



INSTITUTE OF TECHNOLOGY OF CAMBODIA

The 32nd Meeting Board of Trustees

Phnom Penh, 27 June 2024

Director's Report 2023-2024

Complementary Documents:

- General and Pedagogical Documents
- Financial Report

Table of Contents

Table of Contents	i
List of Tables	iv
List of Figures	v
List of Annex	vi
Agenda of CA 2024	vii
1. Summary of activities – Current state	1
1.1. Remarkable events at ITC in 2023-2024.....	3
1.1.1. Foundation stone laying ceremony for the “Training and Research Center” at the new ITC campus.....	3
1.1.2. Visit of His Excellency HANG Chuon Naron, Deputy Prime Minister and Minister of Education, Youth and Sport.....	4
1.1.3. New initiatives in favor of French-speaking youth in Asia-Pacific.....	4
1.1.4. The 13 th ITC Scientific Day	5
1.1.5. Visit of H.E.M. Yann CHANTREL, French senator	6
1.1.6. Visit of delegates from the French Embassy.....	7
1.1.7. Visit of Ms. Carmen Gervet, Director of the ESPACE DEV Research Unit of the Institute of Research for Development (IRD).....	8
1.1.8. Senior ARES delegates visit ITC	9
1.1.9. Visit of H.E. Dominique Hasler, Minister of Education of Liechtenstein.....	9
1.1.10. Visit of Mr. Luis Benveniste, Global Director for Education of World Bank	10
1.1.11. The 14th AUN/SEED-Net Regional Conference on Geological and Geo-Resources Engineering (RCGeoE) and the 2nd International Conference on Earth Resources and Geo-Environment Technology 2023 (EraGET2023)	10
1.1.12. Visit to SAILUN Cambodia-Vietnam factories	11
1.1.13. Graduation ceremony of the First ECAM-ITC promotion	12
1.1.14. Honda Y-E-S Award Program 2023	13
1.1.15. Admission to Ecole Polytechnique	14
2. Recruitment, Evolution of Number of Students and Others Activities	16
2.1. Recruitment in 2023-2024.....	17
2.1.1. Information Campaign	17
2.1.2. Preparation of Entrance Exam.....	17
2.1.3. Registration to the exam.....	17
2.1.4. Result of the Entrance Exam.....	18
2.1.5. Enrollment in 1st Year	18
2.1.6. Remark and Conclusion	19
2.2. Pathway to 3rd Year Engineering Program.....	20
2.2.1. Pass from T2 to 3rd Year Engineering.....	20
2.2.2. Entry into 3 rd Year Engineering Program	20
2.3. Total number of students in 2023-2024	21
2.4. Final Exam (End of Semester)	23
2.5. Continuing Education.....	23

2.6.	Preparation of ITC students for exam of Grandes Ecoles in France	25
2.7.	Preparation for the exam of Japanese Government Scholarship	26
2.8.	Scholarships and exemption of tuition fee (2023-2024)	27
2.9.	Activities Report of E-learning Center	27
2.9.1.	Background	27
2.9.2.	Achievement in 2023-2024	28
2.9.3.	Content development.....	30
2.9.4.	Content operation	30
2.10.	Activities report of library of ITC	31
3.	Educational Report	32
3.1.	Overview of teaching/research staffs at ITC	33
3.1.1.	Number of lecturers/researchers.....	33
3.1.2.	Lecturers/researchers graduated from different countries.....	34
3.1.3.	Conclusion.....	35
3.2.	Student Employability	35
3.3.	Graduate School of ITC	36
3.3.1.	Introduction	36
3.3.2.	Summary of Realized Activities in 2023-2024	37
3.3.3.	Master Programs	39
3.3.3.1.	Overview.....	39
3.3.3.2.	Program M-MSE.....	45
3.3.3.3.	Program M-ETM	46
3.3.3.4.	Program M-WEE	48
3.3.3.5.	Program M-AIE	50
3.3.3.6.	Program M-ECS	52
3.3.3.7.	Program M-MIC	53
3.3.3.8.	Program M-TIE.....	55
3.3.3.9.	Program M-DAS.....	56
3.3.4.	Doctoral Programs.....	58
3.3.4.1.	Overview.....	58
3.3.4.2.	Program D-WAE	59
3.3.4.3.	Program D-ETM.....	61
3.3.4.4.	Program D-FTN	63
3.3.4.5.	Program D-MIT	65
3.3.4.6.	Program D-MSS	67
3.3.5.	Challenges and Way Forwards.....	69
3.3.6.	Conclusion.....	69
4.	Capacity Building and Professor Dispatch	70
4.1.	Capacity Building (2023-2024).....	71
4.1.1.	Long-term overseas capacity building for lecturers and students	71
4.1.2.	Short-term overseas capacity building for lecturers and students.....	71
4.2.	Professor dispatch at ITC (2023-2024)	71
5.	Research and Innovation Center	73
5.1.	Background of Research and Innovation at ITC	74
5.2.	Research and Publication	74

5.2.1. Research Project and Researcher	74
5.2.2. Research Project and Researcher by Research Unit for 2023-2024.....	75
5.2.3. Classification of Research Project by Unit	77
5.2.4. Publication.....	78
5.3. High Impact Research and Innovation Projects	79
5.3.1. Platform for Aquatic Ecosystem Research (PAER).....	79
5.3.1.1. Introduction.....	79
5.3.1.2. Structure.....	79
5.3.1.3. Activities of PAER in 2023-2024.....	80
5.3.2. Toward the establishment of the Cambodian Coastal Research Center.....	84
5.3.3. SATREPS Project: « Establishment of Risk Management Platform for Air Pollution in Cambodia »	90
5.3.3.1. Introduction.....	90
5.3.3.2. Goal and Objective of the project	90
5.3.3.3. Research Participants	90
5.3.3.4. Activities to be implemented	91
5.3.3.5. Activities work plan for five years	91
5.3.3.6. Activities in 2023-2024	92
5.3.4. Higher Education Improvement Project.....	98
5.3.5. Laboratory-Based Education (LBE) Project	109
5.3.5.1. Project Goal and Purpose.....	109
5.3.5.2. Expected Outputs and Selected Projects.....	109
5.3.6. AFD/EU Projects.....	110
5.4. Research Promotion and Collaboration.....	112
5.4.1. Energy Technology and Management (ETM Unit)	112
5.4.2. Food Technology and Nutrition (FTN Unit).....	121
5.4.3. Mechatronics and Information Technology (MIT Unit)	134
5.4.4. Materials Science and Structure (MSS Unit)	141
5.4.5. Water and Environment Unit (WAE Unit)	149
5.5. Research Facilities.....	161
5.6. Research and Innovation Dissemination	162
5.6.1. Techno-Science Research Journal.....	162
5.6.2. RIC Website	163
5.7. Conclusion.....	164
6. National and International Cooperation.....	165
6.1. Memorandum of Understanding and Memorandum of Agreement.....	166
6.2. Internship and visit	167
6.2.1. Foreign student at ITC.....	167
6.2.2. Foreign Students and Organizations on ITC campus.....	167
6.3. Collaboration with industries	167
Annex.....	171

List of Tables

Table 1. Number of students enrolled to 1st Year of International Program.....	19
Table 2. Number of students enrolled to 1st Year at ITC-Tbong Khmum.	19
Table 3. Number of technician graduates accepted to 3 rd Year Engineering Program.	20
Table 4. Actual number of 3 rd year engineering students.	20
Table 5. Total number of students in 2023-2024 (ITC-Phnom Penh).	21
Table 6. Total number of students in 2023-2024 (ITC-Tbong Khmum).	21
Table 7. Number of Reorientation of Engineering and Technician students.	22
Table 8. Total number of students in June 2024 (ITC-Phnom Penh).	22
Table 9. Number of students enrolled in the Continuing Education Program.	23
Table 10. Number of awardees of Japanese Government Scholarship 2024.	26
Table 11. Different Scholarships at ITC.	27
Table 12. Number of lecturers/researchers in different departments in 2023-2024.	33
Table 13. List of publications.	83
Table 14. Sub-research projects granted by Royal Government of Cambodia.	99
Table 15. Achievement of HEIP-ITC.	101
Table 16. KPI of HEIP-ITC.	102
Table 17. New setup laboratories under HEIP-ITC.	103
Table 18. Prototypes created under HEIP project.	103
Table 19. LBE Research Project for 2019-2024.	109
Table 20. AFD Research Project for 2022-2023 (Phase II).	111
Table 21. List of all 3 research projects status (Phase II) with its achievement.	111
Table 22. Research topics in ETM unit for the academic year 2023-2024.	114
Table 23. Summary of number of publications in last 5 years.	117
Table 24. Research topics in FTN unit for the academic year 2023-2024.	122
Table 25. Summary of number of publications in last 5 years.	128
Table 26. Research topics in MIT unit for the academic year 2023-2024.	135
Table 27. Summary of number of publications in last 5 years.	138
Table 28. Research topics in MSS unit for the academic year 2023-2024.	143
Table 29. Summary of number of publications in last 5 years.	146
Table 30. Research topics in WAE unit for the academic year 2023-2024.	151
Table 31. Summary of number of research publications in last 5 years.	156
Table 32. Laboratories of ITC by research unit.	161
Table 33. Activity of Techno-Science Research Journal in 2023-2024.	163
Table 34. Activities of UIL collaboration with industries for 2023 and 2024.	168

List of Figures

Figure 1. Number of Candidates registered in the entrance exam.	17
Figure 2. Evolution of number of successful candidates.	18
Figure 3. Number of students enrolled and graduated in continuing education (GCI).....	24
Figure 4. Number of students enrolled and graduated in continuing education (GEE).....	24
Figure 5. Number of students enrolled and graduated in continuing education (GCA).	24
Figure 6. Number of students enrolled and graduated in continuing education (GIM).....	25
Figure 7. Number of ITC students integrated in an engineering school since 2007-2008.....	26
Figure 8. Evolution of Number of Lecturers/Researchers.	33
Figure 9. Evolution of number of PhD and Master holders.	34
Figure 10. ITC lecturers/researchers graduated from different countries.	35
Figure 11. Engineering students graduated in 2022-2023.	36
Figure 12. Number of researchers and research projects in last 5 years.	75
Figure 13. Research projects by each research unit (2023-2024).	76
Figure 14. Classification of research project by research unit (2023-2024).	77
Figure 15. Classification of project types by research unit (2023-2024).	78
Figure 16. Number of publications in last 5 years.	78
Figure 17. PAER management structure.....	80
Figure 18. Analytical Instrument training on GC-MS, HPLC, IC, and AAS for the academic year 2023-2024.	81
Figure 19. Poster of capacity building and engagement workshop on environmental issues and solution.....	82
Figure 20. Locations of CCRC proposed campuses.	86
Figure 21. Development trend of coastal areas in Cambodia.	87
Figure 22. The need of the Cambodian Coastal Research Center.....	87
Figure 23. The possible management structure of CCRC.....	88
Figure 24. Poster of joint workshop on SATREPS Project.	93
Figure 25. Activities during the laboratory training.....	94
Figure 26. Overview of experimental step from sampling to microbial community analysis.	94
Figure 27. Water filtration during sampling (a, b); Bioaerosol sampling (c); DNA extraction (d); Nanopore sequencing (e)	94
Figure 28. Activities during the training at Nagasaki University, Japan.	95
Figure 29. Poster of SATREPS special lecture.....	96
Figure 30. Photo during the lecture.....	96
Figure 31. Group 2 weekly meeting.....	97
Figure 32. Visit to smoke fish village to observe smoke generation from smoke fish technique.	97

List of Annex

Annex 1. Minutes of the International Consortium Meeting on 27-28 March 2024.	172
Annex 2. Minutes of meeting of the Board of Trustees Meeting on 28 June 2023.	195
Annex 3. Overview of Decisions of CA 2023 and Recommendations of Consortium 2024.....	212
Annex 4. Minutes of CEVU Meeting.	225
Annex 5. List of Lecturer and Supervisors of GS for Master Programs.....	228
Annex 6. List of Master Thesis.	233
Annex 7. List of Master Publications.....	255
Annex 8. List of Lecturers and Supervisors PhD.....	264
Annex 9. List of PhD Thesis.	267
Annex 10. List of Publications by PhD students.	269
Annex 11. ITC lecturers in overseas post-graduate program (2023-2024).....	272
Annex 12. ITC students in overseas post-graduate program (2023-2024).	274
Annex 13. Short-term overseas capacity building for lecturers (2023-2024).....	279
Annex 14. Short-term overseas capacity building for students (2023-2024).....	291
Annex 15. Dispatch Professor at ITC (2023-2024).	296
Annex 16. Research Topics in 2023-2024 of ETM Unit.	299
Annex 17. Research Topics in 2023-2024 of FTN Unit.	304
Annex 18. Research Topics in 2023-2024 of MIT Unit.	313
Annex 19. Research Topics in 2023-2024 of MSS Unit.....	318
Annex 20. Research Topics in 2023-2024 of WAE Unit.....	322
Annex 21. List of publications in Techno-Science Research Journal in Volume 11.....	334
Annex 22. List of publication from ETM Research Unit.....	336
Annex 23. List of publication from FTN Research Unit.	341
Annex 24. List of publication from MIT Research Unit.....	349
Annex 25. List of publication from MSS Research Unit.	355
Annex 26. List of publication from WAE Research Unit.	360
Annex 27. List of Foreign Students at ITC.	368
Annex 28. Organizing Seminars and Workshops for lecturers and students.....	370
Annex 29. Joining Seminars and Workshops Organized by External Entities.	373
Annex 30. Industrial Visits to ITC.....	376
Annex 31. ITC Lecturers and Students' Visits to Industries.	381
Annex 32. Event Organization.	385
Annex 33. Projects Developed with Private Sectors and Other Services.	386
Annex 34. Memoranda of Understanding (MoU) and Memoranda of Agreement (MoA) with Industry.	390

Agenda of CA 2024

27 June 2024

8h30 à 12h00 : Room A-110 at ITC

- 1) Opening Remarks by the President of the Board of Trustees
- 2) Adoption of Agenda
- 3) Presentation of Report of Director 2023-2024
- 4) Presentation of General and Pedagogical Documents for 2024-2025
- 5) Financial Report: Status in 2023-2024 and Estimated budget for 2024-2025
- 6) Nomination of Direction Team for 2024-2025
- 7) Q&A

Membres du CA 2024

1. S. E. Mme PHOEURNNG Sackona, présidente du conseil d'administration et ministre de la culture et des beaux-arts
2. S. E. M. Jacques PELLET, ambassadeur de France au Cambodge
3. S. E. M. UENO Atsushi, ambassadeur du Japon au Cambodge
4. S. E. M. OM Romny, secrétaire d'État au ministère de l'éducation, de la jeunesse et des sports
5. S. E. Mme PEN Chhorda, secrétaire d'État du ministère des mines et de l'énergie
6. S. E. M. CHOU Kimleng, secrétaire d'État du ministère de l'économie et des finances
7. S. E. Prof. PO Kimtho, directeur de l'ITC
8. Mme TEA Channy, représentante des personnels de l'ITC
9. M. MAINETTI Nicolas, directeur de l'AUF Asie-Pacifique
10. M. LAY Méng Sun, directeur de la SKD
11. M. Frédéric DEBASTE, représentant de l'ARES-ex CUD

Membres invités

12. M. PROTIN Ludovic, directeur honoraire de l'ITC
13. M. VINCENT Pierre, Conseiller de Coopération et d'action culturelle de l'Ambassade de France et directeur de l'Institut Français du Cambodge
14. Mme TRAN Thi Anh-Dao, attachée de coopération scientifique et universitaire de l'Ambassade de France
15. Mme Adèle MARTIAL, Représentante du pays chez l'IRD et Représentante du Consortium
16. M. KOICHIRO Watanaba, Senior Advisor of JICA
17. M. Junichi TAKADA, vice-president of TOKYO Institute of Technology
18. Mr. Sanui Kazumasa, chief Representative of JICA Cambodia Office, AUN/SEED-Net
19. M. Pascal MAUSSION, vice-président des Relations Internationales INP-Toulouse
20. M. IM Kravong, responsable Antenne AUF, Phnom Penh

Direction de l'ITC et ses coéquipiers

21. M. SOY Ty, directeur adjoint de l'ITC, chargé des affaires académiques
22. Dr. BUN Kim Ngun, directeur adjoint
23. Dr. NGUON Kollika, directeur adjoint
24. Dr. BUN Long, directeur adjoint
25. Dr. CHUNHIENG Thavarith, conseiller chargé de la coopération et de la recherche
26. M. NUTH Sothân, conseiller de l'ITC, chargé de la pédagogie et des études
27. M. SIEANG Phen, directeur et de la coopération et des relations internationales (RI)
28. Assist. Prof. Dr. OR Chanmoly, directeur du centre de recherche et d'innovation (RIC)
29. Dr. SIM Tepmony, directeur du 3ème cycle (GS)
30. Assist. Prof. Dr. HAN Virak, doyen de la faculté de génie civil (GCI)
31. Assist. Prof. Dr. CHHUON Kong, doyen de la faculté d'hydrologie
32. Dr. CHRIN Phok, doyen de la faculté de génie électrique et énergétique (GEE)
33. Assist. Prof. Dr. LIN Mongkulserey, directeur adjoint du centre de recherche et d'innovation et Chef du département de Mathématiques Appliquées et Statistiques
34. Assist. Prof. Dr. IN Sokneang, doyenne de la faculté de génie chimique et alimentaire (GCA)
35. M. LAY Heng, vice-doyen de la faculté de génie électrique et chef de département de génie informatique et communication (GIC)
36. Dr. SRENG Sochenda, chef de département de Télécommunications et Réseaux (GTR)

37. Mme SREY Malis, chef de département du tronc commun (TC)
38. Dr. CHAN Sarin, chef de département de génie mécanique et industriel (GIM)
39. Assist. Prof. Dr. PHUN Veng Kheang, chef de département transports et infrastructures (DTI)
40. Assist. Prof. Dr. ENG Chandoeurn, faculté de génie de géo-ressources et de géotechnique (GGG)
41. Mme Khem TranKrasel, coordinatrice de la section de français (SF)
42. M. SO Phea, coordinateur de la section d'anglais (SA)
43. M. SOK Kimheng, responsable de la bibliothèque STEM
44. Dr. KRET Kakda, head of ETM
45. Assist. Prof. Dr. VALY Dona, head of MIT
46. Assist. Prof. Dr. PHAT Cahnvoleak, head of FTN
47. Dr. DOUNG Piseth, head of MSS
48. Dr. PENG Chanthol, head of WAE
49. M. KHIEV Samnang, responsable du service informatique (IT)
50. Assist. Prof. Dr. SRANG Sarot, responsable du génie mécanique et des systèmes de contrôle au Département de génie industriel et mécanique et coordinateur du programme international
51. Dr. YIN Molyka, responsable des relations avec les entreprises (UIL)

1. Summary of activities

– Current state

In 2023-2024, a number of remarkable events have been organized in close cooperation with national and international stakeholders.

Moreover, different meetings of ITC councils have been taken place online as follows:

- International Consortium Meeting at ITC, 27-28 March 2024 (Annex 1).
- 31st Board of Trustees Meeting, 28 June 2023 (Annex 2).
- Study Council and University Life meeting in 2023-2024 (Annex 4).

An overview of the CA decision in 2023 and Consortium 2024 opinions is presented in table below.

No	Décisions du Conseil d'Administration 2023	2023-2024
1	Reclasser les projets par nature, par niveau (ne pas les mettre tous ensemble)	En réalisation
2	La durée de « Bachelor of ITC » dure 5 ans	Réalisé
3	L'ITC va discuter avec le MEJS et donner le titre « Professeur Émérite » aux dirigeants et les professeurs de l'ITC qui sont à la retraite	En réalisation
4	Ingénieurs: ITC-Phnom Penh =1300 étudiants (80 bourses); ITC-Tbong Khmum = 120 Techniciens : 1000 étudiants (15% bourses)	Réalisé
5	Droits de scolarité : Ingénieurs : (800USD/650USD pour les filles); Techniciens (350USD/250USD pour les filles)	Réalisé
6	Nomination de l'équipe de direction de l'ITC	Réalisé
7	Project Implementation : - Institution <ul style="list-style-type: none"> • Establishment of Risk Management Platform for Air Pollution in Cambodia – SATREPS – JICA (2022 – 2027); • Institutional Support (IS) – ARES (2022 – 2027) ; • Science and Technology Project in Upper Secondary Education (STEP UP) – ADB (2023 – 2029); • Research and Training Platform on Power System – EU/AFD (2023 – 2027); • Energy Transition Sector Development Program (ETSDP) – ADB (2023); • Skills for Future Economy (SFE) – ADB (2023 – 2029); • LBE-Phase 2 – JICA (2024 – 2029). - Research Project (total: 80 projects) <ul style="list-style-type: none"> • Continuous projects: 59 ; • Newly approved research projects: 21. 	En réalisation

No	Avis du Consortium 2024	AVIS
1	Valorisation de la transversalité des cours entre les départements	Favorable
2	Création de: Master of Architectural Engineering (GS)	Favorable
3	Création de : Artificial Intelligence Engineering and Cybersecurity (GIC-International Program)	Favorable
4	Création de: IT Network and Programming (GIC-Associate)	Favorable
5	Création de : Industrial Engineering (GIM-Associate)	Favorable
6	Création de : Geotechnical Engineering (GGG-Associate)	Favorable
7	Changement du nom: Materials Science and Structure” to “Materials and Built Environment” (RIC)	À revoir
8	New PathWay of ECAM LaSalle “Second years of International Program can go directly to 3rd year at ECAM LaSalle” (ITC-ECAM-Kasetsart University)	À revoir

1.1. Remarkable events at ITC in 2023-2024

1.1.1. Foundation stone laying ceremony for the “Training and Research Center” at the new ITC campus

In the morning of February 7, 2024, the Institute of Technology of Cambodia celebrated a foundation stone laying ceremony for the construction of a training and research building consisting of 65 rooms and 6 floors, the work of which takes more than 18 months and is expected to be completed by May 2025. The new building was designed by Heerim and Group Four and constructed by Jianguo Natong No. 2 Construction



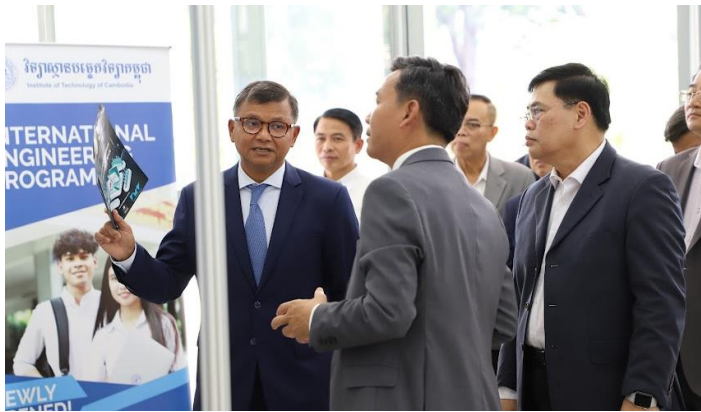
Engineering (Group) Co., Ltd with funding from the Improvement Project of Higher Education (HEIP) of the World Bank (WB). This is the second site of the ITC, which includes a boarding school, a building for classrooms and research, as well as other infrastructure such as fences, parks, Sport fields, parking lots, motorcycles, roads, ponds, lighting, etc.

This historic event was chaired by H.E. Dr. HANG Chuon Naron, Deputy Prime Minister and Minister of Education, Youth and Sport, along with ministry leaders, management team, civil servants, ITC professors and researchers and other stakeholders.

We hope that this new building truly constitutes a new infrastructure that can help to strengthen and facilitate teaching and learning, including the research work of the institute. This also helps improve the quality and expand research on human capital in the digital age, which can enable the seventh-term royal government led by Samdech Thipadei Hun Manet to achieve the two major goals of becoming a country with high middle income by 2030 and a high-income country by 2050.



1.1.2. Visit of His Excellency HANG Chuon Naron, Deputy Prime Minister and Minister of Education, Youth and Sport



In the afternoon of February 23, 2024, H.E. Prof. PO Kimtho, Director of the Institute of Technology of Cambodia (ITC) warmly welcomed H.E. Dr. HANG Chuon Naron, Deputy Prime Minister and Minister of Education, Youth and Sport. H.E. Dr. OM Romny, Secretary of State of the Ministry of Education, Youth and Sport, H.E. Dr. TOUCH Visal Sok, Secretary of State of the Ministry of Education, Youth and Sport, as well as other leaders of the Ministry of

Education, Youth and Sport, were also present.

H.E. Prof. PO Kimtho informed the Minister of the progress of the School of Technology, particularly the four levels of training and research: Technician, Engineer, Master, Doctorate and Research.

After visiting the posters of some of ITC's achievements, H.E. Dr. HANG Chuon Naron visited some laboratories to better understand what this higher education institution does. These laboratories include: the E-Learning Center; the Khmer Earth Observation Laboratory (KHOEBS); the Faculty of Electricity laboratories: Control Laboratory and Smart Grid Laboratory; the Dynamic Control laboratory; the hydrology and hydrology laboratory, etc.

And at the end, the Deputy Prime Minister and Minister of Education, Youth and Sport invited to a very friendly meeting with ITC professors and researchers.

1.1.3. New initiatives in favor of French-speaking youth in Asia-Pacific



In the morning of October 12, 2023, the Institute of Technology of Cambodia (ITC) has the honor of hosting the 14th General Assembly of the Regional Conference of Rectors of Member Institutions of the Agence universitaire de la Francophonie in Asia-Pacific (CONFRASIE), under the theme “Employment and university entrepreneurship” and “Student mobility in the French-speaking area”. The conference brought together 92

rectors from nine countries in the region. These debates will formulate recommendations which will be integrated into the AUF's educational policies adapted to the specific situation of each university in the region.

The program was chaired by H.E. Dr. HANG Chuon Naron, Deputy Prime Minister and Minister of Education, Youth and Sport.

During his welcome speech, H.E. Prof. PO Kimtho thanked and recalled the relations between ITC and the Agence Universitaire de la Francophonie (AUF), formerly AUPEL-UREF. He highlighted that although the ITC is now fully operational, we continue our partnership with the AUF which brings together more than 1,000 major partner universities around the world. This is an important



driver that can help push technology universities to progress more quickly in training and research. In this case, what is important is to raise the quality standards of education within the framework of French-speaking cooperation. These major projects are supported by the Agence Universitaire

de la Francophonie (AUF) and its higher education partners in the Asia-Pacific region, where French is the language of choice for the above destinations.

According to Prof. SLIM Khalbous, Rector of AUF, this conference will also serve to fuel the 7th Ministerial Conference of the Francophonie, on November 2 in Quebec.

“These initiatives demonstrate our commitment to young French-speaking people from the Asia-Pacific region who are ambassadors of La Francophonie in the region,” he concluded. We believe in their ability to plan for the future and we are honored to support them in their educational, entrepreneurial and professional training. »

These innovative activities open new perspectives for French-speaking youth in the Asia-Pacific region and strengthen their relationships within the global French-speaking community.

1.1.4. The 13th ITC Scientific Day



On June 6 and 7, 2024, Institute of Technology of Cambodia (ITC) held its 13th Scientific Day under the theme: "Catalyzing Innovation: Human Capital, Research, and Industry Linkages." The event was chaired by H.E. Dr. HANG Choun Naron, Deputy Prime Minister and Minister of Education, Youth and Sport, and attracted approximately 2000 participants, including researchers, scientists, teachers, and students, as well as another 2000 students from various high schools.

The success of this event was made possible through the collaboration and co-organization of the French Development Agency (AFD) and CAPFish-UNIDO-EU. It received support from the



Ministry of Education, Youth and Sports, the French Embassy, the Japan International Cooperation Agency (JICA), and the Agence Universitaire de la Francophonie (AUF). Financial contributions

came from several private sector entities, including: CAPFish-UNIDO-EU, TEM Trading (M&E Product) Co., Ltd., Chip Mong Insee Cement Corporation, The French National Research Institute for Sustainable Development (IRD), Cart Tire Co., Ltd., DENSO (Cambodia) Co., Ltd., Suez Consulting (Safege), Chemsience Solutions Co., Ltd., S.N.K.R.P Co., Ltd., Standard Scientific Equipment Co., Ltd.

This event highlighted the importance of innovation and collaboration between human capital, research, and industry to drive sustainable development.

In connection with the 13th Scientific Day, the Open House was also organized on 6 and 7 June 2024 in order to allow public and high school students to understand clearly about various majors and to visit some laboratories and ITC campus. About 1000 high school students from 23 high schools in Phnom Penh were invited and participated in this event. It is noted that this annual event is open freely for public.



1.1.5. Visit of H.E.M. Yann CHANTREL, French senator



In the morning of February 20, 2024, H.E. Prof. PO Kimtho, Director of the Institute of Technology of Cambodia (ITC) warmly welcomed H.E. Mr. Yann CHANTREL, French Senator, in charge of French people abroad to explore the Possibility of operational cooperation between ITC and France.

Ms. TRAN Thi Anh-Dao, Scientific and University

Cooperation Attaché, and Mr. Florian BOHÈME, advisor to French people abroad, also accompanied the senator.

To begin with, H.E. Prof. PO Kimtho mentioned that ITC currently has many development partners, including France, which also contributes significantly to the progress of the Institute: Agence Universitaire de la Francophonie (AUF), Agence française de développement (AFD), the

French Embassy, and other institutions such as the Research Institute for the Development of the French Republic (IRD), the Center for International Cooperation in Agronomic Research for Development (CIRAD) and other French higher education establishments.

In response, H.E.M. Yann CHANTREL confirmed that he is the French Senate, representing the approximately 3 million French people living or working outside France. “I am also in charge of higher education with a focus on training and research,” he added. This is why I would like to explore the Potential of the ITC in this matter and examine what we can do together, in particular the need to collect contributions related to the organization of the Francophonie Summit, which Cambodia plans to host. welcome in the year 2026.

Afterwards, the Senate visited some important laboratories on the main campus of ITC:

- 1) Mechatronics Laboratory (DC Lab),
- 2) Soil Ecology Laboratory,
- 3) HealthyRice Laboratory,
- 4) Earth Observation Laboratory, KHEOBS,
- 5) Laboratory of the Environment and Wet and Coastal Zones.

He also took the time to meet French students from the ECAM LaSalle international program and French researchers working in some ITC laboratories.

1.1.6. Visit of delegates from the French Embassy

In the morning of November 23, 2023, H.E. Mr. PO Kimtho welcomed the delegation led by Mr. Pierre VINCENT, Cooperation and Cultural Action Advisor at the French Embassy, to the main campus of the Institute of Technology of Cambodia (ITC).

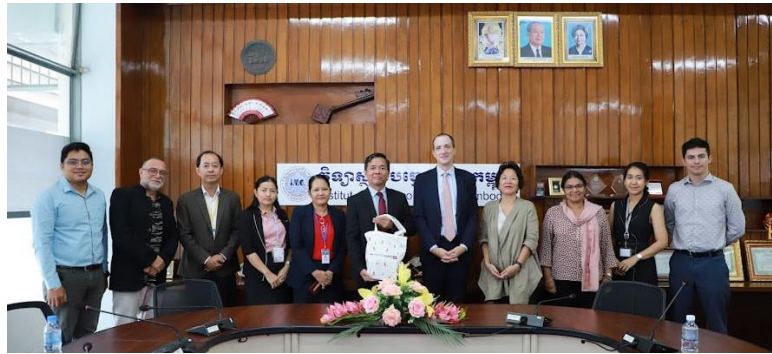


His Excellency the Director informed of the importance of relations with France via the French Embassy since 1993. As part of this cooperation, France contributed to the reopening of the school and supported it until 2004, with four French directors. Since 2004, the ITC has been headed by a Cambodian director. At that time, H.E. Dr. PHOEURNG Sackona was the first Khmer director; then H.E. Dr. OM Romny and then H.E. Prof. PO Kimtho.

Regarding human resources, we left with 0 professors with a doctoral degree (PhD). But nowadays, we have around 100. This potential allows us to strengthen:

- 1) training;
- 2) sharing technology with the community;
- 3) research activities until it is recognized regionally and internationally;
- 4) This year, 5 ITC students passed the exam to study in major schools in France.

In response, Mr. Pierre VINCENT welcomed the good governance of ITC since 2004, which has given the institution a good reputation internationally. In order to improve the French language and provide opportunities for students, he also promised to find additional ways to help students have the opportunity to intern and work by talking with French businessmen at Cambodia. Finally, he affirmed that France always remains alongside the ITC to support it, so that this institution can develop sustainably.



1.1.7. Visit of Ms. Carmen Gervet, Director of the ESPACE DEV Research Unit of the Institute of Research for Development (IRD)



In the morning of November 15, 2023, H.E. Prof. PO Kimtho, Director of the Institute of Technology of Cambodia (ITC), welcomed Ms. Carmen Gervet, Director of the ESPACE DEV Research Unit of the Institute of Research for Development (IRD) to the main campus of the ITC.

The Director of the ESPACE DEV Research Unit clarified that the IRD is a multidisciplinary institution of international renown which works mainly in partnership with southern countries and on French

territory abroad. Together, IRD scientists and partners provide practical solutions to the global challenges facing society and the planet.

ESPACE-DEV (Space for Development) is part of the IRD, created in 2011 to conduct research on technologies and practices including data collection and decision-making approaches for sustainable development.

H.E. Prof. PO Kimtho congratulated and thanked the IRD for having decided to stand alongside the ITC in a spirit of total mutual assistance to serve each other. He added that cooperation with the IRD really brings to the ITC many achievements in terms of research and especially human resources. “Currently, ITC has five research units, but in the future, due to the many new needs and constant technological advances, we will need to increase research teams and new skills,” he said. In this sense, remote sensing, Artificial Intelligence (AI), image processing managed and disseminated by the KHEOBS laboratory at ITC are really important.



1.1.8. Senior ARES delegates visit ITC

In the morning of Thursday, December 14, 2023, H.E. Prof. PO Kimtho, Director of the Institute of Technology of Cambodia (ITC), met and discussed with Ms. Sarah Gasquard, Deputy Director of the Mission at the Belgian Embassy in Bangkok and Marc Fransen, representative of the Academy of Research and of Higher Education of Belgium (ARES).



The discussions focused on the progress of the implementation of the Institutional Support Program, which the Institute of Technology of Cambodia has been implementing for five years (2022-2027) in collaboration with five partner universities in Belgium, UCLouvain, Liège, ULB, University of Namur, and UMONS.

His Excellency expressed his appreciation and gratitude to ARES for its support of the Institute. Both parties expressed satisfaction with the ongoing cooperation

and expressed their commitment to ensuring the implementation of the planned objectives and strengthening the partnership between the Institute of Technology of Cambodia and partner universities.



It should also be noted that this project focuses on two main outcomes:

Firstly, to build and strengthen the capacities and skills of the Institute's staff, faculty and researchers in teaching, research and extension services in line with international standards.

Second: Strengthen the institution's capacity to transfer new knowledge and technologies to communities in the Kingdom of Cambodia.

After the discussion, the delegates also visited some ITC laboratories.

1.1.9. Visit of H.E. Dominique Hasler, Minister of Education of Liechtenstein



In the afternoon of February 29, 2024, H.E. Mr. Dominique Hasler, Minister of Education of Liechtenstein, accompanied by his two delegates Mr. Panagiotis P Otolidis-Beck, Head of the International Humanitarian Cooperation and Development Division, and Mr. Pius Frick, in charge of the development service of Liechtenstein, and national coordinator for Cambodia.

The main objective of the visit was to understand more about ITC and its role in education. Emphasis was placed on the imPORTance of

education, and in particular on increasing and improving human resources. Additionally, discussions focused on projects aimed at cultivating interest in STEM (Science, Technology, Engineering and Mathematics) among young students.

Delegates highlighted the importance of STEM education, commending ITC for its well-focused approach to STEM at tertiary and very young high school levels. The collaborative efforts between Liechtenstein and Cambodia have been recognized as a step towards promoting balanced and robust STEM education, not only at tertiary but also at secondary level.

1.1.10. Visit of Mr. Luis Benveniste, Global Director for Education of World Bank



In the morning of February 26, 2024, in room 110-A of the Institute of Technology of Cambodia (ITC), H.E. Prof. PO Kimtho warmly welcomed the World Bank delegation, led by Luis Benveniste, global director for Education. He was accompanied by: Cristian Aedo, Executive Director for Education in East Asia and the Pacific, Lauri Pynnonen, Senior Education Specialist.

Senior delegates are impressed with the achievements of this higher education institution, particularly the work carried out

under the Higher Education Improvement Project (HEIP).

To better understand, Dr. Bun Kim Ngun, Deputy Director, made a presentation focused on ITC's activities related to training and research. Indeed, as part of the HEIP 1 project, ITC strengthened eight existing programs and created six new ones.

Finally, after visiting the materials directly in different laboratories, Mr. Luis Benveniste and his colleagues expressed their satisfaction and hope that the HEIP 2 project will help the ITC to further develop and be able to develop programs that will meet the needs of the Cambodia.

1.1.11. The 14th AUN/SEED-Net Regional Conference on Geological and Geo-Resources Engineering (RCGeoE) and the 2nd International Conference on Earth Resources and Geo-Environment Technology 2023 (EraGET2023)



On the morning of September 21, 2023, H.E. Dr. OM Romny, Secretary of State of the Ministry of Education, Youth and Sport, chaired the 14th Regional Conference and the 2nd International Conference on Common Minerals: Engineering mineral resources and geology for the Earth.

To begin with, H.E. Prof. PO Kimtho welcomed and thanked

the Ministry of Education, Youth and Sport, JICA, as well as all national and international guests who have always supported and actively participated in the development and research in

engineering, mineral resources and in geology. He added: “Thanks to the initiative of JICA, ITC, the Ministry of Education, Youth and Sport and the Ministry of Culture and Fine Arts, Cambodia's First GeoPark could be created in Siem Reap.

The Secretary General's remarks are also in the same direction: "Recognizing the value of mineral and geological research activities with technological and technical advances, the Ministry of Education, Youth and Sport ensures high performance and support to these activities. » And he hopes that the results of these research activities will actually constitute a valuable benefit for the future needs of the government and the private sector.

The aim of this conference is to enable Cambodian engineering researchers and students, particularly those in mineral resources and geology, to participate and share new research results with each other. This year, for this conference participated 115 professors, researchers, national and international students, experts from ministries and companies such as the Institute of Technology of Cambodia, the Ministry of Mines and Energy, Kyushu University, University of Tokyo, Waseda University of Japan, University of the Philippines Diliman, Caraga State University, Chulalongkorn University, Chiangmai University, Thammasat University, Songkla University of Thailand, Universiti Sains Malaysia (USM) of Malaysia, Universitas Indonesia Depok, Indonesia, Yangon University, Magway University, Myanmar and NIPPON KOEI CO., LTD, Renaissance Minerals (Cambodia) Limited, MERNAD Cambodia, Geo Pro Co., Ltd.

It is also worth noting that this is the second time that the ITC Faculty of Mining and Geology has organized the second RCGeoE regional conference and the first one was held in 2017. This is also the second time that the Faculty of Mines and Geology creates its own international conference called EraGET and successfully organizes the first in February 2022 with the participation of 14 national and international universities and institutions.

This year's conference is also supported by: MGS Soil Improvement Co., Ltd, Renaissance Minerals (Cambodia) Limited, Dynamic Scientific, Laber Scientific, N.V.C Corporation Co., Ltd (Vital Premium Water).



1.1.12. Visit to SAILUN Cambodia-Vietnam factories

On September 11, 2023, At the invitation of the CEO of Cart Tire Co., Ltd, a subsidiary of Sailun Group, H.E. Prof. PO Kimtho led a delegation from the Institute of Technology of Cambodia (ITC) to visit the tire manufacturer, Sailun located in Tay Ninh province of Vietnam.



Mr. TIAN KEXU, Head of Human Resources of Sailun Southeast Asia, welcomed the ITC delegation, saying that Sailun would like to thank ITC for the good cooperation since their meeting. Indeed, today, the presence of its director and his colleagues really confirms the good relations between our two institutions.

In response, H.E. Prof. PO Kimtho expressed gratitude for the company's warm welcome and promised that ITC would expand its cooperation beyond just accepting students for internships and work. The two sides agreed to strengthen joint research to meet the competitive needs of the digital era and industrial revolution 4.0. This work is one of the priorities of ITC, whose mission is to transfer technology to the private sector.

It is worth noting that Sailun in Cambodia can currently only produce small car tires (PCR Passenger Car Radial Tire) and medium car tires (TBR-Truck Bus Radial Tire), while Sailun in Vietnam can produce three types of tires: small, medium and large (OTR-Off tire - The-Road tire). Factory production in Cambodia is 30,000 tires per day, while in Vietnam it is 45,000 tires per day (PCR + TBR = 38,000 and OTR = 7,000).

Regarding the number of employees, Sailun Vietnam employs a total of 6,000 people and Sailun Cambodia employs around 2,000 people.

According to the agreement of the leaders of the two parties, a school factory could be called: Salatechno-Sailun will soon be born at ITC in order to strengthen and expand cooperation, in particular, focus on joint research.

According to JIANG RENSHUANG, chairman of Sailun Policy and Strategy Company, every five years the company will build new factories elsewhere in Cambodia. Sailun Cambodia in Svay Rieng is therefore not the last factory.

Another interesting thing is that H.E. Prof. PO Kimtho took the opportunity to meet 14 Sailun Cambodia employees, former ITC students. To these students, the director added “ITC management is very excited to see that you are not only able to work, but also to be praised by the factory management.” As for the company, it clearly stated: “It is these young people and, together with other Cambodian human resources, who are the leaders of this factory. Chinese experts and technicians will return to the country when Cambodia is able to manage and operate the factory on its own.”

1.1.13. Graduation ceremony of the First ECAM-ITC promotion



On April 22, 2024, the Institute of Technology of Cambodia (ITC) and ECAM LaSalle in Lyon organized a graduation ceremony for the 11 Cambodian students who won the ECAM-ITC international program for the first promotion.

The event was held at the ITC under the presidency of His Excellency Prof. PO Kimtho, director of ITC and Prof. DESPLANCE Didier, Director General of École Catholique des Arts et Métiers (ECAM) LaSalle in Lyon.

These students have successfully completed the following two specialties: Robotics and Automation & Industrial Engineering and Supply Chain Management.



1.1.14. Honda Y-E-S Award Program 2023



The HONDA Y-E-S AWARD PROGRAM is implementing in Vietnam, Burma, India, Bangladesh, Laos and Cambodia.

As one of the important ASEAN countries, Cambodia is expected to experience dramatic growth in the near future. Higher education institutions are still in the process of growing and training future leaders, especially in the field of science and technology. Human exchanges and trade with Japan keep growing day by day, and expectations for expansion in these areas were

high. This is why this program for Cambodia began in 2008. As for the establishments concerned, they are the Institute of Technology of Cambodia, the Royal University of Phnom Penh and the Royal University of Agriculture.

This year, there are 4 Cambodian laureates, including two from ITC, one from Royal University of Agriculture and another one from Royal University of Phnom Penh. The management of ITC was pleased with its two students who were able to win these two major prizes from the HONDA Y-E-S AWARD. Mr. LEY Satya, 5th year student in the Department of Civil Engineering, and Mr. LENG Mengthong, 5th year student in the Department of Mechanical and Industrial Engineering.

The following table highlights this data.

Year	Full Name	Total Number	Number of ITC students
2023	Mr. LEY Satya (GCI) Mr. LENG Mengthong (GIM)	4 (ITC/RUA/RUPP)	2
2022	Miss DET Mouykeang (GCA) Mr. VIRAK Alexander (GIM)	4 (ITC/RUPP)	2
2021	Miss CHHUOR Sochan Vimul(GCA)	4 (ITC/RUPP)	1
2020	Mr. KEO Seiha (GCI) Miss LAY Cheavita (GCA)	4 (ITC/RUPP)	2
2019	Mr. KONG Rathaseyhak (GCA) Mr. CHHENG Ilay (GCI)	4 (ITC/RUPP)	2
2018	Mr. SONG Vergenylundy (GEE)	4 (ITC/RUA/RUPP)	1
2017	Miss NY Vourchnea (GCA)	4 (ITC/RUA/RUPP)	1
2016	Mr. KOUCH Keang Ang (GCI) Mr. THAI Sereyvuth (GCA)	4	2
2015	Miss EA Somuynea Miss CHHIM Panchapor	4	2
2014	Mr. KOUCH Henghok Mr. PHON Bunheng	4	2
2013	Mr. SRENG Mengoing Miss SROY Sengly	4	2
2012	Mr. RITH Monorom Mr. KHY Kimleng	4	2
2011	Miss EK Pichmony Mr. SAY Vortana CHHOR Marady	4	3
2010	Mr. CHEA Ratha Miss Rath Sovannsathya	4	2

1.1.15. Admission to Ecole Polytechnique

Since 2007-2008, Cambodian students of the ITC have been present among other students foreigners in a highly reputed school in France and around the world, the École Polytechnique. It is indisputable that our students have the basic knowledge solid enough to be recruited by the very difficult competition of this school. The list below illustrates the names of students who are studying or have studied at our polytechnic in other major schools and their careers.

For this year, 15 students took part in this competition organized at Institut Francais du Cambodge, of which Seven students succeeded. It should be noted that there are three students for the École Polytechnique.

The table below illustrates this data.

Academic Year	Full Name	Sex	Degree	Workplace or University	Responsibility
2023-2024	CHOUV You Y	F	Étudiant		
	SEN Sovatheakna	M	Étudiant		
	KHUN Sivluy	F	Étudiant		
2022-2023	SENG Hok	M	Étudiant		

2021-2022	MOK Yong	M	Étudiant		
2020-2021	Covid-19 Pandemic				
2019-2020	NORNG Vannvatthana	M	Étudiant		
	CHHOUT Laychiva	M	Étudiant		
2018-2019	VENG Namchhoen	M	Étudiant		
2016-2017	CHAO Kimhong	M	Ingénieur	Institut Polytechnique	Etudiant en Master
	SAMBATH Vibolroth	F	Ingénieur	Institut Polytechnique	Etudiant en Master
	THY Vathana	M	Ingénieur	Institut Polytechnique	Etudiant en Master
2015-2016	EANG Chanpaya	M	Abandon		Ingénieur
	NOU Sithea	M	Master	Suisse	Ingénieur
2014-2015	HEANG Kitiyavirayuth	M	Master	Ecole des Ponts ParisTech (Paris)	Etudiant Architecte
	KHUN Kimang	M	Master	INRIA (Grenoble)	Ingénieur Doctorant
	THAN Poseng	M	Master	Paris Partner (Paris)	Ingénieur Informaticien
2013-2014	IEA Bunthan	M	Master	Ministère du Développement Durable (France)	Ingénieur Corps d'Etat
	DIN Ratanak	M	Master	Vinci Construction (Paris)	Ingénieur d'Etudes
2012-2013	KHOUN Ladyya	M	PhD	Naval Group	Ingénieur-Chercheur
	SENG Sodarith	M	Master	Vinci Construction (Phnom Penh)	Ingénieur d'Etudes
2011-2012	UCH Bunnarith	M	Master	Suez (Rennes et Phnom Penh)	Ingénieur de Projet
2010-2011	IM Seyha	M	Master	Corsicasole (Paris)	Ingénieur, Chef de projet
	HUY Seav Er	M	Master	AFD (Phnom Penh)	Ingénieur, Chef de projet
	SE Dara	M	Master	Suez (Rennes et Phnom Penh)	Ingénieur, Chef de projet
2009-2010	SVAY Angkeara	M	PhD	LBL International (Phnom Penh)	Directeur Technique (CTO)
	CHEY Sopheak	M	Ingénieur	TC (Cambodge)	Enseignant à temps partiels
2008-2009	MUY Sokseiha	M	PhD	EPFL (Lausanne, Suisse)	Post-Doctorat
2007-2008	MANG Chetra	M	PhD	IRT SystèmeX (Paris)	Ingénieur R&D Sénior

2. Recruitment, Evolution of Number of Students and Others Activities

2.1. Recruitment in 2023-2024

Students of engineering program (both national and international programs) have been recruited through an entrance writing examination (on site) on mathematics, physic/chemistry and logic. Recruitment of technician program is based on documentation from high school.

2.1.1. Information Campaign

Some information campaigns to high school students had been done on site. ITC also receives many visits of high school students at the campus. Online campaign and social network had also been implemented.

2.1.2. Preparation of Entrance Exam

Lecturers of ITC were requested to propose writing tests based on curriculum in high school. The Direction Board of ITC was responsible for the final selection of the best tests with confidentiality.

The date, the tests and all regulations of the exam in both campuses (Phnom Penh and Tbong Khmum) are the same.

2.1.3. Registration to the exam

Registration to the entrance exam of Engineering Program took place from 29 November 2023 to 18 December 2023. In total, 3684 candidates (1326 females) registered to the examination in Phnom Penh and 40 candidates (20 females) registered in Tbong Khmum campus. For international engineering programs, there were 37 candidates (11 females).

The tests of selection were held at ITC-Phnom Penh and ITC-Tbong Khmum on 20 December 2023 under supervision of ITC's Direction Board. No fraud had been reported and the tests were conducted in a satisfactory and transparent manner.

Figure 1 shows that number of candidates is slightly higher than last year.

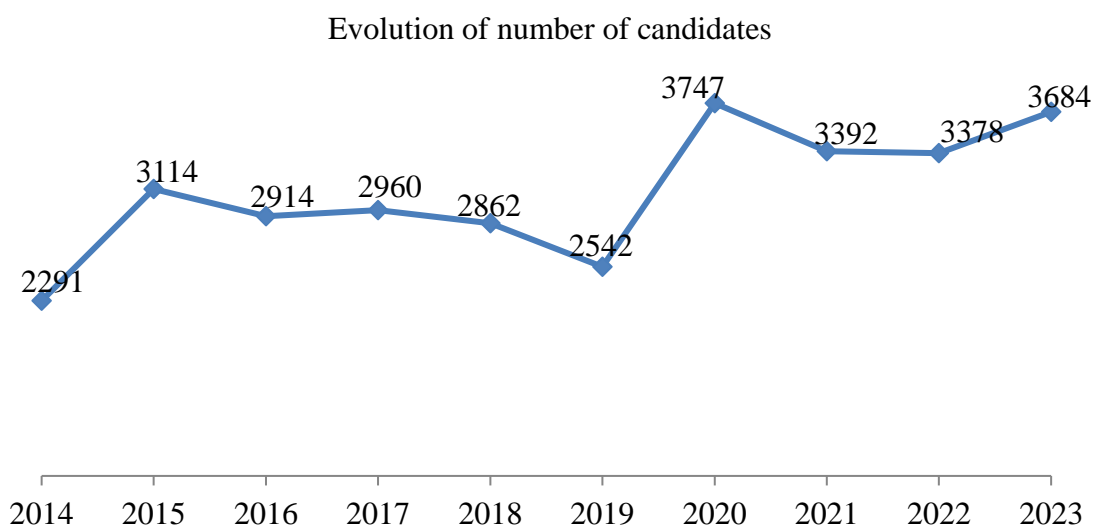


Figure 1. Number of Candidates registered in the entrance exam.

2.1.4. Result of the Entrance Exam

Result of the Entrance Exam was announced on 22 December 2023. There are 1551 successful candidates (502 Females) and 409 candidates in reserved list (174 Females).

Figure 2 shows that number of successful candidates remained around 800 from 2014 to 2016. Due to new building and equipment, number of successful candidates were increased every year from 1002 in 2017 to 1700 in 2020 but slightly decreased to 1551 in 2023.

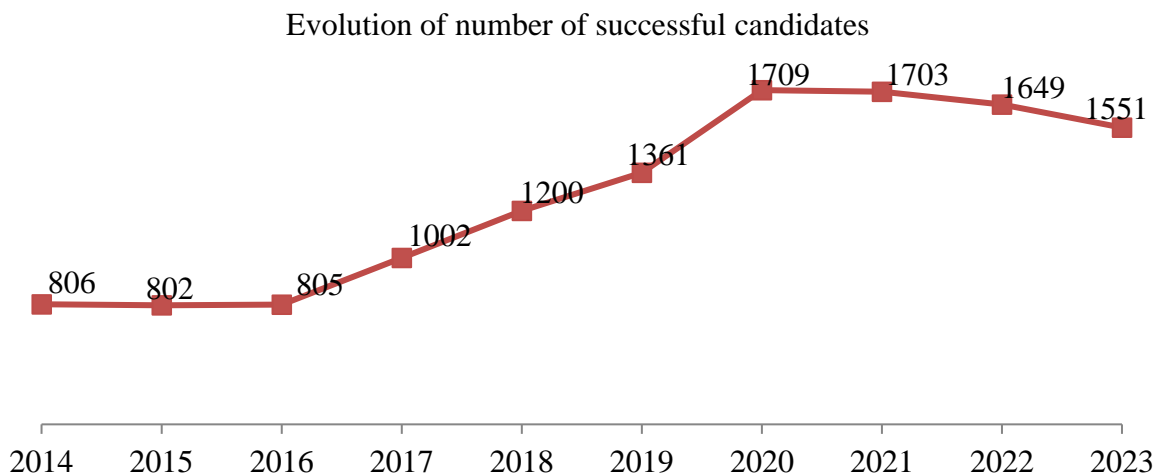


Figure 2. Evolution of number of successful candidates.

2.1.5. Enrollment in 1st Year

The academic year 2023-2024 of 1st Year students was commenced on 8 January 2024 which is about 3 months late comparing to others students who started their classes since 9 October 2023.

a) Engineering Program (ITC-Phnom Penh)

In total, 1380 students (474 females) have enrolled to 1st year of Engineering Program in 2023-2024. These students are composed of:

- 198 of grade A, about 14%
- 580 of grade B, about 42%
- 384 of grade C, about 28%
- 172 of grade D, about 13%
- 46 of grade E, about 3%

b) International Engineering Program (ITC-Phnom Penh)

The International Engineering Program at ITC is launched from this academic year 2023-2024. Table 1 below presents number of high school graduates registered in the entrance examination, number of successful candidates and the one enrolled in the first year of international engineering programs.

Table 1. Number of students enrolled to 1st Year of International Program.

	Total	Female
Candidate	37	11
Successful candidates	27	7
Reserved list	5	0
Enrolled to I1	42 (23 students transferred from National Program)	13

c) Engineering Program (ITC-Tbong Khmum)

Table 2 below presents number of high school graduates registered in the entrance examination, number of successful candidates and the one enrolled in the first year of engineering program at the second campus in Tbong Khmum Province. It is noted that all students enrolled in Tbong Khmum Campus are scholarship holders.

Table 2. Number of students enrolled to 1st Year at ITC-Tbong Khmum.

	Total	Female
Candidate	40	20
Successful candidates	22	8
Reserved list	6	4
Enrolled to I1	31 (4 students transferred from Phnom Penh)	13

d) Associate Degree Program

For Associate Degree Program, 694 students (264 females) enrolled in the first year in 2023-2024.

2.1.6. Remark and Conclusion

There are more Grade A and B students enrolled to the engineering degree. Maintaining the entrance examination is very important in order to keep a positive impression and a very strong brand in mind and appreciation of teachers, students, public and society. It is noted that expense of this examination was fully covered by the Ministry of Education, Youth and Sports, and ITC.

The direction board of ITC should continue to strengthen recruitment strategy of 1st year student of both engineering and technician program by sending staffs to high school in some provinces for advertising and distributing brochures to show the importance and benefit of studying of STEM (Science, Technology, Engineering and Mathematics), especially studying at ITC. The promotion activities can be also implemented online.

2.2. Pathway to 3rd Year Engineering Program

2.2.1. Pass from T2 to 3rd Year Engineering

The pathway is for Associate Degree graduates or equivalent degree. This year 2023-2024, 28 candidates applied for this pathway. Candidates have to pass the following criteria:

- Pre-select and Interview by relevant department,
- Join intensive class on mathematics and physic.

Table 3 below indicates number of candidates and successful candidates to 3rd Year distributed by department over the last five years.

Table 3. Number of technician graduates accepted to 3rd Year Engineering Program.

Dept.	Number of candidates and successful candidates to I3									
	2019-2020		2020-2021		2021-2022		2022-2023		2023-2024	
	Candidate	Successful Candidate	Candi.	Succe. Candi.	Candi.	Succe. Candi.	Candi.	Succe. Candi.	Candi.	Succe. Candi.
GCA	29	10	27	10	27	15	13	9	13	13
GCI	18	12	16	9	12	10	6	2	12	11
GAR	-	-	-	-	-	2	-	-		1
GEE	12	10	4	1	6	3	2	2	2	2
GTR	-	-		1	-	3	-	-		-
GIM	5	3	7	5	2	2	3	2	1	1
GRU	5	5	-	-	-	-	-	-	-	-
GIC	-	-	1	1	-	-	-	-	-	-
Total	69	40	55	27	47	35	24	15	28	28

2.2.2. Entry into 3rd Year Engineering Program

Third year Engineering students may come from:

- Engineering students who finished successfully 2nd year of foundation year,
- DUT and technician graduates if they pass writing test and interview,

Table 4 shows actual number of 3rd year Engineering students.

Table 4. Actual number of 3rd year engineering students.

Department	I2 to I3	T2 to I3	Repeating students	Total
GCA	169	13	9	191
GCI	214	11	6	231
GAR	83	1	9	93
GEE	152	2	13	167
GGG	85	0	4	89
GIC	97	0	15	112

GIM	131	1	7	139
GRU	92	0	6	98
GTR	25	0	10	35
GTI	43	0	8	51
AMS	94	0	9	103
Total	1185	28	96	1309

2.3. Total number of students in 2023-2024

2.3.1. Total number of students in February 2024

As of February 2024, there are 7332 students (2478 females, 33.8%) in both Engineering and Technician programs in academic year 2023-2024 shown in Table 5 below.

Table 5. Total number of students in 2023-2024 (ITC-Phnom Penh).

Dept.	T-1	T-2	Total 1	I-1	I-2	I-3	I-4	I-5	Total 2	Total 1+2
DTC				1380	1357				2737	2737
GCA	195	124	319			191	213	153	557	876
GCI	181	130	311			231	248	204	683	994
GAR	-	-	-			93	85	70	248	248
GEE	219	125	344			167	163	117	447	791
GGG	-	-	-			89	77	28	194	194
GIC	-	-	-			112	61	72	245	245
GIM	67	41	108			139	157	91	387	495
GRU	16	-	16			98	102	65	265	281
GTR	17	24	41			35	52	36	123	164
GTI	-	-	-			51	72	0	123	123
AMS	-	-	-			103	81	0	184	184
Total	695	444	1139	1380	1357	1309	1311	836	6193	7332

Table 6 presents total number of students in 2023-2024 at ITC-Tbong Khmum Campus.

Table 6. Total number of students in 2023-2024 (ITC-Tbong Khmum).

Dept.	I1		I2		I3		I4		I5		Total	F
	Total	F	Total	F	Total	F	Total	F	Total	F		
DTC	31	13	17	6							48	19
GCA					10	10	11	7	8	7	29	24
GCI					11	0	16	5	9	1	36	6
Total	31	13	17	6	21	10	27	12	17	8	113	49

2.3.2. Reorientation

The reorientation represents number of students who quitted ITC due to some reasons such as:

- Recipient of scholarship to study abroad
- Changing of institution
- Dropping out since beginning of academic year
- Etc.

Table below summarizes number of reoriented students of Engineering Programs. It is noted that 1st and 2nd Year students do not finish their 1st semester yet. Therefore, number of reoriented students is not yet available at the time of reporting.

Table 7. Number of Reorientation of Engineering and Technician students.

	T-1	T-2	Total 1	I-1	I-2	I-3	I-4	I-5	Total 2	Total 1+2
Total number	92	38	130	134	83	77	37	6	337	467

2.3.3. Total number of students in June 2024

After semester 1 of 2023-2024, number of reorientation is 467 students. Total number of students remains 6865 students. This number includes students of both Engineering and Associate Degree Program. Table below shows total number of students in June 2024.

Table 8. Total number of students in June 2024 (ITC-Phnom Penh).

Dept.	T-1	T-2	Total 1	I-1	I-2	I-3	I-4	I-5	Total 2	Total 1+2
DTC	-	-		1246	1274				2520	2520
GCA	178	111	289			182	209	153	544	833
GCI	151	119	270			226	233	204	663	933
GAR	-	-				86	83	70	239	239
GEE	187	113	300			157	159	115	431	731
GCG	-	-				87	75	28	190	190
GIC	-	-				98	58	72	228	228
GIM	58	39	97			139	152	88	379	476
GRU	15	-	15			92	101	65	258	273
GTR	14	24	38			27	51	35	113	151
GTI	-	-				44	72	-	116	116
AMS	-	-				94	81	-	175	175
Total	603	406	1009	1246	1274	1232	1274	830	5856	6865

2.4. Final Exam (End of Semester)

This academic year 2023-2024, final exam during the 18th week of semester was organized onsite at ITC. The examination of some subjects has been made in advance because of special character (oral exam of language, projects...). The score is allocated according to the following scale:

- Attendance in class, TD and TP: 10%,
- Mid-term exam, project report, assignment, report of TP: 30-40%,
- Final exam: 50-60%.

It is noted that ITC management system has been developing under support of ARES-CCD project, Belgium. Score input is entered into this system by each lecturer.

2.5. Continuing Education

Continuing Education is designed for associate degree or equivalent degree holders who would like to continue their study in order to upgrade their degree to Bachelor Degree of Engineering.

This year, new 211 students (82 Females) have enrolled in this program. Among them, 57 students (53 Females) enrolled in GCA Department, 80 (14 Females) in GCI, 54 (11 Females) in GEE and 20 (4 Females) in GIM department.

Table below shows total number of students registered for the continuing education.

Table 9. Number of students enrolled in the Continuing Education Program.

Start	End	GCA		GCI		GEE		GIM		Total	
		Total	F	Total	F	Total	F	Total	F	Total	F
2021	2024	53	48	32	5	45	11	24	2	154	66
2022	2025	46	35	37	5	48	10	12	6	143	56
2023	2026	32	30	46	8	43	12	19	5	140	55
2024	2027	57	53	80	14	54	11	20	4	211	82
Total		188	166	195	32	190	44	75	17	648	259

Figures 3, 4, 5 and 6 below show number of students enrolled and graduated in GCI, GEE GCA and GIM departments respectively.

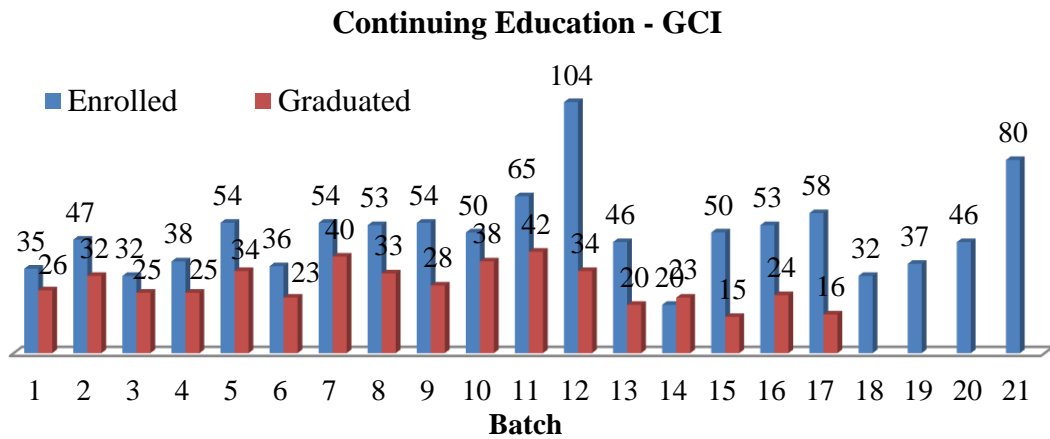


Figure 3. Number of students enrolled and graduated in continuing education (GCI).

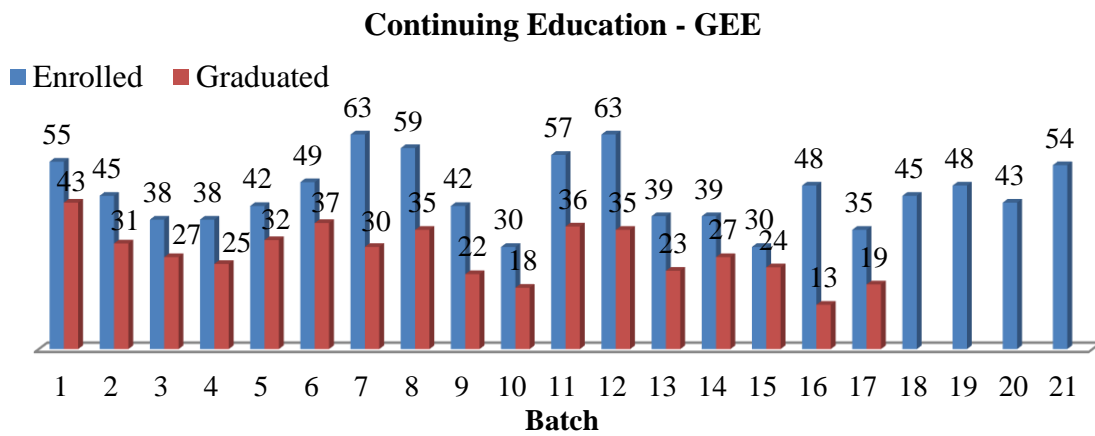


Figure 4. Number of students enrolled and graduated in continuing education (GEE).

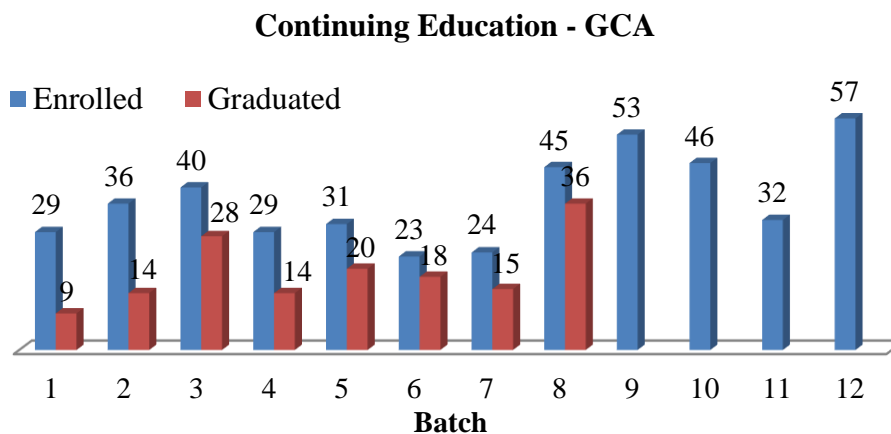


Figure 5. Number of students enrolled and graduated in continuing education (GCA).

Continuing Education - GIM

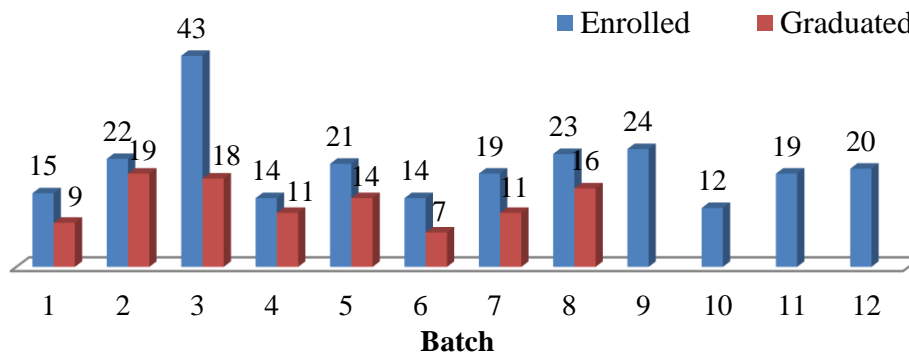


Figure 6. Number of students enrolled and graduated in continuing education (GIM).

2.6. Preparation of ITC students for exam of Grandes Ecoles in France

The cooperation between ITC and Ecole Polytechnique ParisTech was launched in 2007. It is mainly reflected by receiving at Department of Foundation Year long-term polytechnician trainees and organizing international exam of Ecole Polytechnique at ITC. A partnership agreement was signed between the two institutions.

An intensive session of preparation for Institut Polytechnique de Paris (IP Paris) was set up from 16 to 21 October 2023 for 15 eligible ITC students. This preparation has involved two French professors of preparatory classes of Grandes Ecoles (Olivier GRANIER and Philippe BARLIER).

The exam was conducted at Institut Francais du Cambodge from 6 to 10 November 2023 by an International Committee of Institut Polytechnique de Paris.

Finally, Seven candidates have been accepted. Three of them will study at Ecole Polytechnique, Two at École nationale supérieure d'informatique pour l'industrie et l'entreprise (ENSIIE), one at Ecole Nationale de la Statistique et de l'Administration Economique Paris (ENSAE) and another one at Télécom Paris.

Since academic year 2007-2008, 62 ITC students integrated in one of the Grande Ecole in France:

- 28 at Ecole Polytechnique,
- 4 at Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI),
- 3 at Ecole Nationale Supérieure des Techniques Avancées (ENSTA),
- 18 at Ecole Nationale Supérieure d'Informatique pour l'Industrie et l'Entreprise (ENSIIE),
- 1 at Ecole Nationale Supérieure des Mines d'Albi,
- 2 at Ecole Nationale Supérieure des Mines d'Alès,
- 2 at Ecole Telecom Sud Paris, and
- 4 at Ecole Nationale de la Statistique et de l'Administration Economique (ENSAE).

These students get systematically scholarships, usually Eiffel Scholarship from Government of France.

Figure 7 below shows number of ITC students integrated in an engineering school since beginning of cooperation.

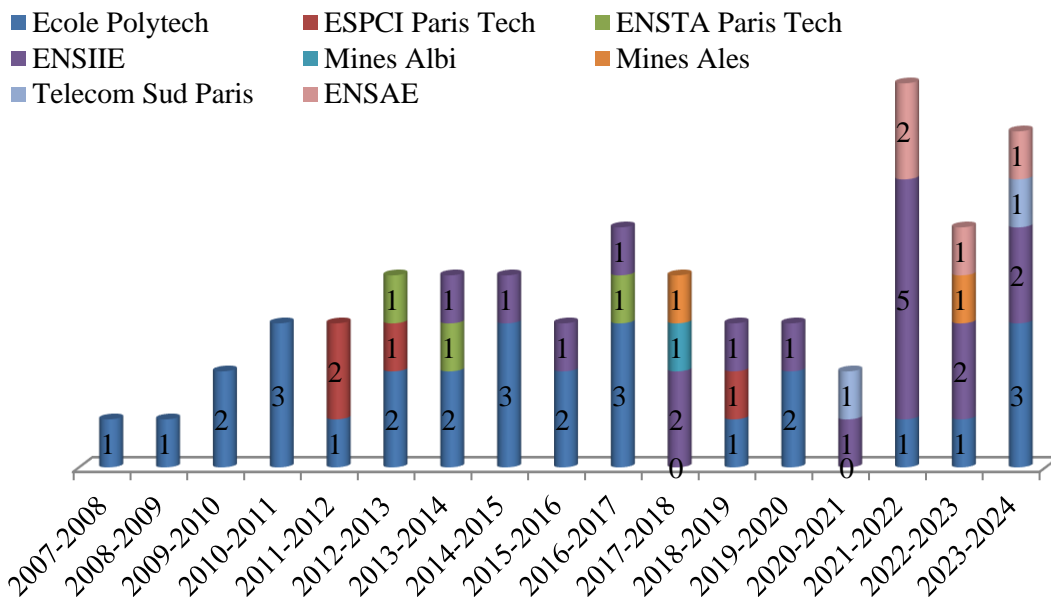


Figure 7. Number of ITC students integrated in an engineering school since 2007-2008.

2.7. Preparation for the exam of Japanese Government Scholarship

Table below shows the number of ITC students who pass successfully the exam of Japanese Government Scholarship. In 2023-2024, 11 students of ITC among 34 successful candidates won this Scholarship.

Table 10. Number of awardees of Japanese Government Scholarship 2024.

Year	Research		Undergraduate		College of Technology		Specialized Training College		Total (ITC)
	Total	ITC	Total	ITC	Total	ITC	Total	ITC	
2010-11	9	0	0	-	0	-	2	2	11 (2)
2011-12	11	0	2	1	8	8	7	1	28 (10)
2012-13	11	0	0	-	14	13	12	3	37 (16)
2013-14	11	0	1	0	16	15	9	3	37 (18)
2014-15	12	2	2	0	15	12	13	7	42 (21)
2015-16	12	2	1	1	6	3	7	3	26 (9)
2016-17	12	3	1	1	7	4	10	5	30 (13)
2017-18	12	1	2	1	5	4	3	3	22 (9)
2018-19	12	5	1	1	7	3	5	0	25 (9)
2019-20	10	5	0	0	11	8	8	4	29 (17)
2020-21	N/A	N/A	0	0	14	7	8	3	22 (10)
2021-22	12	1	1	1	14	11	9	5	36 (19)
2022-23	10	1	0	0	10	5	6	1	27 (7)
2023-24	11	1	1	0	12	6	10	4	34 (11)

2.8. Scholarships and exemption of tuition fee (2023-2024)

Several funding sources were used to award scholarships to ITC students for encouraging the best students and also to help those whose families faced financial difficulty.

There are 3332 scholarships, which represents 45% of the total number of Engineer and Technician students. It is noted that the estimated amount of a scholarship varies from 100 to 2600 USD per year and 100% of female students are scholarship holders (tuition fee's discount). The table below shows the different scholarships.

Table 11. Different Scholarships at ITC.

No.	Type of Scholarship	Number of students
1	Boursier M et P	546
2	Bourse partielle (Fille)	2003
3	Boursier (Premier Ministre)	10
4	Panasonic (Company)	5
5	Chip Mong Insee (Company)	12
6	Prince Bank (Company)	101
7	Enfant du Mekong (NGO)	34
8	Smart Axiata (Company)	7
9	Sumitomo (Company)	8
10	S4C Project (Government and ADB)	504
11	Lotte Foundation	20
12	Akaraka (NGO)	8
13	Techo Digital Talent (MPTC, Public Institution)	53
14	TEM (Company)	21
Total		3332

2.9. Activities Report of E-learning Center

2.9.1. Background

ASEAN Cyber University project was first proposed at the ASEAN – South Korea Summit in 2009. The project is expected to help establishing a foundation for sharing experiences, knowledge, and skills in higher education and long-distance education among ASEAN countries and South Korea. At the first stage, the project is designed to help the CLMV (Cambodia, Laos, Myanmar and Vietnam) countries acquire the technology and knowledge related to e-learning systems, to help students in remote areas access higher education.

In 2011, ITC was selected by the selection committee from Korea for setting up ASEAN Cyber University (ACU) and also mandated by the Ministry of Education, Youth and Sport (MoEYS) of Cambodia to implement the ACU Project. In the project, an e-learning center and multimedia studio had been installed in May 2012 with a content development room, an operation room and learning management system (LMS) servers to host the e-learning course contents. The e-learning center is directly connected to the ACU hub center in Vietnam to share online courses among CLMV countries using TEIN (Trans-Eurasia Information Network) high speed network connection.

From January 2020, the ASEAN Cyber University project finished. There is no support from ACU for course development and course operation. ITC has moved all the courses (including the courses of our partners) to our own LMS for course operating in ITC.

The mission of this center are the follows:

- Capacity building of staff and students for e-learning
- Increase access to higher education using ICT as the tool for learning, teaching, and sharing information
- Promote Cambodia life-long learning
- Promote the collaboration on e-learning in CLMV countries
- Advocate best practice, strategy and policy for e-learning

2.9.2. Achievement in 2023-2024

In 2023, the e-learning center of ITC involves in several projects to support the development of Cambodian Cyber University Network (CCUN) and support our partners to develop the e-learning activities.

Public Investment Program (PIP): Cambodian Cyber University Network (CCUN)

In 2022, ITC supports the Directorate General of Higher Education of the Ministry of Education, Youth and Sport (DGHE/MoEYS) to prepare the concept note for the CCUN project. This project aims to improve higher education quality by using online and digital Teaching and Learning (T&L) materials. The project will connect the Higher Education Institutions (HEIs) in Cambodia through a common network infrastructure and LMS (Moodle). And through this common infrastructure and platform, Member Institutions (MIs) can share their digital content among each other's. The project will also promote the credit transfer among MIs and allow them to connect to global cyber universities network.

In the pilot phase of this project, the CCUN involves six HEIs (ITC, RUPP, RUA, NUBB, SRU, UHST) as MIs. With the experience ITC gained from ACU project, ITC will play a role as technical lead and support other five HEIs to development their e-learning activities.

Below points show a summary activities and result of CCUN implementation in 2023-2024

- Set up common infrastructure of CCUN at ITC
- Set up and operate CCUN's LMS on <https://moodle.ccun.edu.kh> from August 2023
- Support MIs to set up basic network infrastructure to connect to CCUN infrastructure (in 2024, MIs will connect to CCUN infrastructure through DPLC connection)
- Provide training on "e-Learning Content Development" to MIs 2 times with total 96 participants
- Provide local training on "e-Learning Content Operation" 2 times per MIs (5) with total 149 participants
- Provide local training on "Network Design and Administration" 3 times per MIs (4), except RUPP (who already has capacity to manage the network infrastructure)
- Provide support and monitoring mission 3 times per MIs to support the e-learning content development and operation
- Convert 5 courses (56 contents) at ITC into e-learning
- Organize a meeting with member universities (8) to discuss about the activities plan and timeframe. We identified also the schedule of support and monitoring mission to each member universities.

- Provide training on “e-Learning Content Development” to 8 member universities
- Provide training on “e-Learning Content Operation” to 8 member universities
- Identified 8 courses to develop in 2024. The content development starts from this June 2024.

Erasmus + KA2, FoodSTEM

In this project, several T&L materials related to food processing, food safety, etc. will be produced. The e-learning center support the transformation of these T&L materials into e-learning content. Eight courses were transformed into e-learning in FoodSTEM. Four eLearning courses, such as Food market, New food product development, Entrepreneurship, and Argi-food supply chain were developed and finished during 2022. In addition, the remaining 4 eLearning courses, such as Food legislation, Food industrial design, Food safety, and Food storage & stabilization, were developed and finished in June 2023. The eight courses are operated on ITC’s LMS, <https://moodle.itc.edu.kh>.

Erasmus + KA2, Health information and technology for improved health education in South-East Asia (HITIHE)

In this project, several materials and knowledge related to health and medical will be created. The role of ITC in this project is to provide technical support to partners in Cambodia: University of Health Science (UHS), and National Institute of Public Health (NIPH), to convert these materials and knowledge into e-learning and operate it. Several trainings were organized to provide support to NIPH and UHS

- October 2022, LMS user and administrator training for NIPH
- September 2023, studio training (equipment usage and editing software) for NIPH
- October 2023, studio training (equipment usage and editing software) for UHS
- October 2023, LMS user and administrator training for UHS

Agroecology and safe food system transition (ASSET) Project

In this project, several materials and knowledge related to food safety and agriculture will be developed. The e-learning center will support the project to transformed the materials and knowledge into e-learning content.

The development of the e-learning content was moved from 2023 to 2024 due to some reasons related to the identification of the subject-matter expert (SME) and topic structure to be developed. However, the team at eLearning center has met a few times with related person to explain the process and workflow of the eLearning content development. In the end of February 2024, e-learning center team will work closely with the partner and project coordinator in the coordination unit to discuss and prepare a good workflow in order to develop the eLearning contents in a smother way.

AUF training on various digital knowledge and soft skill

In 2023, the team at e-learning center have worked with the focal person at AUF to organize various training. The goal of the training is to provide basic digital knowledge to the targeted AUF partner institutions. The topics of the trainings include: i) using google collaboration tools (Google docs, Google spreadsheet, Google form) to perform daily work more effectively, ii) using AI chatbot (ChatGPT), iii) graphic design and video editing tools, iv) soft skill improvement on team work management: How to work better in team, etc. The e-learning center are working and discussing with AUF to plan the training for 2024.

2.9.3. Content development

Below table summary the content that the e-learning center developed up to March 2024.

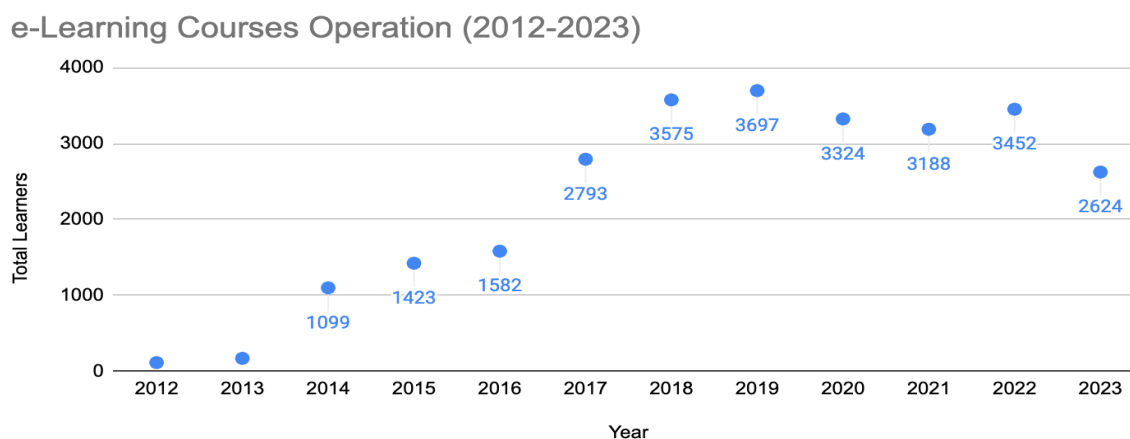
E-learning content		
53	Courses at ITC - 8 courses developed under FoodSTEMP project - 5 courses developed under CCUN project (Host at CCUN's platform)	Some content are shared to partners
11	Courses for UNESCO-BEEP	Currently hosted and operated by DIT/MoEYS
3	Courses for partners	NUM, UHS, Ministry of Rural Development
77	Content for CIESF – IT Passport Examination Preparation Book	Video production Hosting with ITC
74	Math and Khmer contents grade 12 for MoEYS	Video production during COVID-19 pandemic

Besides the courses and content above, the e-learning center also host the content of our partner on <https://moodle.itc.edu.kh>

E-learning content		
13	Courses integration of CIRAD (RUA)	Agroecology content
4	Contents of AUF	Moodle training

2.9.4. Content operation

Below figure illustrate the e-learning courses operation in ITC from 2012 to 2023 (last update December 2023).



Moodle as a T&L material sharing platform from 2023-2024

From academic year 2023-2024, ITC management board decide to use Moodle (<https://moodle.itc.edu.kh>) to store and share (central management) all the T&L material at ITC. By this mean, some e-learning courses will be served as T&L material rather than operate as an e-learning format, which means students are required to attend the class as normal.

All the courses' materials had been uploaded to Moodle by October 2023, before the beginning of academic year 2023-2024. E-learning center provided several trainings to ITC lecturers on how to

use Moodle to upload related materials in the platform as well as manage some class activities including the assignment, quiz, forum and attendance. In semester 1, academic year 2023-2024, there are 7571 learners enroll into the system and access to 233 courses.

2.10. Activities report of library of ITC

I. Introduction

This report details the activities and accomplishments of the STEM Library at the Institute of Technology of Cambodia for the fiscal year 2023-24. We are committed to providing exceptional service and resources to our community, fostering a love of learning and exploration.

II. Some statistics

- **Collection Size:**
 - Number of print books = 12,662
 - Number of print thesis = 1,836
 - Number of print journal = 104
 - Number of journal subscriptions (print and electronic) = 4
- **Circulation:**
 - Number of active borrow users = 400
 - Number of borrow = 1,130/22-23, 862/23-24
- **Symposium Room Booking:**
 - Number of room booking:
 - 250-380 Group / month
 - 2,500-3,800 Group / year
- **Library Access**
 - Number of student access: 23,593 (Sep 01, 2023 – May 27, 2024)
 - Number of active student access: 2,771
- **Workshop**
 - Joint workshop
 - Number of joint workshop = 4
 - Number of attendees = 625
 - Host workshop
 - Number of workshops offered = 3
 - Number of attendees = 100
- **Library Visit**
 - Number of visit: 3
 - Number of attendees = 29

3. Educational Report

3.1. Overview of teaching/research staffs at ITC

3.1.1. Number of lecturers/researchers

In 2023-2024, ITC has 364 (101 females) full-time, trainee and part-time lecturers, lecturer-researchers and full-time researchers. Table 10 below shows the number of lecturers in different departments. Among these 364 lecturers, there are 107 PhD (29.4%), 214 Masters (58.8%) and 43 other degrees (11.8%). They give lectures and also participate in research project, as well as other administrative tasks.

Table 12. Number of lecturers/researchers in different departments in 2023-2024.

Degree		GCA	GCI	GAR	GEE	GGG	GIC	GIM	GRU	GTR	GTI	MAS	DTC	SF	SA	Total
PhD	Full-time	14	15	0	6	8	2	7	11	5	1	3	0	0	0	72
	Trainee	5	4	2	0	5	0	1	5	0	1	0	0	0	0	23
	Part-time	4	1	0	0	1	0	0	2	1	1	2	0	0	0	12
Sub-Total 1		23	20	2	6	14	2	8	18	6	3	5	0	0	0	107
Msc.	Full-time	2	3	0	6	4	8	14	6	4	1	4	10	5	2	69
	Trainee	18	2	5	15	7	9	10	4	0	0	0	0	0	0	70
	Part-time	4	5	7	1	1	2	2	5	2	6	15	6	8	11	75
Sub-Total 2		24	10	12	22	12	19	26	15	6	7	19	16	13	13	214
Bsc.	Full-time	0	0	0	0	0	0	0	0	0	0	0	3	4	0	7
	Trainee	0	0	0	0	0	6	0	0	0	0	0	0	0	0	6
	Part-time	0	0	5	1	0	0	0	3	0	0	0	1	14	6	30
Sub-Total 3		0	0	5	1	0	6	0	3	0	0	0	4	18	6	43
Total		47	30	19	29	26	27	34	36	12	10	24	20	31	19	364

Number of lecturers/researchers increases slightly each year. The evolution of number of lecturers/researchers in the last 10 years is shown in Figure 8.

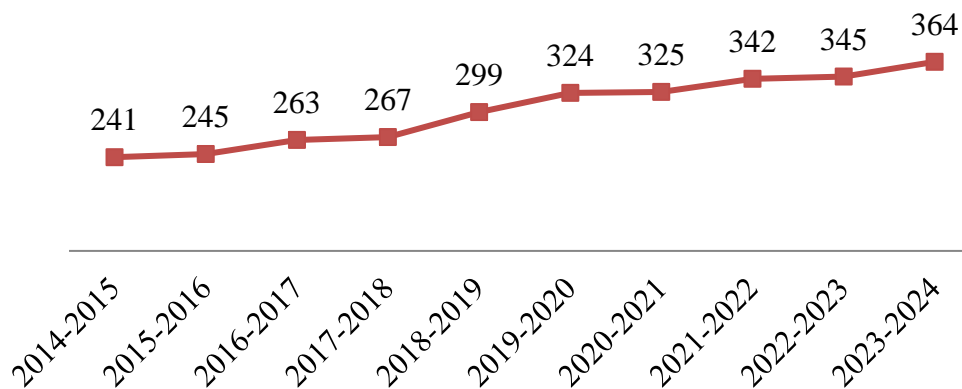


Figure 8. Evolution of Number of Lecturers/Researchers.

Evolution of number of lecturers/researchers with PhD and Master Degree is shown on Figure 9 below. Through regional and international cooperation, number of PhD holders increases about 2.5 times over the past 10 years, from 43 in 2014-2015 to 107 in 2023-2024. Number of Master holders also increases from 117 in 2014-2015 to 214 in 2023-2024. They are potential human resources for teaching and research at ITC.

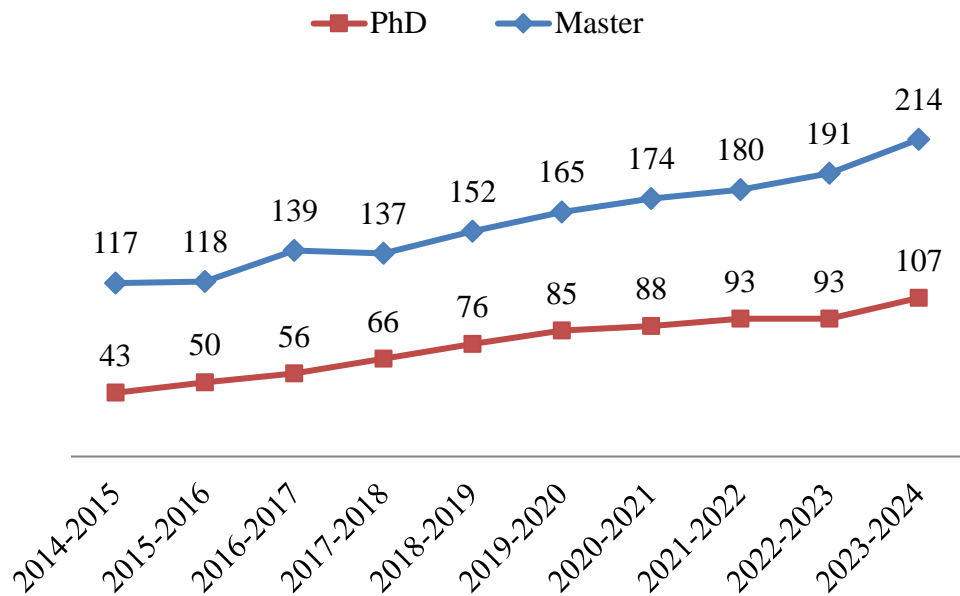


Figure 9. Evolution of number of PhD and Master holders.

3.1.2. Lecturers/researchers graduated from different countries

Lecturers/Researchers of ITC were graduated from different countries and regions in the world:

- At local level in Cambodia (36.8%) in which most of them are lecturers in Department of Foundation Year, English and French Sections.
- At regional level (20.6%) in 5 ASEAN countries: Thailand, Indonesia, Philippines, Malaysia, and Vietnam.
- At international level (42.6%) in 13 countries: France, Japan, Belgium, South Korea, Russia, Australia, China, Afghanistan, Canada, India, Mexico, Spain, and USA.

Figure 10 below indicates percentage by country that ITC lecturers/researchers were graduated from. Abroad, ITC lecturers/researchers graduated from France the most, followed by Japan, Thailand, Indonesia and Belgium.

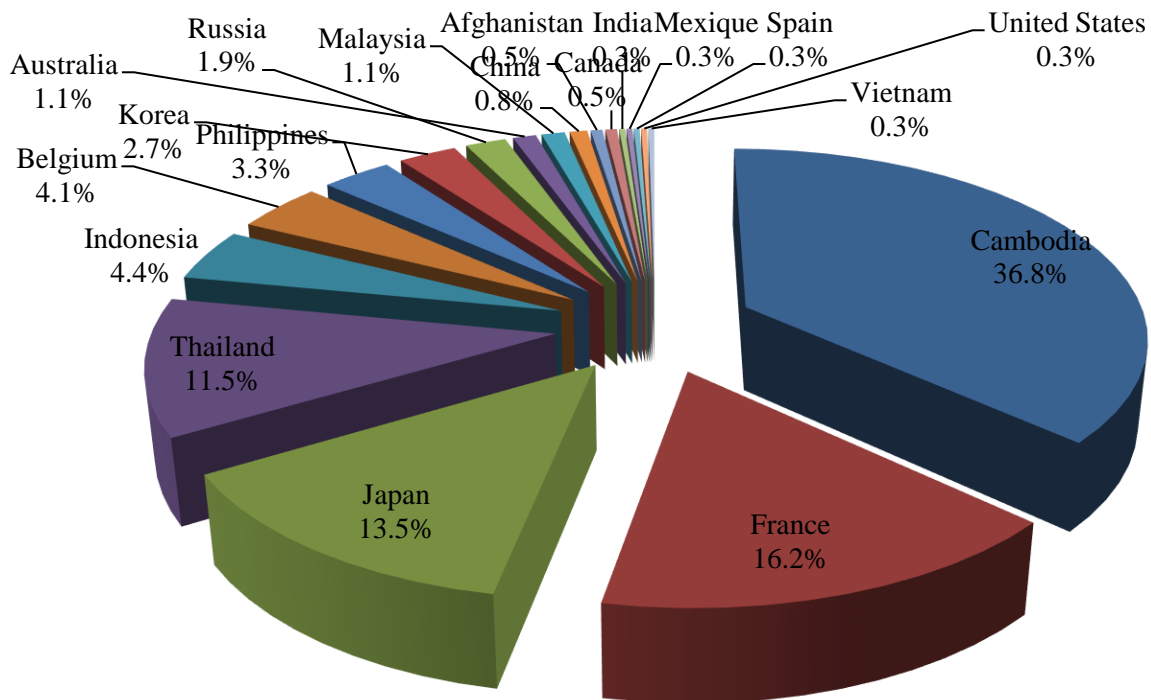


Figure 10. ITC lecturers/researchers graduated from different countries.

3.1.3. Conclusion

Human resources of ITC have increased in recent years with PhD's Degree holders. This year, number of PhD (107) is higher than last year (93), also number of PhD with civil servant status in 2023-2024 (72) is slightly increased comparing to last year (68).

With strong collaboration with partners and through some projects, young lecturers and students have been sent to partner universities abroad to continue their PhD's Degree abroad and will come back in the upcoming year. To ensure quality of teaching, research and also technology transfer, ITC needs to recruit and also maintain young Master and PhD holders who are dynamic for both academy and research.

3.2. Student Employability

An online survey on student employability was conducted in October-November 2023. 565 engineering students graduated in 2023 responded which is about 69% of total graduates (819). Result of this survey is shown graphically in Figure 11.

Figure 11 shows that 82% of engineers graduated in 2023 are employed in different sectors (private, public and NGO); 11% are continuing their studies mostly in overseas; and 7% are waiting for result of scholarship or are seeking employment.

Among the employed graduates, 94% works with private sector, 5% with public sector and 1% with NGO.

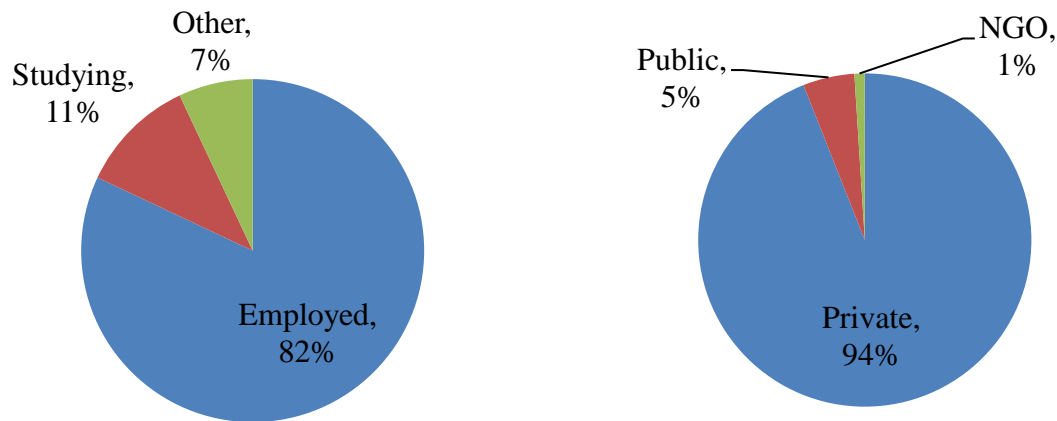


Figure 11. Engineering students graduated in 2022-2023.

3.3. Graduate School of ITC

3.3.1. Introduction

Graduate School of the Institute of Technology of Cambodia (GS-ITC) plays an important role in supporting and providing services regarding the development of human resources at graduate (Master and Doctoral) levels at ITC. Its prime objective is to increase the number of highly qualified human resources in fields of Sciences, Engineering, Technology and Architecture, to meet the demands of Cambodian economic development and society.

Vision

Excellence in graduate education in STEM so that graduates have full potentials and skills to meet the requirement of the Cambodia's 2030 vision.

Mission

GS-ITC commits to achieving the long-term vision of ITC concerning graduate education by providing services to the campus community that maintain integrity and excellence in graduate education in STEM through clear and consistent policies, high standards, efficient procedures, and direct student support. We seek to support and serve as a resource for all graduate students, and to support faculty and staff by fostering relationships, increasing communications and collaborations, and delivering comprehensive research and data resources to inform about graduate education. The graduate school:

1. Improve and develop graduate training programs in STEM to align with national, regional, and international standards.
2. Educate graduate students to have full potentials and skills in STEM to meet the requirement of the Cambodia's 2030 vision.

Core Values

- Excellence in graduate education
- Recruitment and graduation of outstanding students
- Ethical conduct and integrity in graduate studies and research
- Diversity among students, faculty, and staff
- Communication and collaboration throughout the graduate community
- Accountability and transparency
- Graduate-student professional development
- Preservation of academic standards
- Maintaining accurate data and records.

Goals (2021-2030)

1. Improve and develop **10 graduate training programs** in STEM to align with national, regional, and international standards.
2. Educate **952 graduate students** to have full potentials and skills in STEM to meet the requirement of the Cambodia's 2030 vision.

3.3.2. Summary of Realized Activities in 2023-2024

No	Activities	Based line (2022-23)	Target (2023-24)	Realized (March 2024)	Plan 2024-25	Indicator	
1	Increase number of partnerships	Academic institutions	21	21	21	21	Number
		Development agencies	4	4	4	4	Number
		Government/Private sectors/NGO	3	5	3	5	Number
2	Operate thematic programs (Master)	8	8	8	9	Number	
3	Operate research-based program (Master)	8	8	8	9	Number	
4	Seek for funds/scholarships to support students	Master programs	44% of students enrolled	50% of students enrolled	50% of students enrolled	60% of students enrolled	Percentage
		Doctoral programs	100% of students enrolled	100% of students enrolled	100% of students enrolled	100% of students enrolled	
5	Conduct fresh graduate employment survey of master and doctoral graduates (annually).	Master	51	70	91	90	Number of responses
		PhD	7	8	7 (7 new graduates)	18	Number of responses

6	Internationalize Master programs through our regional and international partnerships	Programs involved	3	4	5	6	Number
		Student inbound mobility	3	-	1	5	Number
		Student outbound mobility	9	-	15	15	Number
		Staff mobility	4	-	2	5	Number
		Guest lecturer	-	-	0	3	Number
7	Increase communication among campus community, faculty staff and prospective students.	Website, Facebook, Telegram	Website, Facebook, Telegram, study fair, promotional video	Website, Facebook, Telegram	Website, Facebook, Telegram, study fair, promotional video	Means of communication	
8	Fully implement Partnership programs of the HIEP projects. <i>(Done)</i>	5	5	5	-	Number	
9	Increase number of research topics that respond to the societies needed through support from research fund institutions such as ministries, LBE/JICA project, WB project.	Master	38	40	38	40	Number
		PhD	10	10	10	10	Number
10	Increase number of students' publications in journals/conferences	Master	29 (27 journal articles)	60	49 (all journal articles)	55	Number
		PhD	24 (21 journal articles)	20	15 (13 journal articles)	30	Number
11	Enroll PhD students	54	10 new enrolled (planned)	54 (10 new enrolled)	10 new enrollments	Number	
12	Number of PhD students graduated	12	20 (planned 8 new graduates)	19 (7 new graduates)	37 (plan 18 new graduates)	Number	

13	Enroll Master students for the full-time thematic master programs	144	150	124	150	Number
14	Number of Master students graduated (accumulated)	320	420 (planned 100 new)	411 (91 new graduates)	500 (plan 89 new graduates)	Number
15	Implementation of EDC-AFD-EU project to support Master and Doctoral program in Energy and Technology Management 2023-27	-	-	13	12	Number of master and PhD students

3.3.3. Master Programs

3.3.3.1. Overview

The master programs at ITC were authorized by the Ministry of Education, Youth and Sport (MoEYS) of Cambodia since 2007 and launched the first promotions of different programs successively from 2010. The curricula were continuously updated from which a remarkable change from departments-based operation to a centralization at Graduate School in 2017. Six master programs were transformed to be thematic so that the students can be trained in multi-disciplinary skills.

In the academic year 2023-2024, the Graduate School of ITC offers 8 full-time thematic Master programs in the field of engineering and applied science (cf. table below). The calendar of semester 1 is from October 23, 2023, to February 11, 2024, and the semester 2 from February 26, 2024, to July 02, 2024.

List of Thematic Master Programs

No	Program (Master of Engineering)	Eligible student's background	Promo.	Descended from	Remark
1	Master of Materials and Structural Engineering (M-MSE)	GCI, GIM, GGG, GRU, others equivalent field	14 (since 2010)	MGCI (+MGIM)	<ul style="list-style-type: none"> • In operation • Program Head: <i>Dr. LIM Sovanvichet</i> • Double degree with INSA de Rennes since 2010
2	Master of Energy Technology and Management Engineering (M-ETM)	GIM, GEE, others equivalent field	8 (since 2011)	MGIM (+MGEE)	<ul style="list-style-type: none"> • In operation • Program Head: <i>Dr. KHON Kimsrornn</i>

					<ul style="list-style-type: none"> • Financial support by EDC-AFD-EU project 2023-2027
3	Master of Water and Environmental Engineering (M-WEE)	GRU, GCA, GCI, GGG, others equivalent field	10 (since 2012)	MGRU	<ul style="list-style-type: none"> • In operation • Program Head: <i>Dr. KET Pinnara</i>
4	Agro-industrial Engineering (M-AIE)	GCA, RUPP, RUA, others equivalent field	10 (since 2012)	MAIE	<ul style="list-style-type: none"> • In operation • Program Head: <i>Dr. TY Boreborey</i>
5	Master of Computer Science (M-ECS)	GIC, GEE, others equivalent field	10 (since 2013)	MGIC	<ul style="list-style-type: none"> • In operation • Program Head: <i>Mr. HENG Rathpisey</i>
6	Master of Mechatronics, Information and Communication Engineering (M-MIC)	GIM, GEE, others equivalent field	8 (since 2012)	MGIM (+MGEE, +MGIC)	<ul style="list-style-type: none"> • In operation • Program Head: <i>Dr. PEC Rotna</i> • Double diploma with IMT Mine Alès since 2021
7	Master of Transport Engineering (M-TIE)	GCI, GIM, GIC, GEE	4 (since 2020)	New program	<ul style="list-style-type: none"> • In operation • Program Head: <i>Dr. PHUN Veng Kheang</i>
8	Master of Data Science (M-DAS)	GIC, GEE, MATH	2 (since 2022)	New program	<ul style="list-style-type: none"> • In operation • Program Head: <i>Dr. Phauk Sokkhey</i>

Enrollment and Scholarship in 2023-2024

The official announcement has been disclosed at ITC, at Graduate School and on ITC Facebook pages and Telegram channels. In general, the duration for each Master program is 2 or 3 years, classified as year 1 level (M1) and year 2 level (M2). For students holding ITC Engineer's degree, they are allowed to enter directly the M2 program, thus being able to spend only 1 year more in addition to 5 years in engineering program to complete the master's degree (5+1 program). However, this opportunity is selective.

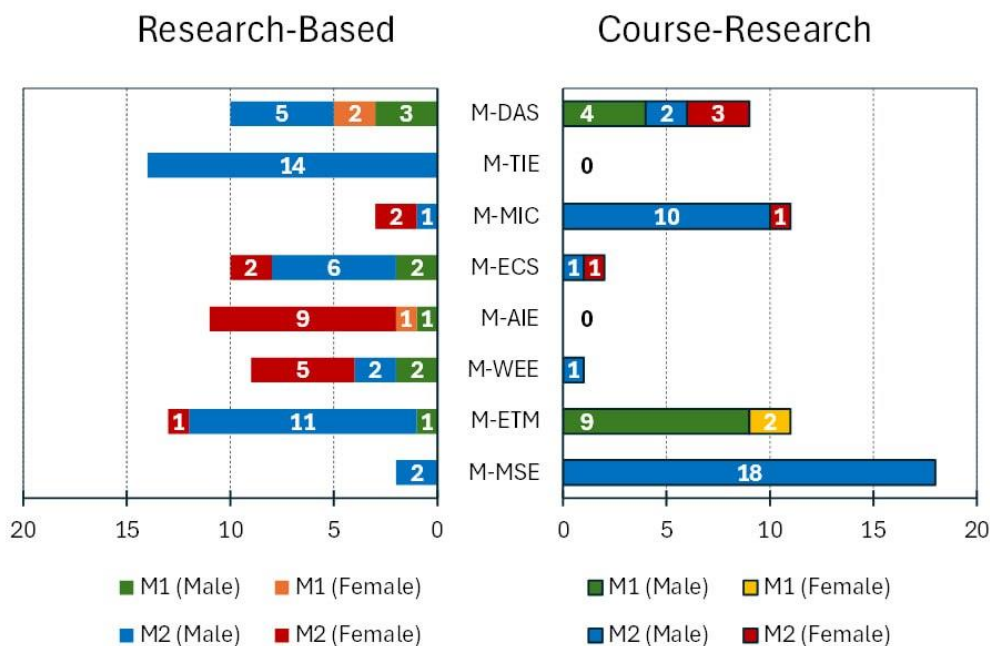
In the academic year 2023-2024, there are in total 124 students (29 females) enrolled into 8 master programs and 49 students receive scholarships. For the double degree programs, there are 8 students registered in the M-MSE under the double degree framework, 7 students receive the mobility supports of Erasmus+ (5 at INSA Rennes, 1 at UPS, and 1 at UnivRen) and 2 students registered at IMT Mine Alès for the M-MIC with supports of HEIP. On the other hand, there are 6 outbound exchange master students: 1 to USPN (supported by Dassault Project), 5 to Belgium (3

supported by ARES/AI/R4, 2 supported by Erasmus+); and 1 inbound exchange master student from INP Grenoble. The details are presented in the table below.

Number of Students enrolled in 2023-2024

Master Programs	Partial or Full Scholarship Students				Non-scholarship Students				Total	Female
	M1		M2		M1		M2			
	Total	F	Total	F	Total	F	Total	F		
M-MSE	-	-	8	0	-	-	20	0	20	0
M-ETM	11	2	3	1	1	0	9	0	24	3
M-WEE	0	0	5	3	2	0	3	2	10	5
M-AIE	0	0	5	5	2	1	4	4	11	10
M-ECS	2	0	6	2	0	0	4	1	12	3
M-MIC	-	-	7	3	-	-	7	0	14	3
M-TIE	-	-	0	0	-	-	14	0	14	0
M-DAS	1	0	1	0	8	2	9	3	19	5
Total	14	2	35	14	13	3	70	10	124	29

The following graph shows the distribution of students by study's pathways.



In the academic year 2023-2024, there are in total 49 students (16 females) receive the scholarship supports. The detail sources of scholarships are reported in the table below.

Sources of Scholarships/funding in 2023-2024

N°	Type /Funder	Benefit	Number of beneficiaries
1	EDC-AFD-EU	100% Tuition Fee + Monthly allowance	11
2	HEIP-ITC	100% Tuition Fee/Monthly allowance	12
3	HEIP-NUBB	100% Tuition Fee	4
4	HEIP-UHST	100% Tuition Fee	1
5	ITC	100% Tuition Fee	5
6	IRD	Tuition Fees/Research Fund	2
7	IRD + ARES/AI	Tuition Fees/Research Fund + Mobility	1
8	ARES/CAMBOFISH	Tuition Fees/Research Fund	1
9	ARES/AI	Mobility	2
10	Dassault Project	Mobility	1
11	Erasmus+	Mobility	9
Total			49

Graduates and Tracer study

The number of graduated master students from the academic year 2010-2011 to 2022-2023 is in total 411 graduates (106 females). In the last academic year, there are 91 new graduates (26 females) in which 44 graduates (17 females) benefitted from partial and full scholarships. For graduates in M-MSE who received double degree from INSA Rennes (cf. section 3.3.3.2), there are in total 89 graduates (11 females) from the first to thirteenth promotion, in which there are 4 new graduates (0 female) in 2022-2023. For the graduates in M-MIC of the first promotion (2022-2023) who received double degree from IMT-Mines Alès, there is only 1 (0 female). Lists of Master Thesis posted on the webpage of the Graduate School (GS-ITC).



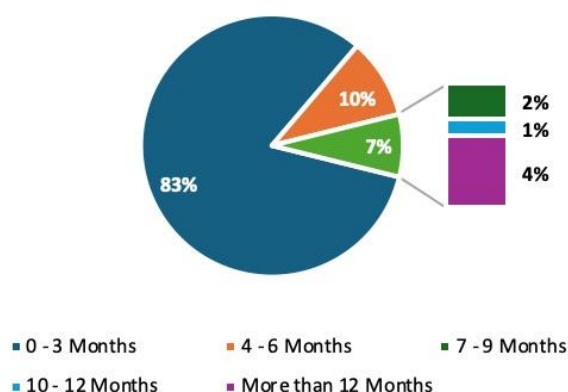
The statistics of master graduates are reported in Table below.

Number of Students graduated from master programs in 2022-2023

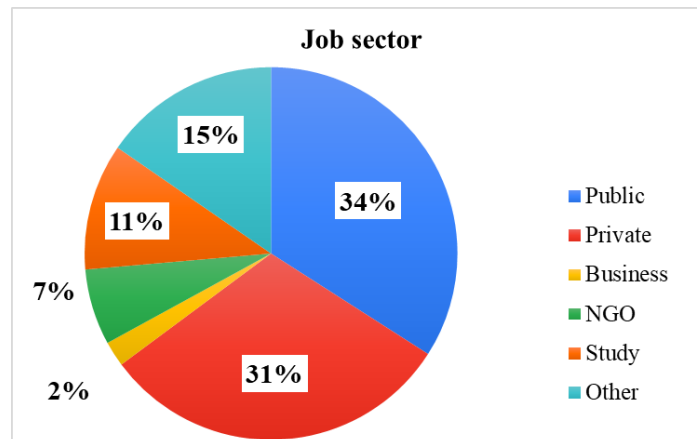
Program	Number of students graduated in 2022-2023						Cumulative graduated students from Promotion 1		
	Partial or Full Scholarship Students		Non-scholarship students		Total	Female	Number of promotions	Total	Female
	Total	F	Total	F					
M-MSE	3	0	8	1	11	1	13	119	14
M-ETM	6	0	5	0	11	0	8	39	0
M-WEE	24	12	5	1	29	13	9	128	52
M-AIE	5	5	7	5	12	10	8	42	32
M-ECS	2	2	10	1	12	3	9	40	7
M-MIC	4	0	6	1	10	1	8	32	2
M-TIE	0	0	4	0	4	0	3	9	1
M-DAS	0	0	2	0	2	0	1	2	0
Total	44	19	47	9	91	28	Total	411	108

A survey on fresh graduates in 2022-2023 was conducted via Google Form. The objectives of this survey are to trace the employability and skills development of the graduates. 91 graduates responded to the questionnaires, that is 100%. The result of the survey shows that 83% of fresh graduates could find jobs immediately, 10% needed more than 3 months to find jobs and 7% spent more than 6 months to find jobs.

Employment Delay



The survey also reveals the distribution of job sectors for fresh graduates. Thirty-four percent of them work for public sector, 31% work for private sector, 15% work for NGO, 11% continue their study and 2% run their own business.



When asking the question “Please evaluate the level of 5 following skills that you gained from your study in master program: creativity, teamwork, critical thinking, problem solving, and entrepreneurship (1 = Very little, 2 = Little, 3 = Much, 4 = Very much)”, more than 81% of them said that they gained (much or very much) the creativity skill, 77% gain the team work skill, 98% gain the critical thinking skill 92% gain the problem-solving skill. However, 51% of them said that they did not gain (little or very little) skill in entrepreneurship. The observation on job sector also shows that none of them have run startup at fresh graduate. The result looks comparable with the 2021-2022 survey.

Having a job is a success from the technical and softs skill of the graduate, but creating a job is competence that they should have received from the program. The course specifically on entrepreneurship we provided is not enough to make students become entrepreneurs. Each course in the program needs to stimulate the startup concept and make class assignment to become an investment project.

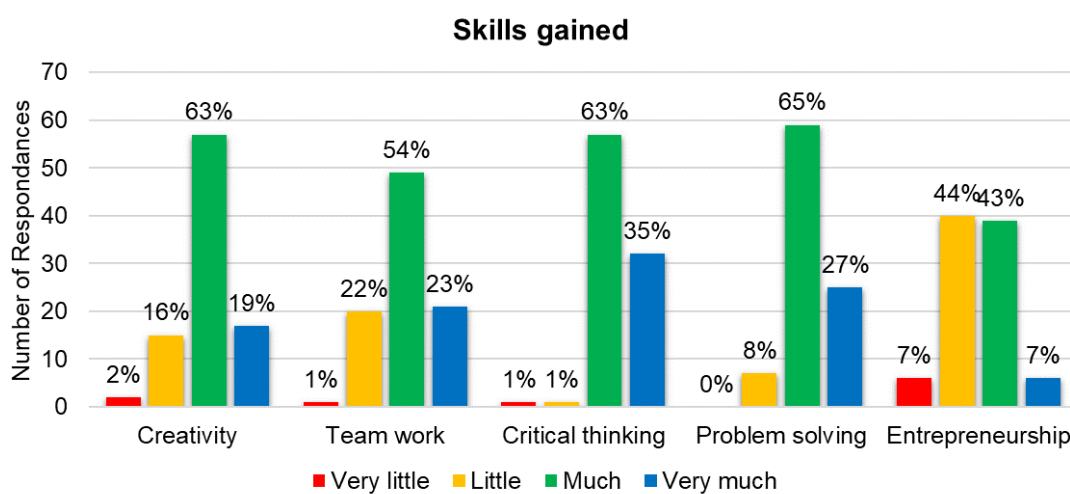


Table: Average score (scale 4) for each skill

Year	# of Graduate	# of Respondent	Creativity	Team-work	Critical thinking	Problem solving	Entrepreneurship
2022-2023	91	91	3.0	3.0	3.2	3.1	2.4
2021-2022	43	33	3.0	3.2	3.2	3.2	2.5

3.3.3.2. Program M-MSE

Program's objective

Master's Degree Program of Materials and Structural Engineering, codeveloped by professionals and experts of INSA Rennes, France, is designed to provide students expertise in research, innovation, and complex problem solving of diverse engineering topics related to materials properties and structural engineering. In this program, qualified students can apply for double degrees issued by ITC and by INSA Rennes, and they can choose to study at ITC or at INSA Rennes.

Program Coordinator: Dr. LIM Sovannvichet

Curriculum and syllabus

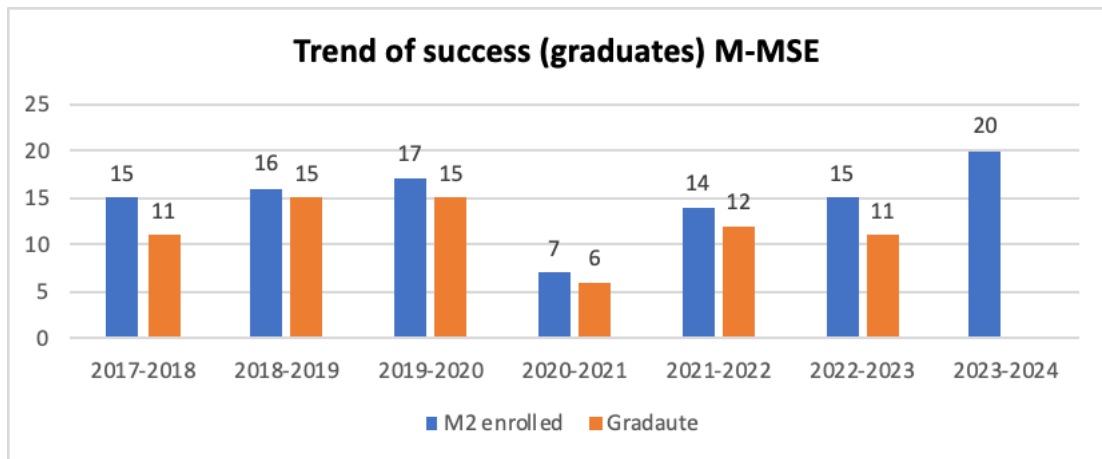
M-MSE is a full-time program (1 to 3 years), classified into two levels, M1 and M2, and is offered in two pathways: research-based and course-research pathways. For course-research pathway, students are required to take 52 credits, 40 credits for coursework and 12 credits for the last semester report/thesis defense of their final project/thesis. For research-based pathway, students are required to take 54 credits, 12 credits for coursework and 42 credits for research activities, research results, thesis, and thesis defense. Detailed curriculum can be found on the website of GS-ITC.

Students and alumni

Starting in 2010-2011 academic year, in total, 119 students (14 females) graduated from the program, in which 89 (11 females) of them got double degree from INSA Rennes. In the academic year 2023-2024, there are 20 students (0 female) enrolling in the program and the details are reported in the table below.

Pathway	M1		M2		Total	Female	Remark
	Total	F	Total	F			
Course-research	0	0	18	0	18	0	8 in Double-degree with INSA-Rennes/UnivRen
Research-based	0	0	2	0	2	0	
Total	0	0	20	0	20	0	

The time series of enrollments in M2 and numbers of graduates from 2017 to 2024 is displayed in the following figure. We observe that rate of success (ratio graduate/ M2 enrolled) is 83%.



Scholarships

In this academic year 2023-2024, 3 students obtain scholarships and funding support, 2 from ITC, 1 from research project under HEIP.

Lecturers

This program involves over 15 faculty members whose specializations are in materials science and engineering, civil engineering, and structural engineering, etc. All of them hold doctoral degrees from Europe, Japan, and ASEAN. They serve as teaching resources and superiors for the master students M-MSE. Some students are jointly supervised by professors from partner universities. The list of faculty members for M-MSE can be found in Annex 5 or on the website of GS-ITC.

Theses and publications

The list of published theses can be found in Annex 6 or on the website of GS-ITC.

Regarding the dissemination and publication, 2 articles were published to national journals, 4 conference papers, 8 posters. The list of publications can be found in Annex 7 or on the website of GS-ITC.

3.3.3.3. Program M-ETM

Program's objective

Master's Degree Program of Energy Technology and Management Engineering, technically supported by professionals and experts from European and ASEAN partner universities, is designed to provide students with technical skills, competencies, and expertise in the field of energy technology and management. Students will be equipped with advanced research methods, energy-related techniques and regulations, project management, and problem-solving methods. Graduates of M-ETM will be able to design effective techniques and tools, manage projects, and propose suitable solutions toward solving real-world energy-related problems.

Program Coordinator: Dr. KHON Kimsornn

Curriculum and syllabus

M-ETM is a full-time program (1 to 3 years), classified into two levels, M1 and M2, and is offered in two pathways: research-based and course-research pathways. For course-research pathway, students are required to take 54 credits, 42 credits for coursework and 12 credits for the last semester report/thesis defense of their final project/thesis. For research-based pathway, students are required to take 54 credits, 12 credits for coursework and 42 credits for research activities, research results, thesis, and thesis defense. Detailed curriculum can be found on the website of GS-ITC.

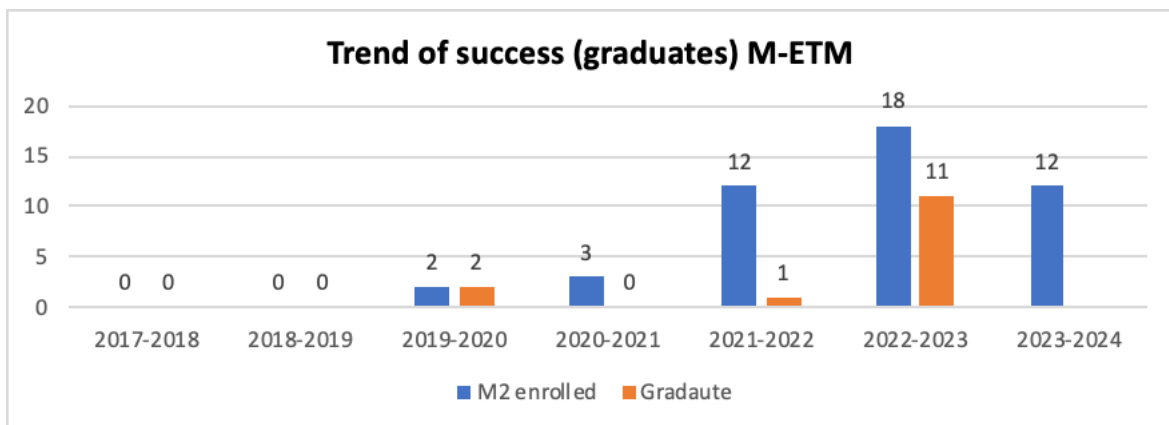
The curriculum of M-ETM is reviewed annually by the program’s curriculum committee with consultation with stakeholders and partner universities, especially with INP Grenoble, France. In 2023, this program was evaluated as satisfactory by external expert panels (both technical and educational aspects) as it met the criteria set by the higher education’s educational experts from the MoEYS and the World Bank (WB).

Alumni and Students

From 2016-2017 academic year, in total, 39 students (0 female) graduated from the program. Currently, there are 24 students (3 females) enrolling in the program and the details are reported in the table below.

Pathway	M1		M2		Total	Female	Remark
	Total	F	Total	F			
Course-research	11	2	0	0	11	2	
Research-based	1	0	12	1	13	1	
Total	12	2	12	1	24	3	

The time series of M2 enrollments and numbers of graduates from 2017 to 2024 is displayed in the following figure. We observe that rate of success (ratio graduate/ M2 enrolled) is only 40%, one of the low graduate rates.



Scholarships

In this academic year 2023-2024, in total 14 students (3 females) obtain scholarships and funding support: 11 from EDC-AFD-EU (2 females) under the Platform for Research and Training on the Power System, 1 from HEIP-NUBB, and 3 HEIP-ITC (1 female).

Lecturers

This program involves over 14 faculty members whose specializations range from electrical energy, renewable energy to energy power management. Half the faculty members (7) hold doctoral degrees from Europe, Japan, Korea, and ASEAN. They serve as teaching resources and supervisors for the master students M-ETM. The list of faculty members for M-ETM can be found in Annex 5 or on the website of GS-ITC.

Theses and publications

In the academic year 2022-2023, eleven out of 13 students successfully defended their theses. All of them conducted the study under the research-based pathway. The list of published theses can be found in Annex 6 or on the website of GS-ITC.

Regarding the dissemination and publication, the list of publications can be found in Annex 7, on the website of GS-ITC, or the webpage: <https://techno-srj.itc.edu.kh/>.

3.3.3.4. Program M-WEE

Program's objective

Master's Degree Program of Water and Environmental Engineering, technically supported by professionals and experts from European and ASEAN partner universities, is designed to provide students with technical skills, competencies, and expertise in the field of water and environment. Students will be equipped with advanced research methods, water-related techniques, modern modeling tools and problem-solving methods, and after graduation, they will be able to design effective techniques and tools, manage projects, and propose suitable solutions toward solving real-world problems including water supply and sanitation, irrigation and drainage, disaster management, wastewater treatment and disposal systems, transport and disposal systems and drainage systems.

Program Coordinator: Dr. KET Pinnara

Curriculum and syllabus

M-WEE is a full-time program (1 to 3 years), classified into two levels, M1 and M2, and is offered in two pathways: research-based and course-research pathways. For course-research pathway, students are required to take 54 credits, 42 credits for coursework and 12 credits for the last semester report/thesis defense of their final project/thesis. For research-based pathway, students are required to take 54 credits, 12 credits for coursework and 42 credits for research activities, research results, thesis and thesis defense. There are three specializations in M-WEE, namely, (1) Water Resources Engineering (WRE), (2) Urban Water and Sanitation Engineering (UWE), which receives full financial supports from AFD-EU to support both curriculum development and student scholarships, and (3) Environmental Engineering and Management (EEM). Detailed curriculum can be found on the website of GS-ITC.

The curriculum of M-WEE is reviewed annually by the program's curriculum committee with consultation with stakeholders and partner universities, especially, with Chulalongkorn University (CU), Thailand--a partner under HEIP project and with Pau University, France. In 2023, this program was evaluated by external expert panels (both technical and educational aspects) to see whether the program meets the modest standard criteria set by the higher education's educational

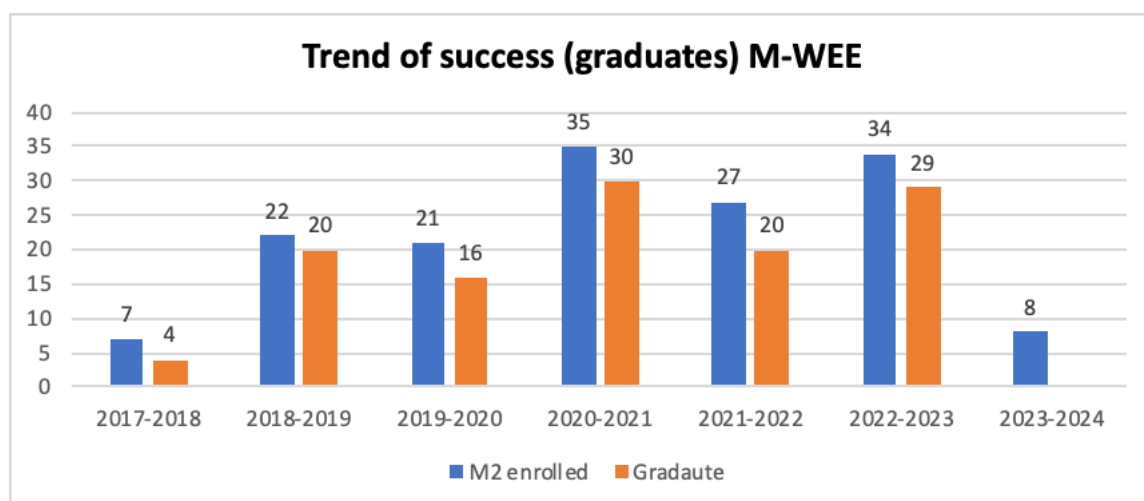
experts from the MoEYS and the World Bank (WB). Overall score results were 3/4 with satisfaction of the evaluation.

Alumni and Students

Starting in 2012-2013 academic year, in total, 128 students (52 females) graduated from the program. Currently, there are 10 students (5 females) enrolling in the program. The details are reported in the table below. This number significantly declines due to no more scholarship supports from major source such as EU-AFD, as the project has concluded successfully.

Pathway	M1		M2		Total	Female	Remark
	Total	F	Total	F			
Course-research	0	0	0	0	0	0	
Research-based	2	0	8	5	10	5	
Total	2	0	8	5	10	5	

The time series of M2 enrollments and numbers of graduates from 2017 to 2024 is displayed in the following figure. We observe that rate of success (ratio graduate/ M2 enrolled) is 82%.



Scholarships

From 2018 to 2023, 114 students (55 females) received AFD-EU scholarships that cover tuition fees, monthly living allowance, research, and internship funds and 101 students (43 females) graduated. In this 2023-2024 academic year, 5 students (3 females) receive scholarship supports, 2 students obtain HEIP-ITC under the framework of upgrading staff's qualification and 3 students receive IRD scholarship. One student receives mobility support to Belgium from ARES-AI.

Lecturers

This program involves over 20 faculty members whose specializations are in water resources, hydrology, environmental engineering, ... Most of them hold doctoral degrees from Europe, Japan, Korea, and ASEAN. They serve as teaching resources and superiors for the master students M-

WEE. Some students are jointly supervised by professors from partner universities. The list of faculty members for M-WEE can be found Annex 5 or on the website of GS-ITC.

Theses and publications

In the academic year 2022-2023, twenty theses were published. The list of published theses can be found in Annex 6 or on the website of GS-ITC.

Regarding the dissemination and publication, the list of publications can be found in Annex 7 or on the website of GS-ITC.

3.3.3.5. Program M-AIE

Program's objective

Master's Degree Program of Agro-industrial Engineering, technically supported by professionals and experts from European and ASEAN partner universities, is designed to provide students with technical skills, competencies, and expertise in the field of agro-industrial engineering. Students will be equipped with advanced research methods, food processing and development techniques, business and entrepreneurship skills and problem-solving methods. As graduates of M-AIE, they will be able to design innovative techniques and processes, manage projects and propose suitable solutions toward solving real-world problems in food industries. Graduates can also apply their knowledge and skills to do develop their own businesses.

Program Coordinator: Dr. TY Boreborey

Curriculum and syllabus

M-AIE is a full-time program (1 to 3 years), classified into two levels, M1 and M2, and is offered in two pathways: research-based and course-research pathways. For course-research pathway, students are required to take 54 credits, 42 credits for coursework and 12 credits for the last semester report/thesis defense of their final project/thesis. For research-based pathway, students are required to take 54 credits, 12 credits for coursework and 42 credits for research activities, research results, thesis and thesis defense. Detailed curriculum can be found on the website of GS-ITC.

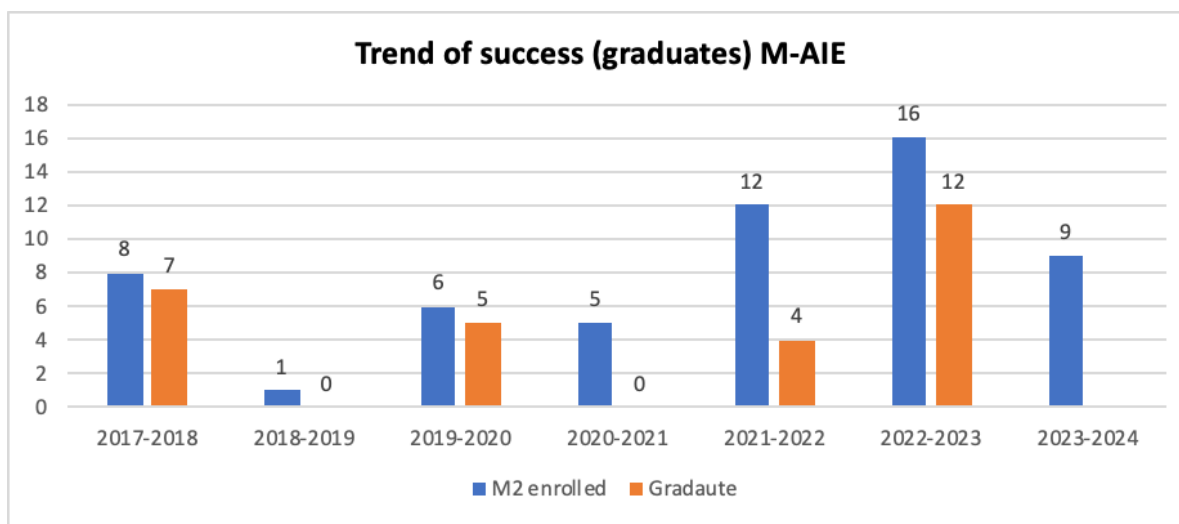
The curriculum of M-AIE is reviewed annually by the program's curriculum committee with consultation with stakeholders and partner universities, especially, with Kasetsart University (KU), Thailand--a partner under HEIP project and AgroSup Dijon, France. In 2023, this program was evaluated by external expert panels (both technical and educational aspects) to see whether the program meets the modest standard criteria set by the higher education's educational experts from the MoEYS and the World Bank (WB). Overall score results were 3/4 with satisfaction of the evaluation.

Alumni and Students

Starting from the academic year 2017-2018, in total, 42 students (32 females) graduated from the program. Currently, there are 11 students (10 females) enrolling in the program and the details are reported in the table below.

Pathway	M1		M2		Total	Female	Remark
	Total	F	Total	F			
Course-research	0	0	0	0	0	0	
Research-based	2	1	9	9	11	10	
Total	2	1	9	9	11	10	

The time series of enrollments and numbers of graduates from 2017 to 2024 is displayed in the following figure. We observe that rate of success (ratio graduate/ M2 enrolled) is 58%.



Scholarships

In this academic year 2023-2024, five students (5 females) receive scholarships, 3 students (3 females) obtain scholarships and funding support from HEIP-ITC under the framework of upgrading staff's qualification, 1 female, student ARES-CAMBOFISH and 1 female student receive ITC scholarship.

Lecturers

This program involves over 15 faculty members whose specializations are in food science and technology, food processing, agro-industrial engineering, chemical engineering, ... All of them hold doctoral degrees from Europe, Japan, and ASEAN. They serve as teaching resources and superiors for the master students M-AIE. Some students are jointly supervised by professors from partner universities. The list of faculty members for M-AIE can be found Annex 5 or on the website of GS-ITC.

Theses and publications

In the academic year 2022-2023, twelve master theses were successfully defended. All of them were conducted under the research-based pathway. The list of published theses can be found in Annex 6 or on the website of GS-ITC.

Regarding the dissemination and publication, twelve articles were published to national journals. The list of publications can be found in Annex 7 or on the website of GS-ITC.

3.3.3.6. Program M-ECS

Program’s objective

Master’s Degree Program of Computer Science aims to provide students with essential skills and advanced research methods, in the field of Computer Science, Artificial Intelligence (AI) applications and Information Security, to address the current trends of fast-growing technology and digitalization.

Program Coordinator: Mr. HENG Rathpisey

Curriculum and syllabus

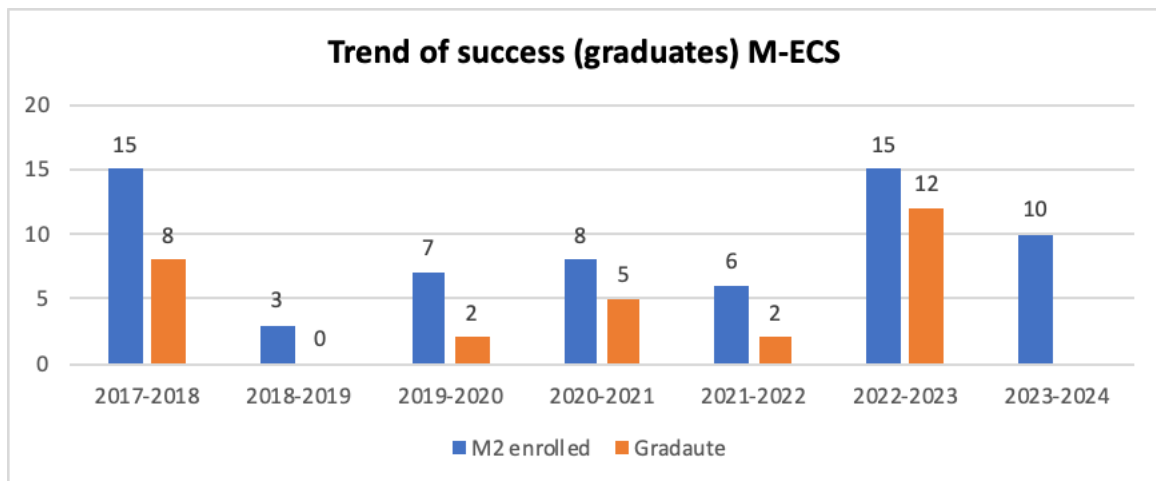
M-ECS is a full-time program, classified into two levels, M1 and M2, and is offered in two pathways: research-based and course-research pathways. For course-research pathway, students are required to take 54 credits, 42 credits for coursework and 12 credits for the last semester report/thesis defense of their final project/thesis. For research-based pathway, students are required to take 54 credits, 12 credits for coursework and 42 credits for research activities, research results, thesis and thesis defense. Detailed curriculum can be found on the website of GS-ITC.

Alumni and Students

Starting in academic 2013-2014, in total, 40 students (5 females) graduated from the program. Currently, there are 12 students (2 females) enrolling in the program and the details are reported in the table below.

Pathway	M1		M2		Total	Female	Remark
	Total	F	Total	F			
Course-research	0	0	0	0	0	0	
Research-based	1	0	11	3	12	3	
Total	1	0	11	3	12	3	

The time series of M2 enrollments and numbers of graduates from 2017 to 2024 is displayed in the following figure. We observe that rate of success (ratio graduate/ M2 enrolled) is 54%.



Scholarships

In this academic year 2023-2024, five students obtain scholarships and funding support, 3 ITC scholarships, 2 HEIP-NUBB scholarships.

Lecturers

This program involves over 11 faculty members whose specializations are in software engineering, IT, machine learning, deep learning, AI, information security, computer vision, NLP, data science, etc. Among these, 5 of them hold doctoral degrees from Europe, Japan, Korea, and ASEAN. They serve as teaching resources and superiors for the master students M-ECS. Some students are jointly supervised by professors from partner universities. The list of faculty members for M-ECS can be found in Annex 5 or on the website of GS-ITC.

Theses and publications

In 2022-2023, twelve master theses were successfully defended. Six of them were conducted under the research-based pathway and Six others were conducted under the course-research pathway. The list of published theses can be found in Annex 6 or on the website of GS-ITC.

Regarding the dissemination and publication, 5 articles were published to national journals. The list of publications can be found in Annex 7, on the website of GS-ITC, or in the webpage of Techno-Science Research Journal: <https://techno-srj.itc.edu.kh/search?topic=3>

3.3.3.7. Program M-MIC

Program's objective

Multimilitary master's degree Program of Mechatronics, Information and Communication Engineering, technically supported by professionals and experts from stakeholders and European partner university, is designed to equip students with a broad range of skills and knowledge that seek the applications in engineering disciplines ranging from mechanical design to software engineering as well as those more purely focused on mechatronics, automation, and robotics. Graduates from this program are employed in industries ranging from mining to manufacturing, agriculture, and defense.

Program Coordinator: Dr. PEC Rothna

Curriculum and syllabus

M-MIC is a full-time program, classified into two levels, M1 and M2, and is offered in two pathways: research-based and course-research pathways. For course-research pathway, students are required to take 54 credits, 42 credits for coursework and 12 credits for the last semester report/thesis defense of their final project/thesis. For research-based pathway, students are required to take 54 credits, 12 credits for coursework and 42 credits for research activities, research results, thesis and thesis defense. Detailed curriculum can be found on the website of GS-ITC.

The curriculum of M-MIC is reviewed annually by the program's curriculum committee with consultation with stakeholders and partner university, namely, IMT Mines Alès, France--a partner under HEIP project. In 2023, this program was evaluated by external expert panels (both technical and educational aspects) to see whether the program meets the modest standard criteria set by the

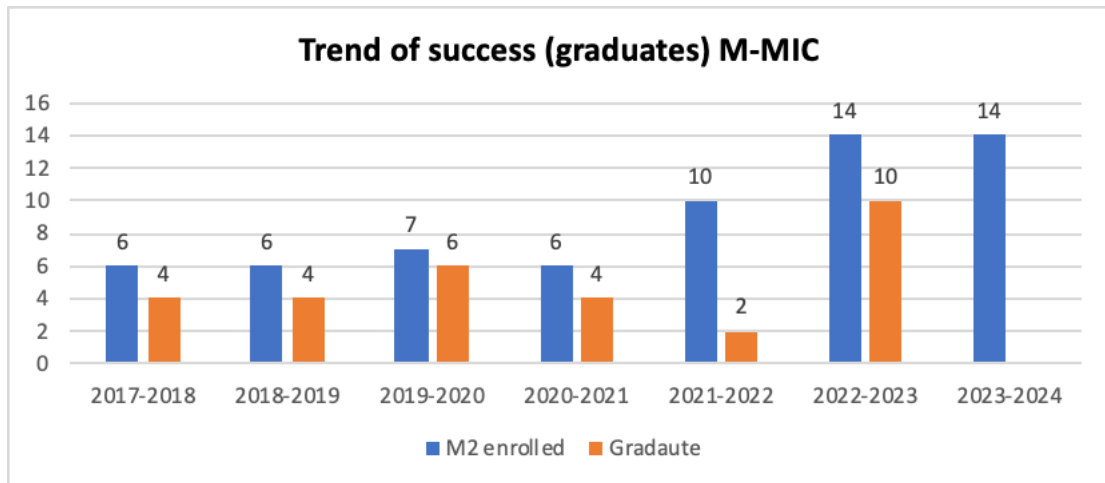
higher education’s educational experts from the MoEYS and the World Bank (WB). Overall score results were 3/4 with satisfaction of the evaluation.

Alumni and Students

Starting in academic 2013-2014, in total, there were 32 students (2 females) graduated from the program. Currently, there are 14 students (3 females) enrolling in the program and the details are reported in the table below.

Pathway	M1		M2		Total	F	Remark
	Total	F	Total	F			
Course-research	0	0	11	1	11	1	2 in Double-degree with IMT Mines Alès, France
Research-based	0	0	3	2	3	2	
Total	0	0	14	3	14	3	

The time series of enrollments and numbers of graduates from 2017 to 2024 is displayed in the following figure. We observe that rate of success (ratio graduate/ M2 enrolled) is 61%.



Scholarships

In this academic year 2023-2024, six students (3 females) obtain scholarships and funding support, 1 Eiffel scholarships, 1 Erasmus+ + HEIP-ITC, 1 HEIP-NUBB, 2 HEIP-ITC.

Lecturers

This program involves over 15 faculty members whose specializations are in electronics, mechanical engineering, control system, mechatronics, robotics, automation, machine learning, and data science, IT, telecommunication engineering, etc. Most of them hold doctoral degrees from Europe, Japan, Korea, and ASEAN. They serve as teaching resources and superiors for the master students M-MIC. Some students are jointly supervised by professors from partner universities. The list of faculty members for M-MIC can be found in Annex 5 or the website of GS-ITC.

Theses and publications

In the academic year 2022-2023, ten master theses (1 female) were successfully defended. All of them were conducted under the research-based pathway. The list of published theses can be found in Annex 6 or in or the website of GS-ITC.

Regarding the dissemination and publication, ten articles were published to national journals. The list of publications can be found in Annex 7 or in the website of GS-ITC.

3.3.3.8. Program M-TIE

Program's objective

Master's Degree Program of Transport Engineering is designed to provide students expertise in research, innovation, and complex problem solving of diverse engineering topics related to transport engineering and public infrastructure. It addresses the solution toward land, air and water transportation issues including traffic congestion and accidents, public transport systems, transport policy, logistic networks, energy consumption, aviation issues, environmental matters, etc.

Program Coordinator: Dr. PHUN Vengkheang

Curriculum and syllabus

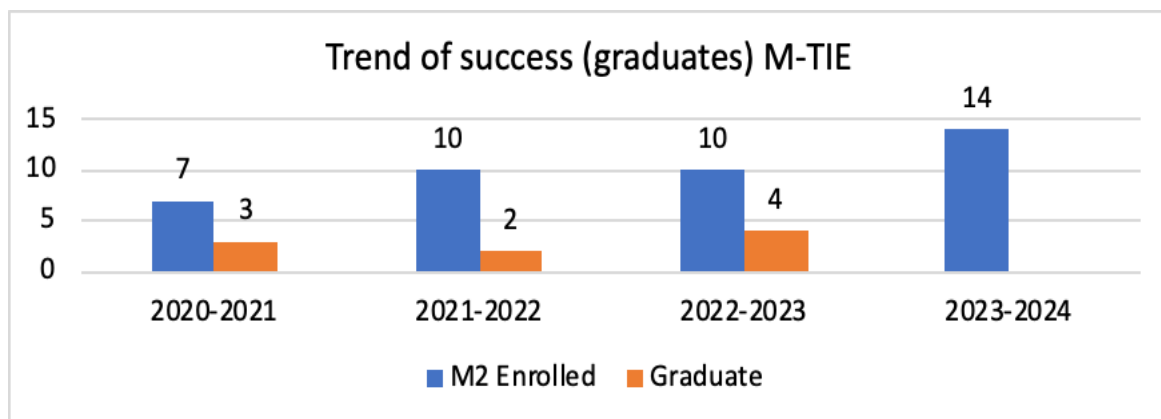
M-TIE is a full-time program, classified into two levels, M1 and M2, and is offered in two pathways: research-based and course-research pathways. For course-research pathway, students are required to take 52 credits, 40 credits for coursework and 12 credits for the last semester report/thesis defense of their final project/thesis. For research-based pathway, students are required to take 54 credits, 12 credits for coursework and 42 credits for research activities, research results, thesis and thesis defense. Detailed curriculum can be found on the website of GS-ITC.

Alumni and Students

Starting in academic 2020-2021, in total, nine students (1 female) graduated from the program. Currently, there are 14 students (0 female) enrolling in the program and the details are reported in the table below.

Pathway	M1		M2		Total	F	Remark
	Total	F	Total	F			
Course-research	0	0	0	0	0	0	
Research-based	0	0	14	0	14	0	
Total	0	0	14	0	14	0	

The time series of enrollments and numbers of graduates from 2020 to 2024 is displayed in the following figure. We observe that rate of success (ratio graduate/ M2 enrolled) is only 33%, marking one of the low graduate rates.



Scholarships

In this academic year 2023-2024, there are no scholarship students.

Lecturers

This program involves over 14 faculty members whose specializations are in transport engineering, logistics, civil engineering, public infrastructure, etc. Among these, 11 of them hold doctoral degrees from Europe, Japan, Korea, and ASEAN. They serve as teaching resources and superiors for the master students M-TIE. Some students are jointly supervised by professors from partner universities. The list of faculty members for M-TIE can be found in Annex 5 or in the website of GS.

Theses and publications

In 2022-2023, four master theses were successfully defended. All of them were conducted under the research-based pathway. The list of published theses can be found in Annex 6 or in the website of GS.

The list of publications can be found in Annex 7 or in the website of GS.

3.3.3.9. Program M-DAS

Program's objective

Master's Degree Program of Data Science, codeveloped by professionals and experts of IMT and ENSIIE, France, uses real-world problems and situations to prepare graduates for roles as strategic thought leaders who leverage predictive modeling to drive decision making. Students will develop in-depth understanding of key technologies in data science and business analytics: data mining, machine learning, visualization techniques, predictive modeling and Statistics.

Program Coordinator: Dr. PHAUK Sökkhey

Curriculum and syllabus

M-DAS is a full-time program, classified into two levels, M1 and M2, and is offered in two pathways: research-based and course-research pathways. For course-research pathway, students are required to take 54 credits, 42 credits for coursework and 12 credits for the last semester report/thesis defense of their final project/thesis. For research-based pathway, students are required to take 54 credits, 12 credits for coursework and 42 credits for research activities, research results, thesis and thesis defense. Detailed curriculum can be found on the website of GS-ITC.

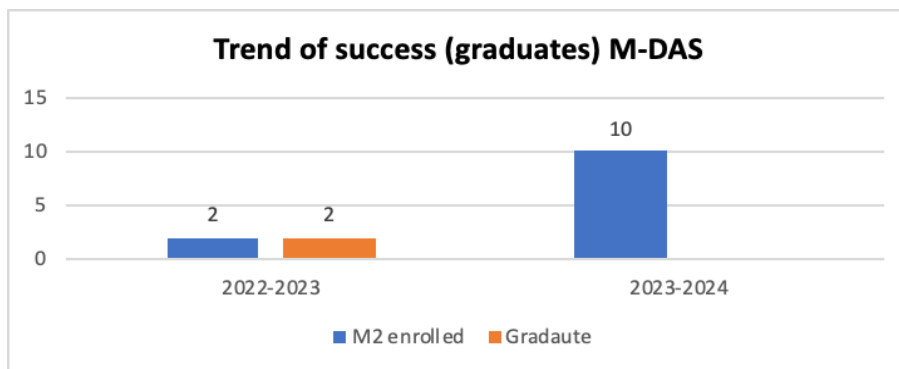
The curriculum of M-DAS is reviewed annually by the program’s curriculum committee with consultation with stakeholders and partner universities, especially, with ENSIIE, France--a partner under HEIP project. In 2023, this program was evaluated by external expert panels (both technical and educational aspects) to see whether the program meets the modest standard criteria set by the higher education’s educational experts from the MoEYS and the World Bank (WB). The program was evaluated with satisfactory.

Alumni and Students

Starting in 2022-2023, in total, two students (0 females) graduated from the program. Currently, there are 19 students (5 females) enrolled in the program and the details are reported in the table below.

Pathway	M1		M2		Total	Female	Remark
	Total	F	Total	F			
Course-research	6	1	5	3	11	4	
Research-based	3	1	5	0	8	1	
Total	9	2	10	3	19	5	

The time series of enrollments and numbers of graduates from 2022 to 2024 is displayed in the following figure. We observe that rate of success (Graduates/ M2 enrolled) is 100%.



Scholarships

In this academic year 2023-2024, one student obtains scholarships and funding support from HEIP-ITC project under the framework of upgrading staff’s qualifications.

Lecturers

This program involves over 15 faculty members whose specializations are in software engineering, IT, machine learning, deep learning, AI, NLP, data science, data mining, mathematics, and statistics, etc. Among these, 7 of them hold doctoral degrees from Europe, Japan, Korea, and ASEAN. They serve as teaching resources and superiors for the master students M-DAS. Some students are jointly supervised by professors from partner universities. The list of faculty members for M-DAS can be found in Annex 5 or on the website of GS-ITC.

Theses and publications

In the academic year 2022-2023, two master theses were successfully defended. All of them were conducted under the research-based pathway. The list of published theses can be found in Annex 6 or the website of GS-ITC.

Regarding the dissemination and publication, two articles were published in a national journal. The list of publications can be found in Annex 7, the webpage of GS-ITC or via <https://techno-srj.itc.edu.kh/search?topic=10>.

3.3.4. Doctoral Programs

3.3.4.1. Overview

The doctoral programs at ITC were authorized by the Ministry of Education, Youth and Sport by the **Prakas No. 909 AYK. BrK**, dated the 29th September 2017, to operate 5 programs as listed in table below.

No	Abbrev.	Name in English	First promotion
I	DEng	Doctor of Engineering	2017
1	D-FTN	Food Technology and Nutrition	2017 (Cotuelle)
2	D-MSS	Materials Science and Structures	2017 (Cotuelle)
3	D-MIT	Mechatronics and Information Technology	2018 (Cotuelle)
4	D-WAE	Water and Environment	2018 (Cotuelle)
5	D-ETM	Energy Technology and Management	2018 (Cotuelle)

In the academic year 2023-2024, fifty-four doctoral students are enrolled, in which 24 of them are in cotutelle/co-supervision with partner universities (15 with universities in France, and 9 with universities in Belgium). All students enrolled receive financial support from several projects and organizations. Total number of graduates is 19 (8 females). PhD graduates have jobs and most of them are working in academic institutions. Table below shows the overall statistics of PhD students.

Statistics of PhD students

Name	Program										Total	F
	WAE		FTN		MIT		MSS		ETM			
Number	Total	F	Total	F	Total	F	Total	F	Total	F		
Total number of PhD graduates	4	2	4	2	4	0	5	2	2	2	19	8
PhD Graduated in 2021-22	-	-	1	0	3	0	2	0	1	1	7	1
Total number of PhD enrolments by 2022-23	9	6	9	6	17	0	9	3	10	1	54	16
PhD Enrolled in year 1	5	3	-	-	1	0	2	0	2	0	10	3
PhD Enrolled in year 2	1	1	2	1	2	0	1	1	-	-	6	3
PhD Enrolled in year 3	-	-	6	5	2	0	2	0	3	0	13	5
PhD Enrolled in year 4	3	2	1	0	9	0	4	2	3	0	20	4
PhD Enrolled in year 5	-	-	-	-	3	0	-	-	2	1	5	1
Scholarship	9	6	9	6	17	0	9	3	10	1	54	16

Sources of funding

Sources of Funding*	Total Number of Beneficiaries	Female
ARES-ITC-HEIP	1	0
ARES-ITC	3	0
ARES-COMBODIA	2	2
ARES-CAMBOFISH	2	1
ARES	1	0
BGF	5	2
BGF-ITC	2	1
BGF-HEIP	1	0
BGF-ITC/HEIP	2	2
HEIP-ITC	3	1
HEIP-NUBB	1	0
HEIP	8	3
ITC-Erasmus+/HEIP	1	1
ITC	2	1
KIT-ITC	1	0
USAID-WoM	1	1
NPIC	10	0
NIPTIC	1	0
MoE	1	0
IRD	1	1
NUM	1	0
UHST	1	0
EDC-AFD-EU	2	0
CCCA	1	0
Total	54	16

* 14 (5 females) of the 54 students, who are ITC staffs, receive co-funding from ITC. Two students receive tuition fee scholarship from ITC.

3.3.4.2. Program D-WAE

Program's Objective

D-WAE, in conjunction with the Research Unit of Water and Environment under RIC-ITC, is one of the five doctoral programs of ITC, established in 2017, recognized by the Ministry of Education Youths and Sports. D-WAE was developed by the relevant experts in Water and Environment Engineering such as lecturers and researchers at ITC with the support from partner universities and institutions. Students can register for a single degree at ITC, or a degree under cotutelle (co-supervision) between ITC and a partner university in France. The cotutelle program is selective and upon the agreement between ITC and the partner university.

D-WAE students will develop in-depth understanding of the key technologies in their research area of Water and Environmental Engineering. D-WAE students will work closely with researchers of WAE research unit (generally, one of them is the student's supervisor) and they also can be co-supervised by the professors from our partner universities or research institutions (France, Belgium, Japan, etc.).

Curriculum and syllabus

D-WAE is a full-time program (3 to 6 years), consist of 54 credits: 21 credits for coursework (Supplementary/Prerequisite and Doctoral courses, and PhD Orientation courses), and 33 credits for research and thesis (3 credits for detailed research proposal, 6 credits for national/international publications, 3 credits for the presentation in scientific conference, 3 credits for seminars, 18 credits for Thesis writing and defense). This program trains doctoral students to be specialized in their advanced research and development field including hydrology, water supply and wastewater, urban environment management, disaster and climate system and other relevant fields. Detailed curriculum can be found on the website of GS-ITC.

Students and Alumni

Starting from the academic year 2017-2018 to 2022-2023, four students (2 females) have graduated from the program. Currently, there are 4 students (3 females) enrolling in the program and the details are reported in the table below. The list of current and graduated students including their including research topic can be found on the website of GS-ITC.

List of current D-WAE students in 2023-2024

No.	Name	Sex	First Reg.	Funding	Cotutelle		Research topic
					Yes/No	University	
1	CHAN Ratboren	M	2023	BGF	Yes	Université de Toulouse	Effect of geomorphological features and land use change on stormflow genesis and stream water quality in headwater catchments of mountainous tropical environment
2	CHANTO Monychot Tepy	F	2023	BGF	Yes	Université de Montpellier	Circulation of Multi-Drug Resistant Bacteria in Humans, Animals and in the Environment in the province of Takeo, Cambodia
3	HENG Chhenglang	F	2023	BGF	Yes	Université de Montpellier	Assessing the effects of land use dynamics on water quality and flood risk using satellite imagery, machine learning and hydrological modeling: the Tonle Sap Lake in Cambodia as a test case
4	PEN Chhorda	F	2023	ITC and MME	No		Chemical Characterization of Acid Mine Drainage from Gold Mining in Monudulkiri Province, Cambodia
5	SOK Serey vathana	M	2023	BGF	Yes	Ecole Nationale Supérieure de Chimie de Rennes	Removal of Organic Micropollutants by Coupling Simultaneous Continuous Adsorption and Sedimentation for Drinking Water Production
6	CHEA Seila	F	2022	USAID-WoM	No		Assessment of Plastic Debris Distribution in Coastal and Mekong River systems of Cambodia towards separation process development
7	LAI Chenda	F	2020	HEIP	Yes	Université de Liège	Optimization of Soil Nutrients for Rice Cultivation Using

							Experimental and Modeling Approach
8	PHOEURN Chan Arun	F	2020	HEIP	Yes	Université de Liège	Integrated approach of precise irrigation and sustainable laboratory development: the focus on rice farming
9	HIN Chandara	M	2020	NPIC	No		Development of Eco-Friendly and Low-Cost Wastewater Treatment System as an On-site Product

Lecturers and Supervisors

This program involves over 15 faculty members whose specializations are in water resources, hydrology, environmental engineering, and relevant fields. All of them hold doctoral degrees from Europe, Japan, and ASEAN. They are involving in the program for teaching or/and supervising the D-WAE students. Some students are jointly supervised by professors from partner universities. The list of faculty members in D-WAE program can be found in Annex 8 or on the website of GS-ITC.

Theses and publications

The list of published theses can be found in Annex 9 and on the website of GS-ITC.

Regarding the dissemination and publication, 7 articles were published in international journals. The list of publications is presented in Annex 10 and in the webpage of GS-ITC.

3.3.4.3. Program D-ETM

Program's Objective

D-ETM, in conjunction with the Research Unit of Energy Technology and Management under RIC-ITC, is one of the five doctoral programs of ITC, established in 2017, recognized by the Ministry of Education Youths and Sports. D-ETM was developed by the relevant experts in Energy Technology and Management including the lecturers and researchers at ITC with the support from partner universities and institutions. Students can register for a single degree at ITC, or a degree under cotutelle (co-supervision) between ITC and a partner university in France. The cotutelle program is selective and upon the agreement between ITC and the partner university.

D-ETM students will develop in-depth understanding of the key technologies and engineering in their research area of Energy Technology and Management. D-ETM students will work closely with researchers of ETM research unit (generally, one of them is the student's supervisor) and they also can be co-supervised by the professors from our partner universities or research institutions (France, Belgium, Japan, etc.).

Curriculum and syllabus

D-ETM is a full-time program (3 to 6 years), consist of 54 credits: 21 credits for coursework (Supplementary/Prerequisite and Doctoral courses, and PhD Orientation courses), and 33 credits for research and thesis (3 credits for detailed research proposal, 6 credits for national/international

publications, 3 credits for the presentation in scientific conference, 3 credits for seminars, 18 credits for Thesis writing and defense). This program trains doctoral students to be specialized in their respective advanced research and development field such as new and renewable energy, energy efficiency and conservation, smart grid, energy management and other relevant fields. Detailed curriculum can be found on the website of GS-ITC.

Students and Alumni

Starting from the academic year 2017-2018 to 2023-2024, 11 students have pursued this program. 2 students (1 female) have graduated (Annex 9). Currently, there are 10 students (1 female) enrolling in the program and the details are reported in the table below. The details of current and graduated students with research topic can also be found on the website of GS-ITC.

List of current D-ETM students in 2023-2024

N°	Nom	Sexe	1 ^{re} inscript.	Financement	Cotutelle		Sujet de recherche
					Oui/Non	Université	
1	LENG POR	H	2023	EDC-AFD-EU	Non		Power Management and Control of Hybrid LV AC/DC Microgrids with Renewable Energy Sources and Battery Energy Storage
2	SORN Darong	H	2023	EDC-AFD-EU	Oui	Université Grenoble Alpes	Operation and Protection Strategies for Low Voltage Hybrid Grids: Enhancing Efficiency, Reliability, and Resilience
3	CHHLONH Chhith	H	2021	BGF-HEIP	Oui	Université Grenoble Alpes	Optimal fault location, isolation, and restoration procedure for LV microgrids
4	NEAK Kimhak	H	2021	HEIP-ITC	Non		The impacts Assessment of Gasoline and Diesel Quality in Cambodian Fuel Market on Economic and Environment
5	CHHENG Monyvathna	H	2021	HEIP	Non		Design and Techno-economic analysis of plug-in electric vehicle-integrated Hybrid solar PV charging system for Cambodia
6	HEANG Latin	H	2020	CCCA	Non		Study on impact of heat stress on construction worker's productivity and economic in Cambodia
7	CHEA Vabotra	H	2020	MoE	Non		Study on the Impact of Heat Stress on Garment Worker Productivity and Economy in Cambodia
8	MEAS Saran	H	2020	NPIC	Non		Optimization of an Integrated Hybrid Onboard Charger with High Efficiency of MPPT Solar Charger for 3-Wheel Solar E-Rickshaw and Electric Vehicles
9	SIO Sreymean	F	2019	HEIP-ITC	Non		Applied geophysical methods for geological structures and hydrocarbon potential investigation in Kampong Som Basin, Onshore of Cambodia
10	ETH Oudaya	H	2019	HEIP-ITC	Non		Study on Impacts of the Integration of Renewable Energy Resources on Distribution System considering Micro Grid Scenario

Lecturers and Supervisors

This program involves over 8 faculty members whose specializations are in new and renewable energy, energy efficiency and conservation, smart grid, energy management and relevant fields. All of them hold doctoral degrees from Europe, Japan, Korea, and ASEAN. They are involving in

the program for teaching or/and supervising the D-ETM students. Some students are jointly supervised by professors from partner universities. The list of faculty members in D-ETM program can be found in Annex 8 or on the website of GS-ITC.

Thesis and publication

The list of published theses can be found in Annex 9 and on the website of GS-ITC.

Regarding the dissemination and publication, 4 articles were published in international journals. The list of publications is presented in Annex 10 in the webpage of GS-ITC.

3.3.4.4. Program D-FTN

Program's Objective

D-FTN, in conjunction with the Research Unit of Food Technology and Nutrition under RIC-ITC, is one of the five doctoral programs of ITC, established in 2017, recognized by the Ministry of Education Youths and Sports. D-FTN was developed by the relevant experts in Food Science, Food Engineering, Food Technology and Nutrition including the lecturers and researchers at ITC with the support from partner universities and institutions. Students can register for a single degree at ITC, or a degree under cotutelle (co-supervision) between ITC and a partner university in France. The cotutelle program is selective and upon the agreement between ITC and the partner university.

D-FTN students will develop in-depth understanding of the key technologies and engineering in their research area of Food Science, Food Engineering, Food Technology and Nutrition. D-FTN students will work closely with researchers of FTN research unit (generally, one of them is the student's supervisor) and they also can be co-supervised by the professors from our partner universities or research institutions (France, Belgium, Japan, etc.).

Curriculum and syllabus

D-FTN is a full-time program (3 to 6 years), consist of 54 credits: 21 credits for coursework (Supplementary/Prerequisite and Doctoral courses, and PhD Orientation courses), and 33 credits for research and thesis (3 credits for detailed research proposal, 6 credits for national/international publications, 3 credits for the presentation in scientific conference, 3 credits for seminars, 18 credits for Thesis writing and defense). This program trains doctoral students to be specialized in their respective advanced research and development field such as Food technology development, Food processing and engineering, Food product development, Food quality and safety, Sustainability of food systems, Food contaminant surveillance and control and other relevant fields. Detailed curriculum can be found on the website of GS-ITC.

Students and Alumni

Starting from the academic year 2017-2018 to 2023-2024, 13 students (9 females) have pursued this program. 4 students (3 females) have graduated (Annex 9). Currently, there are 9 students (6 female) enrolling in the program and the details are reported in the table below. The list of current and graduated students including their including research topic can be found on the website of GS-ITC.

List of current D-FTN students in 2022-2023

No.	Name	Sex	First Reg.	Funding	Cotutelle		Research topic
					Yes/ No	University	
1	LAY Sovannmony	M	2022	ARES-CAMBOFISH	Yes	Université Catholique de Louvain	Improvement of nutritional profiles of fish through plant-based feed
2	MOM Vattana	F	2022	ARES-CAMBOFISH	Yes	Université de Liège	Improvement the safety of processed fish farm products
3	OEUM Kakada	F	2021	IRD	Yes	University of Montpellier	Exploration and exploitation of root-associated bacteria for a sustainable rice agriculture in Cambodia
4	MAO Socheata	F	2021	ITC-Erasmus+/HEIP	Yes	Agro-Sup Dijon	Lactic Acid Bacteria Strain Diversity Depending on the Origin of the Product
5	SAY Manit	M	2021	HEIP	No		Development of cooking oil processes for commercialization
6	PHAL Sivchheng	F	2021	BGF-ITC	Yes	INSA Toulouse	New insights into Pharmaceuticals and Personal Care Products (PPCPs) removal from waters
7	CHIN Lyda	F	2021	BGF-ITC/HEIP	Yes	Montpellier SupAgro	Impact of initial compositions and processing techniques on aromatic quality of Mango
8	THANH Channmuny	F	2021	BGF-ITC/HEIP	Yes	Montpellier SupAgro	Nutritional Interest of Different Fish Species and Valorization of By-Products
9	LY Luka	M	2020	HEIP	No		Control of Different Soy Sauces Sold in the Markets and the Development of Soy Sauce Fermentation Process

Lecturers and Supervisors

This program involves over 6 faculty members whose specializations are in Food technology development, Food processing and engineering, Food product development, Food quality and safety, Sustainability of food systems, Food contaminant surveillance and control and other relevant fields. They hold doctoral degrees from Europe, Japan, US, or ASEAN. They are involving in the program for teaching or/and supervising the D-FTN students. Some students are jointly supervised by professors from partner universities. The list of faculty members in D-FTN program can be found in Annex 8 or on the website of GS-ITC.

Thesis and publication

Four theses have published since the academic years 2020-2021. The list of published theses can be found in Annex 9 and the website of GS-ITC.

Regarding the dissemination and publication, 7 articles were published in international journals. The list of theses and publication are presented in the webpage of graduate school: The list of publications is presented in Annex 10 in the webpage of GS-ITC.

3.3.4.5. Program D-MIT

Program's Objective

D-MIT, in conjunction with the Research Unit of Mechatronics and Information Technology under RIC-ITC, is one of the five doctoral programs of ITC, established in 2017, recognized by the Ministry of Education Youths and Sports. D-MIT was developed by the relevant experts in Mechanical engineering, robotics, electronics and automation, information and technology including the lecturers and researchers at ITC with the support from partner universities and institutions. Students can register for a single degree at ITC, or a degree under cotutelle (co-supervision) between ITC and a partner university in France. The cotutelle program is selective and upon the agreement between ITC and the partner university.

D-MIT students will develop in-depth understanding of the key technologies and engineering in their research area of mechanical engineering, robotics, electronics and automation, information and technology, data science, computer vision and other related fields. D-MIT students will work closely with researchers of MIT research unit (generally, one of them is the student's supervisor) and they also can be co-supervised by the professors from our partner universities or research institutions (France, Belgium, Japan, etc.).

Curriculum and syllabus

D-MIT is a full-time program (3 to 6 years), consist of 54 credits: 21 credits for coursework (Supplementary/Prerequisite and Doctoral courses, and PhD Orientation courses), and 33 credits for research and thesis (3 credits for detailed research proposal, 6 credits for national/international publications, 3 credits for the presentation in scientific conference, 3 credits for seminars, 18 credits for Thesis writing and defense). This program trains doctoral students to be specialized in their respective advanced research and development field such as intelligent mechatronics, artificial intelligence, telecommunication and internet of things, optimization for operation research and supply chain, electronics, and communication and other relevant fields. Detailed curriculum can be found on the website of GS-ITC.

Students and Alumni

Starting from the academic year 2017-2018 to 2023-2024, twenty-one students have pursued this program. 4 students have graduated (Annex 9). Currently, there are 17 students enrolling in the program and the details are reported in the table below. The list of current and graduated students including their including research topic can be found on the website of GS-ITC.

List of current D-FTN students in 2023-2024

No.	Name	Sex	First Reg.	Funding	Cotutelle		Research topic
					Yes/No	University	
1	NGIN Kimlong	M	2023	UHST and ITC	No		S3AT: Attendance Tracking System based on AI Integrated with Electronic Device for Security Alarm
2	CHIN Chan Daraly	M	2022	BGF-ITC	Yes	Toulouse INP	The vehicle as an intelligent thing
3	SRENG Vichet	M	2022	NUM	No		Automatic License plate number recognition system for Vehicle in Cambodia (ALPR)

4	PICH Reatrey	M	2021	ARES-ITC-HEIP	Yes	Université de Namur	Anomaly Detection in networks based on DNS's data analysis
5	BUN Menghorng	M	2021	HEIP	Yes	Toulouse INP	Study of feasibility and control of solar electric tuktuk
6	SOK Song	M	2020	HEIP-NUBB	No		Development of Non-Intrusive Appliance Load Monitoring and Diagnostic System for Residential Home
7	KARTHIKEYAN Dinesh Kumar	M	2020	KIT-ITC	No		Image or Video Visualization of Text (Book) using Generative Adversarial Networks (GAN) / Educational GAN(EduGAN)
8	CHHOUR Vongchivorn	M	2020	NPIC	No		Parameter estimation for actuator using Kalman filter
9	PEOU Thura	M	2020	NPIC	No		System integration for autonomous navigation for mobile robots using deep learning and ROS
10	SREY Sophyn	M	2020	NPIC	No		State and parameter estimation, and flight control for Unmanned Aerial Vehicle (UAV)
11	THUOK David	M	2020	NPIC	No		Optimization for multi agent in system integrity protection
12	UN Sok Oeun	M	2020	NPIC	No		Cambodia disaster back-up communication for natural disaster by emergency amateur radio operator
13	YEAN Sopheak	M	2020	NPIC	No		Parameter Identification and Automatic Control for a System with Friction
14	KUY Movsun	M	2020	ARES	Yes	Université de Mons	Automatic security assessment of IoT devices using machine learning
15	HEAN Samboeun	M	2018	NIPTIC	No		Research & development mathematical model as a machine learning system for Cambodia's digital economy
16	SIV Ratha	M	2018	ARES-ITC	Yes	Université de Mons	Crowds Analysis and Augmentation
17	SOK Kim Heng	M	2018	ARES-ITC	Yes	Université de Namur	Building trustable and privacy aware IoT systems using blockchain and smart contacts

Lecturers and Supervisors

This program involves over 8 faculty members whose specializations are in mechatronics, electronic and automation engineering, data science, robotics, and relevant fields. They hold doctoral degrees from Europe, Japan, or ASEAN. They are involving in the program for teaching or/and supervising the D-MIT students. Some students are jointly supervised by professors from partner universities. The list of faculty members in D-MIT program can be found in Annex 8 or on the website of GS-ITC.

Theses and publications

Four theses have been published since the academic year 2020-2021. The list of published theses can be found in Annex 9 and the website of GS-ITC.

Regarding the dissemination and publication, 13 articles were published in international journals. The list of theses and publication are presented in the webpage of graduate school: The list of publications is presented in Annex 10 in the webpage of GS-ITC.

3.3.4.6. Program D-MSS

Program's Objective

D-MSS, in conjunction with the Research Unit of Materials Science and Structure (MSS) under RIC-ITC, is one of the five doctoral programs of ITC, established in 2017, recognized by the Ministry of Education Youths and Sports. D-MSS was developed by the relevant experts in material science, structural engineering, mechanical engineering, and related fields including the lecturers and researchers at ITC with the support from partner universities and institutions. Students can register for a single degree at ITC, or a degree under cotutelle (co-supervision) between ITC and a partner university in France. The cotutelle program is selective and upon the agreement between ITC and the partner university.

D-MSS students will develop in-depth understanding of the key technologies and engineering in their research area of material science and engineering, structural engineering, polymer composites, failure analysis of steel structure and other materials, numerical modeling and experimental analysis of infrastructure and materials. D-MSS students will work closely with researchers of MSS research unit (generally, one of them is the student's supervisor) and they also can be co-supervised by the professors from our partner universities or research institutions (France, Belgium, Japan, etc.).

Curriculum and syllabus

D-MSS is a full-time program (3 to 6 years), consist of 54 credits: 21 credits for coursework (Supplementary/Prerequisite and Doctoral courses, and PhD Orientation courses), and 33 credits for research and thesis (3 credits for detailed research proposal, 6 credits for national/international publications, 3 credits for the presentation in scientific conference, 3 credits for seminars, 18 credits for Thesis writing and defense). This program trains doctoral students to be specialized in their respective advanced research and development field such as material science and engineering, structural engineering, polymer composites, failure analysis of steel structure and other materials, numerical modeling and experimental analysis of infrastructure and materials and other relevant fields. Detailed curriculum can be found on the website of GS-ITC.

Students and Alumni

Starting from the academic year 2017-2018 to 2023-2024, 14 students have pursued this program. 5 students (2 females) have graduated (Annex 9). Currently, there are 9 students (3 females) enrolling in the program and the details are reported in the table below. The list of current and graduated students including their including research topic can be found on the website of GS-ITC.

List of current D-MSS students in 2023-2024

No.	Name	Sex	First Reg.	Funding	Cotutelle		Research topic
					Yes /No	University	
1	PLACK Sokhit	M	2023	ITC	No		Walkability and importance assessment of pedestrian facilities in Phnom Penh City
2	SOM Chansamnang	M	2023	BGF	Yes	INSA Rennes	Effect of the addition of natural fibers on shrinkage, cracking risk and healing capacity of cementitious materials
3	HENG Muoy Yi	F	2022	HEIP	Yes	Université de Liège	Quality assurance of concrete pile integrity using Non-destructive method
4	HENG Kimhong	M	2021	HEIP	Yes	Université de Rennes 1	A study of high strength-to-weight ratio glass beam
5	LONG Makara	M	2021	ARES-ITC	Yes	Université de Liège	Sustainable design conception integrated in architecture project in BIM environment
6	KETH Kannary	F	2020	ARES-COMBOdIA	Yes	Université Libre de Bruxelles	Managing the interdisciplinary collaboration in Construction 4.0: ITC case
7	TAING Kimninh	F	2020	ARES-COMBOdIA	Yes	Université de Liège	Green BIM – Analysis of BIM approach for design a bioclimatic building
8	HOUR Sokaon	M	2020	NPIC	No		FEM to Predict Effects of Plastic Deformation on Mechanical Properties of a Structural Steel
9	KEAT Rayuth	M	2020	NPIC	No		Study on Furnace Glass Heat Treatment Technology

Lecturers and Supervisors

This program involves over 12 faculty members whose specializations are material science and engineering, structural engineering, polymer composites, failure analysis of steel structure and other materials, numerical modeling and experimental analysis of infrastructure and materials, and relevant fields. They hold doctoral degrees from Europe, Japan, or ASEAN. They are involving in the program for teaching or/and supervising the D-MSS students. Some students are jointly supervised by professors from partner universities. The list of faculty members in D-MSS program can be found in Annex 8 or on the website of GS-ITC.

Theses and publications

Three theses were published in the academic years 2020-2021 and 2021-2022. The list of published theses can be found in Annex 9 or on the website of GS-ITC.

Regarding the dissemination and publication, 3 articles were published in international journals. The list of publications is presented in Annex 10 in the on the website of GS-ITC.

3.3.5. Challenges and Way Forwards

The number of Master graduates in the academic year 2022-2023 was achieved by 91% = 91 against the plan which was 100. On average, students take more than 1.5 years complete their Master's degree. The number of new recruitments for 2023-2024 was not achieved as target (only 83% was achieved). We observe that 58% of all students choose research-based pathway. Major challenge we faced is the reliance of scholarships of our full-time master students, as some main projects such as AFD-EU, one of the main scholarship funding sources, was concluded by the end of December 2023. This affects the enrollments into the program M-WEE very significantly. For the program M-ETM, supported by EDC-AFD-EU project, we received more than 20 qualified applicants, however, only a dozen of students chose to study as they received scholarships.

In general, only a few master students who have already been employed in industries were sent to join our programs by their employers. To improve this situation, we will do more communications, especially between ITC and stakeholders, about our programs and consider credit-accumulating programs in the form of module-based programs. In so doing, we can find more funding sources for students and enable more bachelor's holders already employed to take part in the programs. They can join parts of our training to get certified credits, then for a suitable duration, number of credits earned, and when they wish to enroll in our program, they can do it within our full-time framework.

3.3.6. Conclusion

For this academic year, 8 full-time master programs are operated (with 8 research-based programs). The number of enrollments in academic year 2023-2024 however decreased by 14%, compared with academic year 2022-2023. Around 40% of our master students are scholarship recipients (full or partial scholarships). Number of students mobilities increased from 12 to 16, from 3 to 5 programs. There are in total 411 Master graduates (108 females) from our programs. Whereas, in the academic year 2022-2023, there were 91 Master graduates (28 females) from the 8 master's programs. By March 2024, under HEIP projects, 4 Master programs, namely M-AIE, M-WEE, M-DAS and M-ETM have been evaluated by external experts' panels. From the released reports, the results of evaluations of these programs are satisfactory. Satisfactory results and comments from the evaluators serve as models and guidelines for the rest of the program to follow. To promote our master programs and attract more students, we will increase our communications, especially between ITC and relevant stakeholders, about our programs and consider credit-accumulating programs in the form of module-based programs.

For doctoral programs, for the academic year 2023-2024, there are 54 students enrolled in the 5 fields. Among these, 24 (13 females) doctoral students registered in cotutelle programs with French and Belgian partner universities. In total, 19 students obtained their doctoral degrees (16 double-degree students), 4 students in 2020-2021, 8 students in 2021-2022 and 7 students in 2022-2023. To promote our doctoral programs, “*Thèse CIFRE*” style programs should be implemented and collaboration with private sectors is important.

4. Capacity Building and Professor Dispatch

4.1. Capacity Building (2023-2024)

4.1.1. Long-term overseas capacity building for lecturers and students

From year to year, the number of teachers and students undergoing postgraduate training and other abroad gets back into rhythm after Covid. The first semester of the 2023-2024 academic year bears witness to this. Indeed, the ITC has 26 lecturers (1 post-doctorate, 23 doctoral students, 2 masters) and 111 students (1 diplôme d'ingénieurs, 98 masters, 12 doctoral students). They are distributed in different partner establishments around the world. For more information, please see Annex 11 and 12.

4.1.2. Short-term overseas capacity building for lecturers and students

Within the framework of international cooperation, 123 missions for lecturers and 71 missions for students (a total of 194 missions) were carried out abroad. For more information, please see Annex 13 and 14.

Obviously, the professional development missions for ITC lecturers are essential to ensure the quality of teaching. For students, they allow them to acquire new scientific experiences with foreign lecturers.

4.2. Professor dispatch at ITC (2023-2024)

In general, teachers from our ITC partner universities can come on international mobility to ITC. For this school year 2023-2024, we had 48 mobility of professors from abroad:

1. M. Olivier GRANIER, Lycée J. Decour, France
2. M. Philippe BARLIER, Lycée Montesquieu (Le Mans), France
3. M. Pascal PODWOJEWSKI, IRD, France
4. M. Pascal JOUQUET, IRD, France
5. Prof. Marc Descloitres, IRD, France
6. M. Jean-Emmanuel ROUGIER, Lisode, France
7. Prof. Sylvain GIRAUDET, ENSCR, France
8. Prof. Melissa Lenczewski, Northern Illinois University, USA
9. Prof. Tsuji Takeshi, The University of Tokyo, Japan
10. Prof. Watanabe Koichiro, JICA Headquarter, Japan
11. Ms. Nanako Ebata, JICA Headquarter, Japan
12. Prof. Uchida Esto, Waseda University, Japan
13. Prof. Naoko Okibe, Kyushu University, Japan
14. Assoc. Prof. Yonezu Kotaro, Kyushu University, Japan
15. Assoc. Prof. Falan Srisuriyachai, Chulalongkorn University, Thailand
16. Dr. Nichole Anthony D. Pacle, Caraga State University, Philippines
17. Assoc. Prof. Jillian Aira Gabo-Ratio, University of the Philippines

18. Assoc. Prof. Dr. Hareyani Zabidi, Universiti Sains Malaysia
19. Dr. Zakaria Endut, Universiti Sains Malaysia
20. Dr. Ku Esyra Hani Ku Ishak, Universiti Sains Malaysia
21. Dr. Nurul'Ain Jabit, Universiti Sains Malaysia
22. Dr. Muhammad Irman Khalif Bin Ahmad Aminuddin, Universiti Sains Malaysia
23. Prof. Pornchai Supnithi, King Mongkut's Institute of technology Ladkrabang, Thailand
24. Dr. Lin Min Min Myint, King Mongkut's Institute of technology Ladkrabang, Thailand
25. Dr. Jirapoom Budtho, King Mongkut's Institute of technology Ladkrabang, Thailand
26. Dr. Somkit Sophan, King Mongkut's Institute of technology Ladkrabang, Thailand
27. Dr. Phimmason Thammavongsy, NUOL, Lao PDR
28. Prof. Pierre Leclercq, ULiege, Belgique
29. Prof. Samia Ben Rajeb, ULB, Belgique
30. Prof. Christophe BUGAUD, CIRAD, France
31. Prof. Joe DEUSCHER, CIRAD, France
32. Prof. Sopark SONWAI, Silpakorn University, Thailand
33. Prof. Jacques Mercadier, École Nationale Supérieure en Génie des Technologies Industrielles (ENSGTI), France
34. Prof. Jean PAPEE, Total Professor Associate, France
35. Prof. Jehan-Eric BLUMEREAU, Total Professor Associate, France
36. Prof. Sopark SONWAI, Silpakorn University, Thailand
37. M. Rainer Zaiss, IRD, France
38. M. Ruben Puga Freitas, Université Paris-Est Créteil Val de Marne - Université Paris 12 (UPEC)
39. M. Sébastien Marchand, Centre d'Études et de Recherches sur le Développement International (CERDI)
40. Mme. Catherine Keller, Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement (CEREGE)
41. Mme. Eve Bureau-Point, Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement (CEREGE)
42. M. Jean-Dominique Meunier, Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement (CEREGE)
43. Mme. Martine Audibert, Centre d'Études et de Recherches sur le Développement International (CERDI)
44. Prof. Bertrand François, Université de Liège, Belgique
45. Prof. Pierre Gérard, Université Libre de Bruxelles, Belgique
46. Prof. Tharakan Josesh, Université Libre de Bruxelles, Belgique
47. M. François Chassagne, PHARMADEV et IRD, France
48. M. Nicolas Bottinelli, IRD, France

For more information, please refer to Annex 15.

5. Research and Innovation Center

5.1. Background of Research and Innovation at ITC

Institute of Technology of Cambodia (ITC) contributes to maintain sustainable development and decrease the inequalities within our society through its internal functioning and opening-up to foreign countries and the way their students get admitted. ITC enjoys numerous cooperative agreements with European, Regional, and local Universities. These agreements help improve the quality of the educational program, create new degrees, and enable collaboration in new research projects and mobility of researchers, lecturers and students. ITC also enjoys privileged relations with a great number of Cambodian companies and multinationals which have branches throughout Cambodia.

Beside the education as engineer and technician, ITC also committed to promote the research activity by gathering the alumni, offering Master and PhD degree program locally and internationally through partnership programs, approaching the industries and local enterprises, and collaborating researches both local and international universities. To promote research activities, ITC has created 2 statuses, i.e., contracted lecturer-researcher with 50% of their time contributed to research (established on 31 May 2010) and full-time researcher (established on 18 June 2012). Further, ITC's first **Research and Innovation Center (RIC)** was established which is supported by JICA on July 14, 2015. In 2017, five research units have been established: (1) Energy Technology and Management (ETM), (2) Food Technology and Nutrition (FTN), (3) Mechatronics and Informatics Technology (MIT), (4) Materials Science and Structure (MSS), and (5) Water and Environment (WAE).

To sustain the research quality as well as to evaluate and orientate the research activities, RIC organizes the meeting of all lecturer-researchers/full-time researchers semi-annually at the beginning and at the end of academic year. In addition, the monthly meeting has been internally conducted by research unit and quarterly meeting has been conducted with participated by RIC management team. The main objective of the meeting is to recall the statuses, contracts, and evaluation criteria for researcher performance. At the same way, Head of research unit as well as RIC management team can solve the issue immediately as well can advise to researchers who have slow progress. In this academic year, under the recovery of covid-19 pandemic, the meeting has been conducted physically. Prior to the meeting, all researchers are required to submit their research progress and challenges in the form of PowerPoint to their Unit Head followed by their presentations and new projects granted.

This chapter is made to report the information related to research and innovation that have been conducting, especially for academic year 2023-2024 to a very important scientific council of ITC. The scientific council composed of the Direction Board, Director and deputy directors of RIC, Deans of faculties and a representative from each Department chaired by Director General of ITC, is in charge of orientation and evaluation of scientific research and teaching program of the institute.

5.2. Research and Publication

5.2.1. Research Project and Researcher

With regard the engineering field and commercialization of research, ITC has employed up to 111 researchers in this 2023-2024 academic year (this number includes also those who hold Admin positions but also conducted research). The number of research project is almost constantly maintained around 102 research projects in 2023-2024. The data of the researchers and research projects in the last five years are shown in Figure below.

Figure 12 below presents the evolution of researcher numbers between 2019-2020 and 2023-2024. Importantly, the number of full-time researchers increased remarkably since the academic year 2021-2022 due to the support from HEIP projects, BGF and MoEYS, and others supports.

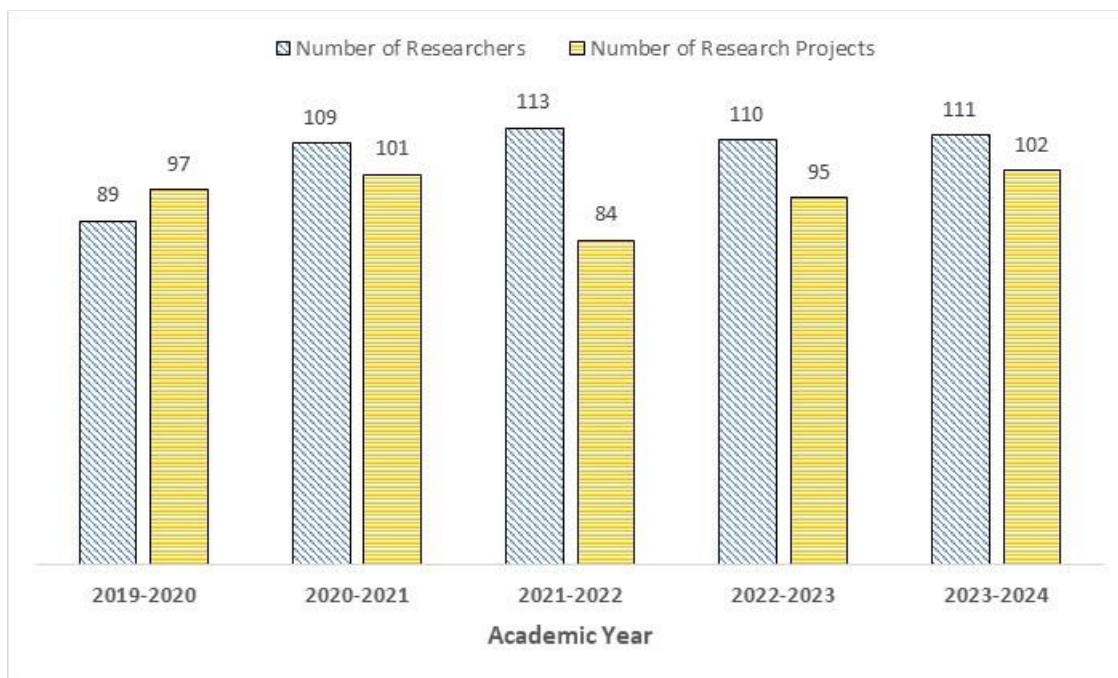


Figure 12. Number of researchers and research projects in last 5 years.

5.2.2. Research Project and Researcher by Research Unit for 2023-2024

This academic year 2023-2024, 102 projects are on-going and implemented by 111 Researchers, about 40 percent are female, classified into three categories: Senior researchers¹ (46%), Lecturer-Researchers (22.50%), and full-time researchers (31.50%).

- Energy Technology and Management-ETM (12 projects) : 19 Researchers including 10 Senior researchers, 02 Lecturer-Researchers, and 07 full-time Researchers.
- Food Technology and Nutrition-FTN (30 projects) : 26 Researchers including 10 Senior researchers, 06 Lecturer-Researchers and 10 full-time Researchers.
- Mechatronics and Information Technology-MIT (18 projects) : 22 researchers including 10 Senior researchers, 06 Lecturers-researchers, and 06 full-time researchers.
- Material Sciences and Structure-MSS (16 projects) : 16 Researchers including 10 Senior researchers, 01 Lecturer-Researchers, and 05 full-time Researchers.
- Water and Environmental-WAE (26 projects): 28 researchers including 11 Senior researchers, 10 Lecturer-Researchers, and 07 full-time Researchers.

¹ Senior researchers in our term refer to those under management teams and group direction who have not been contracted as researchers but have been conducting researches on their own projects.

Figure 13 presents the number of projects and the number of researchers by research unit (2023-2024). All research units show similar number of research projects compare with number of their researchers. FTN shows high number of research projects of 30, followed by WAE with 26 projects and ETM with the lowest number of projects of 12.

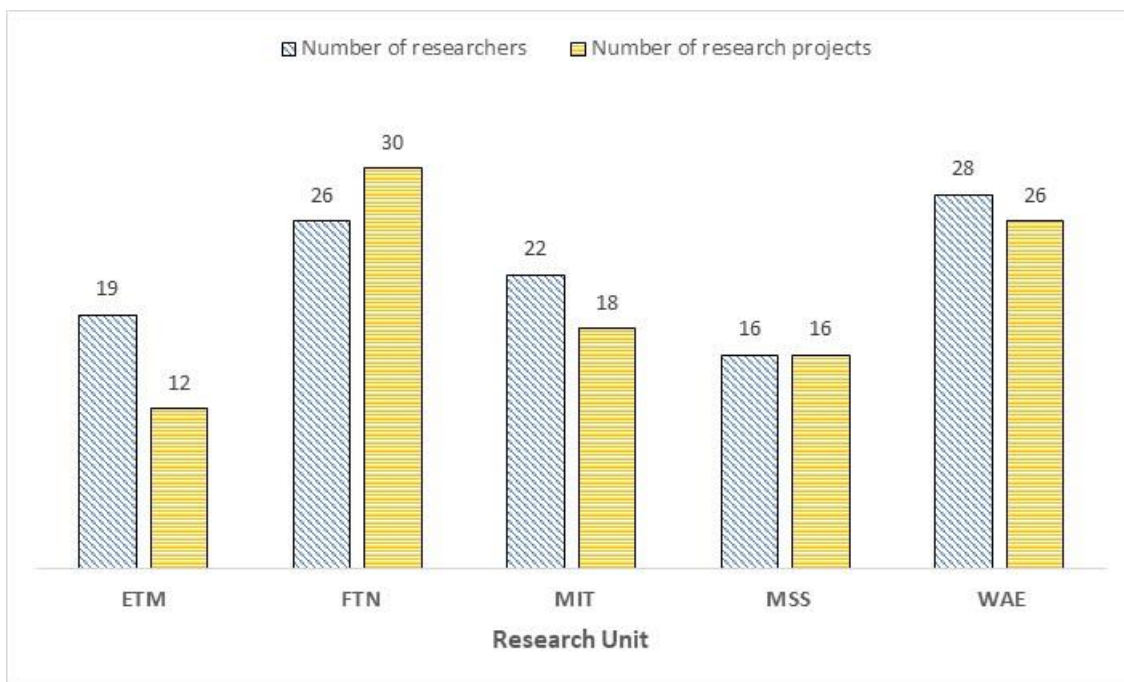


Figure 13. Research projects by each research unit (2023-2024).

Researches are conducted with the support and/or under the collaboration with ARES-CCD (Belgium), AgroSup Dijon (France), AUF, JST/JICA (Japan), Cambodia Climate Change alliance (Cambodia), AUN/Seed-Net JICA, JSPS (Japan), Kanazawa University (Japan), Ambassade de France, INSA de Rennes (France), ACIAR (Australia), CDRI (Cambodia), USAID (United States of America), US-Airforce (United states of America), Takashi Foundation (Japan), Kurita Foundation (Japan), United Kingdom Trust Fund, Pierre Fable (France), Researcher Institute of Development (IRD-France), Ministry of Environment (Cambodia) and Higher Education Improvement Program (Cambodia).

Through the collaboration with Japanese partners, second grand research project has been awarded to ITC entitled “*Establishment of Risk Management Platform for Air Pollution in Cambodia*”. This project is participated by both Japanese and Cambodian counterparts such as Kanazawa University, Nagasaki University, Osaka Ohtani University, Partical Plus Co., Ltd., Institute of Technology of Cambodia, University of Health and Science, National Univesity of Management and Ministry of Environment. The project was start in July 2022 and expected to last for five years.

Under the support of JICA, totally 49 Laboratory Based Enducation-LBE (7 projects on-going and 42 projects completed) projects for strengthening engineering education and research for industrial development in Cambodia have been extended the awards to implement until March 2024. This project has produced more than 150 papers within 4 years period.

5.2.3. Classification of Research Project by Unit

Research projects have been classified according to the partners involved in the implementation of the project. Projects are classified into National (45%), Regional (4%) and International (51%) cooperation levels (Figure 14). National cooperation stands for collaboration and partners within local institutions and SMEs, whereas regional cooperation covers the cooperation within Asian countries, and international cooperation includes all other countries outside Asian.

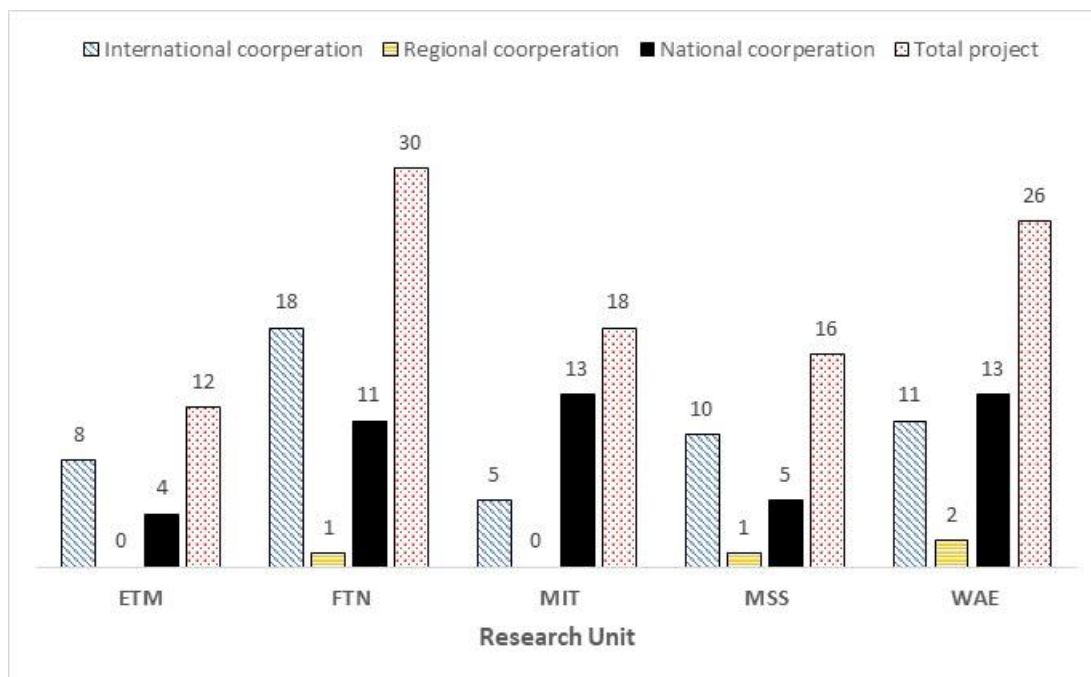


Figure 14. Classification of research project by research unit (2023-2024).

The projects are also classified into four types: basic research project, applied and development research, start-up and tech-transfer (Figure below). In our terms, basic research is an approach to knowledge-specific that seeks to expand knowledge in a field of study. Applied and development research are those research activities, which focus on providing innovative or practical solutions to a specific problem and contribute to development at any scale. Among the 102 on-going projects, there are 25 Basic researches (24.5%), 75 Applied and development researches (73.5%), 1 Start-up research and 1 Tech-transfer research. Start-up² and tech-transfer³ are under RIC development plan for 2030.

² Start-up projects refer to an organization or a process of forming or managing business that uses innovation as the core of its business model under uncertainty conditions and has risks, yet high potential to growth fast (source: Techo Startup Center).

³ Tech-transfer projects refer to the research projects that could lead to the process of commercialization by technology licensing or Intellectual Property (IP) rights transferred.

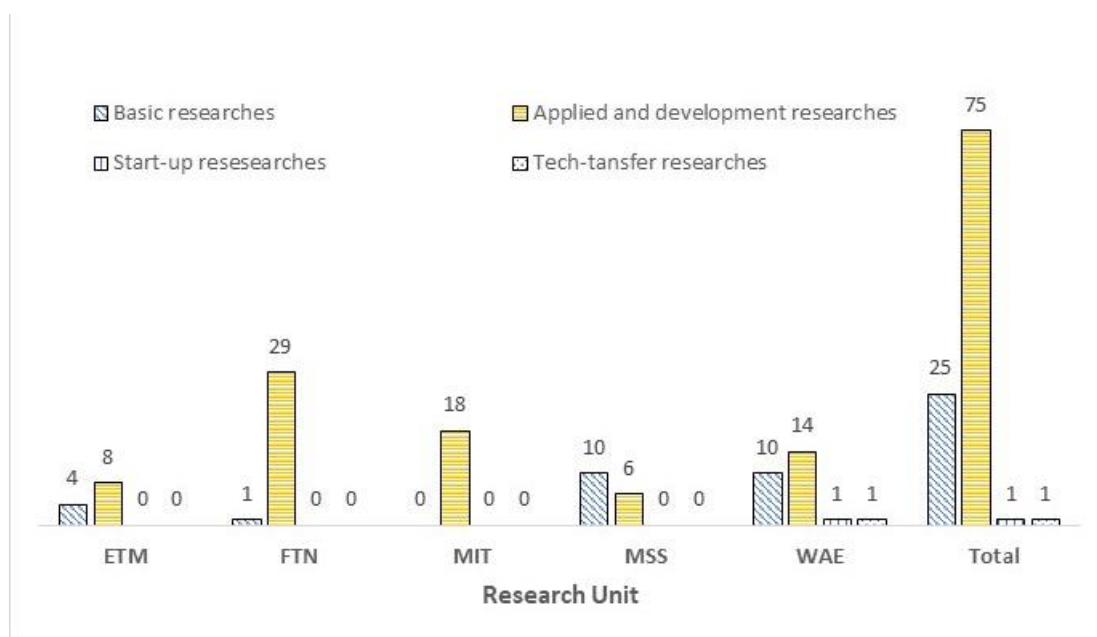


Figure 15. Classification of project types by research unit (2023-2024).

5.2.4. Publication

In term of scientific journal publication for the last five academic year, from 2019-2020 to 2023-2024, researchers published their research articles of 236 international published papers and 92 in local published papers (Figure below). Indexed papers refer to the publication in international journal and non-indexed papers refer to the publication in local journal and Techno-Science research journal of ITC. Researchers also did their research results presentation in about 400 conferences and scientific events.

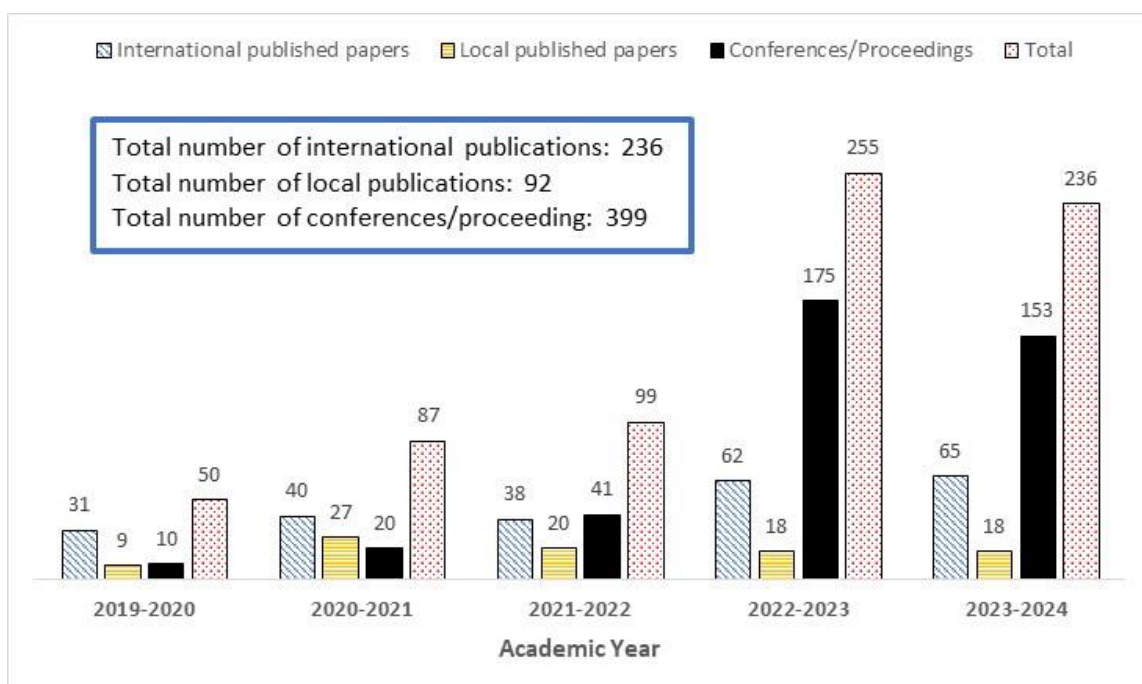


Figure 16. Number of publications in last 5 years.

5.3. High Impact Research and Innovation Projects

5.3.1. Platform for Aquatic Ecosystem Research (PAER)

5.3.1.1. Introduction

A platform for Aquatic Ecosystem Research (PAER) for Tonle Sap Lake (TSL) is established under the Institute of Technology of Cambodia to promote research, development, and education in environmental science and technology focusing on aquatic ecosystems under the tropical climate. PAER was established through the financial support of SATREPS, which stands for Science and Technology Research Partnership for Sustainable Development. This project was funded by the Japan International Cooperation Agency (JICA) and Japan Science and Technology Agency (JST). SATREPS is a 5-year project starting from April 2016 to March 2021. However, it was extended to March 2022 due to the COVID-19 pandemic. The main institutions of the projects were: (1) the Tokyo Institute of Technology, Japan, and (2) the Institute of Technology of Cambodia (ITC), Cambodia. Besides these, there are also the Institute for Global Environmental Strategies (IGES, Japan), Yamagata University (YU, Japan), Tonle Sap Authority (TSA, Cambodia), Ministry of Water Resources and Meteorology (MOWRAM, Cambodia), Ministry of Environment (MOE, Cambodia), Ishikawa Prefectural University (Japan), Toyama Prefectural University (Japan), Iwate University, and University of Tokyo (Japan).

The principal roles and responsibilities of PAER Committees are subjected to make a decision and give advice on the following issues:

- Preparing of the overall implementation plan of PAER at ITC, including a long-term vision of curriculums with PAER
- Collaboration with MOE, TSA, and MOWRAM by enhancing and supporting evidence-based environmental management policy to the related governmental agencies
- Serving as a hub (i.e. liaison) for connecting individuals and organizations regarding research, technical support and management of Tonle Sap water environment
- Publishing research report/journals on a regular basis (i.e., Tropical Limnology, Tropical Lake)
- Maintaining the environmental database about Tonle Sap Lake
- Holding regular academic meetings/conference
- Library with relevant books, journal papers, proceedings, and movies
- Other issues necessary for the establishment of PAER

5.3.1.2. Structure

The management team of PAER (Figure below) composes of one Chairman, several advisory boards, one director, and members such as:

- Chairperson: Director General of the Institute of Technology of Cambodia
- Advisory board: National, international experts, the governmental agency who are in the related field and head of the research unit of water and environment as well as RIC director

- Director: A faculty member appointed by Chairperson
- Management team: 5 executive members appointed or recruited by the director to manage each division/office (Figure 18), such as:
 - Division/Office of Database and Model Application (WEAT).
 - Division/Office of Research and Development
 - Division/Office of Public Relationship and Engagement
 - Division/Office of Facility Management
 - Division/Office of Administration and Finance

Each division/office can recruit supporting staff as necessary

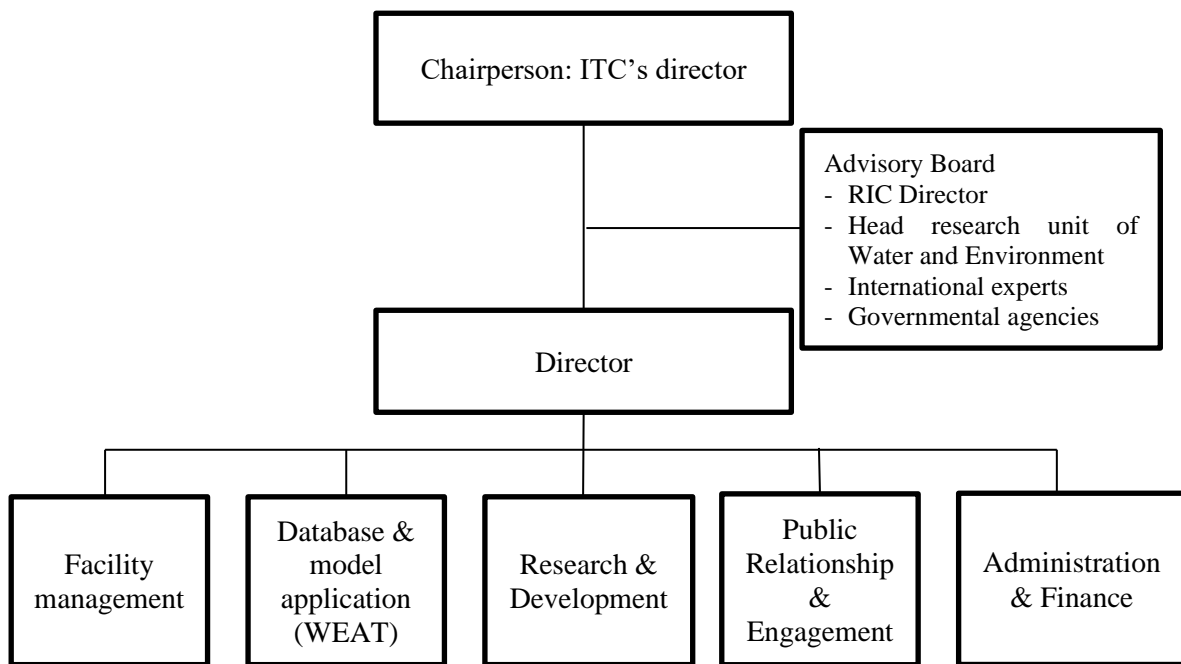


Figure 17. PAER management structure.

5.3.1.3. Activities of PAER in 2023-2024

- Laboratory and Capacity Building Training

A platform for Aquatic Ecosystem Research consists of 3 research laboratories: 1) Environmental Microbiology Laboratory, 2) Environmental Chemistry Laboratory, and 3) Environmental Observation Laboratory. Recently, a Molecular Biology Lab is established as a separated laboratory from (1). Therefore, 4 laboratories now are under the management of PAER. Currently, these facilities host the activities of 8 different projects on water and environment at ITC:

1. Higher Education Improvement Project (HEIP) funded by Royal Government of Cambodia through MOYES as loan from World Bank: HEIP#5, HEIP#17, HEIP#25
2. Water and Health Risk (WAT-HEALTH) funded by Institute for Research and Development (IRD), and French Embassy
3. Provincial Water Supply and Sanitation (PWSS) funded by AFD/EU

4. Laboratory-Based Education (LBE) funded by JICA
5. Feed the Future Innovation Lab (FSIL), funded by USAID
6. Improving Capacity on Integrated Coastal Management with Low Impact Development Considering Environmental Sustainability and Climate Change In Coastal Area of Cambodia (CLID) Project supported by Cambodia Climate Change Alliance phase 3 (CCCA3)
7. AfriCam Cambodia - Preventing zoonotic diseases emergence funded by AFD
8. Photoproduction of Radicals and their Effects on Carbon Dynamics in Tropical Lakes (JSPS-Photochem) Funded By JSPS

Besides, 11 researchers and 55 research students are using the facilities of PAER laboratories. Each year, we provide training on basic laboratory safety, training on laboratory instruments (GC-MS, IC, etc.), and prepare laboratory entrance exams for research students. In 2023 the first safety training and the first period of the entrance exam were held in August 2023 with the participation of around 30 research students.

On 7th, 16th, 17th, 21st, and 22nd of August 2023, we hosted Analytical Instrument training on GC-MS, HPLC, IC, and AAS. The objectives of this workshop are 1) Introduction to Chromatography; 2) Introduction to IC, GC-MS, HPLC, and AAS: software and hardware, maintenance and troubleshooting, and general procedure of sample preparation; and 3) laboratory practice of GC-MS, HPLC, AAS, and IC. The presenters in this workshop are Assist. Prof. Eang Khy Eam, Ms. May Phue Wai, Mr. Chork Vuthy, Assist. Prof. Yoeun Sereyvath, Assist. Prof. Phat Chanvoleak, Assist. Prof. Khoern Kimleang, Mrs. Sieng Sreyvich, Mr. Ly Luka, and Ms. Hoeun Seanghai. The activities during this workshop are shown in figure below.

ANALYTICAL INSTRUMENT TRAINING

GC-MS, HPLC, AAS & IC

THEORY SESSION & LAB PRACTICE

You Will Learn :

- Introduction to Chromatography
- Introduction to IC, GC-MS, HPLC, and AAS
 - Software and Hardware
 - Maintenance and troubleshooting
 - General procedure of sample preparation
- Laboratory practice of GC-MS, HPLC, AAS, and IC

TRAINING WILL BE HELD ON

07, 16-17 & 21-22, August, 2023

Refer to the agenda for more information

Institute of Technology of Cambodia
Building A, Room A-109

Registration:

Deadline
03 Aug 2023

JOIN US NOW!

MORE INFORMATION
+855 69 711 207
paer@itc.edu.kh

Limited seats!
Prioritize to ITC's researchers, I5, Master and PhD students

ORGANIZED BY: PLATFORM FOR AQUATIC ECOSYSTEM RESEARCH (PAER)

Figure 18. Analytical Instrument training on GC-MS, HPLC, IC, and AAS for the academic year 2023-2024.

– Workshop and Dissemination

In addition, on 28th February 2024, PAER will host an event on “Capacity building and engagement on Environmental Issues and Solutions” for undergraduate and high school students funded by JASTIP-Net 2023/24 (Figure below). The objectives of this workshop are 1) STI lectures provided by internal experts from our collaborating institution in Japan, governmental officers, NGOs working on water and environment will be conducted for high school and undergraduate students, academic, and relevant audiences; 2) an engagement program for students to visit a floating village on Tonle Sap Lake (TSL) to understand the environmental issues there; and 3) creating a competition for students to work in groups to raise solutions toward solving the environmental issues at a floating village on TSL using an innovative idea and solution judged by key experts and government officers.

CAPACITY BUILDING AND ENGAGEMENT ON ENVIRONMENTAL ISSUES AND SOLUTIONS

Are you ready to form a team?

Apply now for free

Eligibility of applicants:

- High school students are encourage to apply
- Undergraduate students

WHY YOU SHOULD JOIN

- Capacity building on environmental issues and solution
- Field visit to Chhnok Tru floating village, Tonle Sap Lake
- Certificate and awarding for winners of the video competition

TRAINING WILL BE HELD ON :

- 28th February 2024: Training workshop on science, technology, and innovation focusing on environmental issues and solution at Tonle Sap Lake.
- 2nd March 2024: Field visit to Tonle Sap Lake for creating video competition at Chhnok Tru, Kampong Chhnang
- 9th March 2024: Submission video presentation
- 16th March 2024: Video presentation and announcement of the winner at ITC

HOW TO REGISTER

- Apply as a small team (3 - 5 people)
- Complete the application form
- Create a short video (about 5 min) after field visit on 2nd March

MORE INFORMATION
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Figure 19. Poster of capacity building and engagement workshop on environmental issues and solution

– Research Proposal Submission

In addition, researchers in PAER have cooperated with researchers from the University of Tokyo, Japan, and Chulalongkorn University, Thailand to write a Science and Technology Research Partnership for Sustainable Development (SATREPS) proposal on Climate Literacy for Just-in-Time Adaptation for the Lower Mekong Region. Currently, our proposal passed the shortlist and we are waiting for the final results.

– **Research Output within 2023-2024**

The outputs from the projects during this academic year include 10 conference proceedings and peer review papers have been published (Table below).

Table 13. List of publications.

N	Project	Publication	Type
1	HEIP-ITC-SGA#17	Choeng, L., Peng, C., Set, L., Doeurn, S. “Determination of Histamine Level and Its Correlation with Viable Bacterial Count in Cambodian Fermented Fish. International Journal of Environmental and Rural Development. 2023, 14(1), 52-58	Peer-Review Paper
2	HEIP-ITC-SGA#17	Chor, L., Sroy, S., Peng, C., Doeurn, S. “Process Optimization and Quality Assessment of Nem, a Traditional Cambodian Lactic Acid Fermented Fish Product” Journal of Food Science and Nutrition Research. 2023, 6 (4)	Peer-Review Paper
3	HEIP-ITC-SGA#17	Peng, C., Choeng, L., Yoeun, S., Doeurn, S. “Evaluation of Histamine Content in Lactic Fermented Fish Product, Nem, by Enzymatic Test Kit. STI Focus: Science, Technology and Innovation. 2023, 2 (2), 27-31	Peer-Review Paper
4	HEIP-ITC-SGA#17	Set, L., Sroy, S., Chor, L., Mith, H., Yoeun, S., Doeurn, S., Thanh, C., Peng, C. “Chemical and Microbiological Analysis of Traditional Fermented Fish and Meat Products Collected from Battambang, Cambodia” Techno-Science Research Journal, 2023, 11 (1), 53-59	Peer-Review Paper
5	HEIP-ITC-SGA#17	Doeurn, S., Tep, C., Peng, C., Heng, O. (2022). Diversity of Lactic Acid Bacteria isolated from Nem, a traditional fermented fish product of Cambodia. In FOODI International Conference 2022. Malaysia	Conference Proceeding
6	HEIP-ITC-SGA#17	Set, L., Peng, C., Tep, C. (2022). Traditional Fermented Products from Battambang, Cambodia: Their Lactic Acid Bacteria and Physicochemical Characteristics. In FOODI International Conference 2022. Malaysia.	Conference Proceeding
7	HEIP-ITC-SGA#17	Choeng, L., Peng, C., Set, L., Doeurn, S. (2023). Determination of Histamine Level and Its Correlation with Viable Bacterial Count in Cambodian Fermented Fish. In International Society of Environmental and Rural Development. Cambodia.	Conference Proceeding
8	HEIP-ITC-SGA#17	Set, L., Peng, C., Sroy, S., Mith, H., & Yoeun, S. (2022). Microbial Loads Analysis in Ready-to-Eat Fermented Fish and Meat Collected from Producers in Battambang Province.	Conference Proceeding
9	HEIP-ITC-SGA#17	Tep, C., Heng, O., & Peng, C. (2022) Evaluation the affect of physical-chemical factors on concentration of Lactic Acid Bacteria containing on Khmer fermented Fish and Meat (Nem). 11th Scientific Days. 132-135.	Conference Proceeding
10	HEIP-ITC-SGA#17	Chhoeung, S., Doeurn, S., & Peng, C. (2023). Optimization of fish sausage processing methods based on physicochemical quality assessment and consumer acceptability. 12th Scientific Days, 95-98	Conference Proceeding
11	4C-WATER	Oeurn, S., Sorn, P., Sem, S., Eang, K.E., & Massuel, S. (2023). Hydrogeochemistry and Quality Assessment of Groundwater in Coastal Area, Sihanoukville. The 12th Scientific Day of ITC "Engineering Technology and Innovation toward the Development of Digital Economy and Society", June 08-09, 2023. Institute of Technology of Cambodia.	Conference Proceeding
12	CLID	Koy M., Doung R., Chhin R. (2023). Impact of Climate Change on Mean Sea Level Rise in Coastline of Cambodia. The 12th Scientific Day of ITC "Engineering Technology and Innovation toward the Development of Digital Economy and Society", June 08-09, 2023. Institute of Technology of Cambodia.	Conference Proceeding
13	CLID	Pao L., Chhuon K., Pen S. (2023). Low Impact Development for Storm Water Management in Khemarak Phoumin City, Koh Kong Province, Cambodia. The 12th Scientific Day of ITC "Engineering Technology and Innovation toward the Development of Digital Economy and Society", June 08-09, 2023. Institute of Technology of Cambodia.	Conference Proceeding

14	CLID	Duong, S., Song, L., Chhin, R. (2023). Performance Investigation of a Statistical Climate Downscaling Method of Precipitation over Cambodia: Case of Precipitation. . The 12th Scientific Day of ITC "Engineering Technology and Innovation toward the Development of Digital Economy and Society", June 08-09, 2023. Institute of Technology of Cambodia.	Conference Proceeding
15	CLID	Tai S., Chhuon K., Kim L. (2023). Flood Studies on Coastal Area by Integrated Low Impact Development (LID) Concept and Climate Change, Preah Sihanouk, Sihanoukville (Cambodia). The 12th Scientific Day of ITC "Engineering Technology and Innovation toward the Development of Digital Economy and Society", June 08-09, 2023. Institute of Technology of Cambodia.	Conference Proceeding

5.3.2. Toward the establishment of the Cambodian Coastal Research Center

Cambodia has enjoyed a robust and inclusive economic growth rate of around 7.7% per annum over the last two decades (World Bank 2021). Such rapid growth has substantially contributed to the acceleration of the living standard, infrastructure development, and poverty reduction from 53% in 2004 to 13.5% in 2014 and to around 10% in 2018 (GSSD 2019). Under the impact of climate change, ecosystem changes, and other environmental issues, however, retaining such a robust economic achievement will be challenging for the government for years or decades to come. Response efforts in all relevant sectors to address these issues cannot be separated from economic development and poverty alleviation, which are vital toward achieving sustainable and climate-resilient development and community livelihood improvement.

Many coastal regions around the world are commonly selected as major commercial locations in society, while the critical issue of coastal instability has been highlighted in recent years as a result of anthropogenic activities and climate change (Bidorn et al., 2021; Cao et al., 2022; Yang et al., 2022). Like other coastal regions, the Cambodian coastal area has recently experienced rapid urbanization and industrialization and is foreseen to be the second-largest economic region after the capital city of Phnom Penh. Activities related to these rapid developments in addition to climate change may have a strong impact on the coastal environment and natural resources. However, the physical environment of this coastal region is not well documented, making it impossible to anticipate potential effects. This calls for a thorough monitoring of the environmental evolution, and understanding of the processes at stake to anticipate the responses to global changes and propose innovative solutions.

This means documenting climate trends, land use and land cover changes, surface water and groundwater flows and quality, sediment transport as well as coastal hydrodynamics and hydrochemistry. The main challenges like flood prediction and risk mitigation, sustainable water resource management, coastline evolution and ecological impacts assessment could then be met. The success of this commitment will depend on the monitoring of environmental parameters using satellite imagery, permanent field observation equipment and punctual sampling and measurement campaigns. It will also require the involvement of Cambodian experts for the next decades. Innovative and effective solutions will be proposed to ensure the sustainable development of the coastal region.

In this regard, the **Ministry of Environment (MoE)** and the National Committee on Management and Development of Cambodian Coastal Areas have been working on coastal zone conservation and management. Looking at the same interest, the **Institute of Technology of Cambodia (ITC)**, the leading engineering school and scientific research institute, has carried out many scientific and

technological research project cooperation in Cambodia and gradually absorbs talented researchers to work for. In order to enhance our scientific research, which contributes directly to science-based action on sustainable and climate-resilient development in the coastal area, we need the co-creation of a **Cambodian Coastal Research Center (CCRC)** in the Cambodian coastal zone to facilitate the coastal scientific research commitment. Co-creation will depend on the interest of the Ministry of the Environment to have a sustainable impact on coastal development, including the safeguarding of the environment at sea and on land.

The CCRC will address the main identified coastal challenges through applied research, education and public policy initiatives. It will focus on climate analysis and trends, land use and land cover evolution, sea level and tidal monitoring, coastal hydrodynamics modeling, surface runoff and groundwater flow modeling and interaction with seawater and sediment transport, assessment of the use of water resources and onshore/inshore hydrochemistry analysis. To do this, the CRC will need permanent coastal monitoring stations and land with buildings including laboratory rooms, demonstration rooms and conference rooms.

➤ **Vision:**

The vision of CCRC is to become the national center of excellence for addressing environmental issues and developing expertise dedicated in scientific research on coastal management.

➤ **Mission:**

The CCRC will:

- produce and share scientific environmental knowledge on Cambodian coastal areas
- propose recommendations and solutions or tools, well accepted by the local communities, for the conservation and management of coastal and marine spaces
- raise awareness and train Cambodian experts in coastal zone science and environment monitoring, including students, governmental staff and any stakeholders
- enhance the national scientific research and collaboration between national and international institutions
- provide an experimental platform for testing innovative solutions for sustainable coastal development

➤ **Location**

The CCRC will likely to be constructed on 3 ha of land area in Ream National Park, which is connected to the coastline as shown in Figure below. There are several reasons that the CCRC campus should be placed at these proposed locations:

- The CCRC campus should be connected to the coastline with direct sea access for easily maintaining permanent monitoring stations and conducting experiments
- It should be large enough for hosting buildings, sheds and experimental areas
- This location is not a forest cover.

- Ease of access should be preserved for transportation of CCRC’s staff, students, heavy equipment and visitors.
- Comfortable and suitable for coastal experiment and measurement (training, workshop), means connected to power and water supply.

There are three proposed locations of the CCRC’s campus along the coastline of the Ream National Park which can be illustrated in Figure 9. The location of the proposed campuses is listed below:

- Location 1 (351675, 1160790)
- Location 2 (354480, 1161130)
- Location 3 (360194, 1161030)

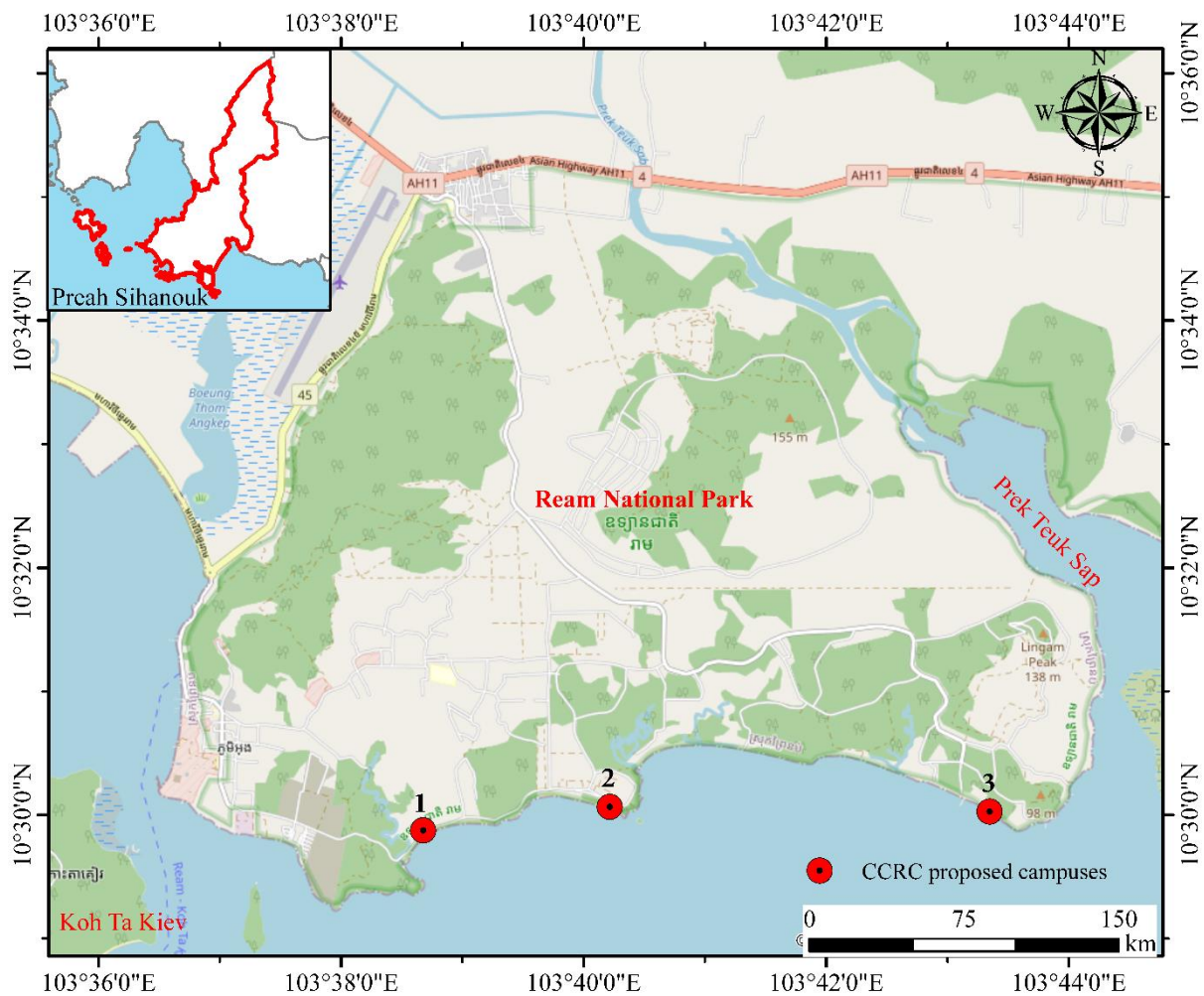


Figure 20. Locations of CCRC proposed campuses.

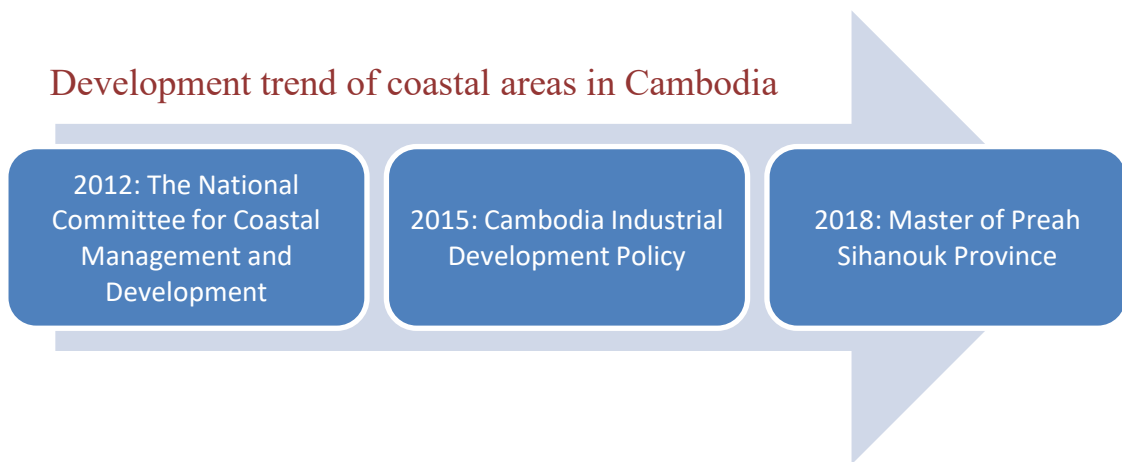


Figure 21. Development trend of coastal areas in Cambodia.

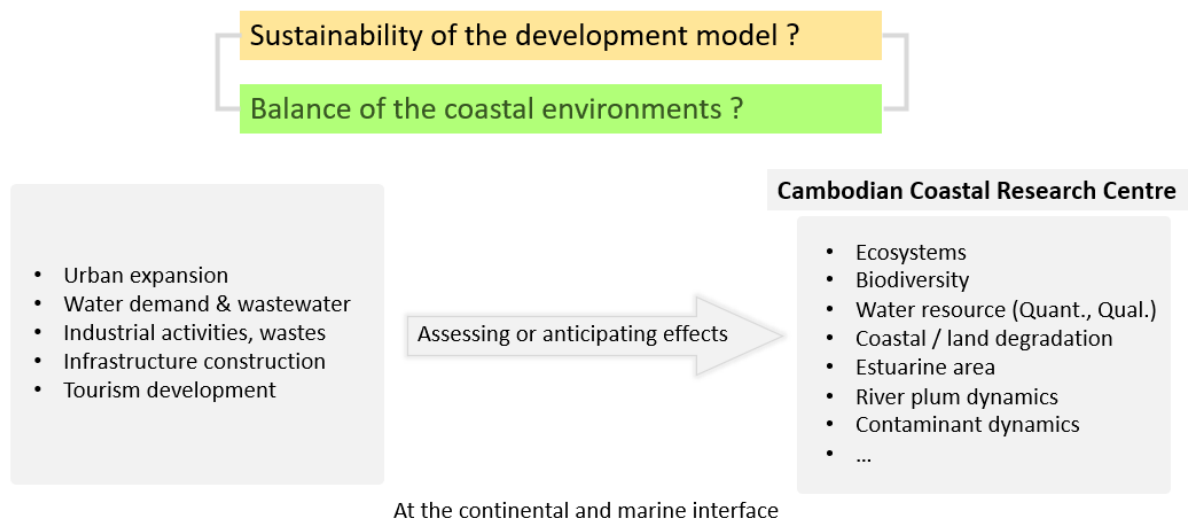


Figure 22. The need of the Cambodian Coastal Research Center.

➤ **Research component:**

Coastal environment monitoring

- Climate trends
- Physical coastal processes
- Hydrochemistry
- Land-use and land cover
- Sediment transport
- Groundwater and surface water flow

Modeling and forecasting

- Flood risk assessment and mitigation
- Surface water and groundwater interaction with seawater
- Water resource evolution
- Coastline evolution
- Anthropogenic and climate change physical and ecological impact on marine and coastal areas

➤ **Training component:**

- Academic education
- Capacity building based on experimentation
- Demonstration platform

➤ **Dissemination and collaboration component:**

- Website and social media animation for vulgarization
- Database management and data sharing
- Workshops, seminars, meetings and exhibition events

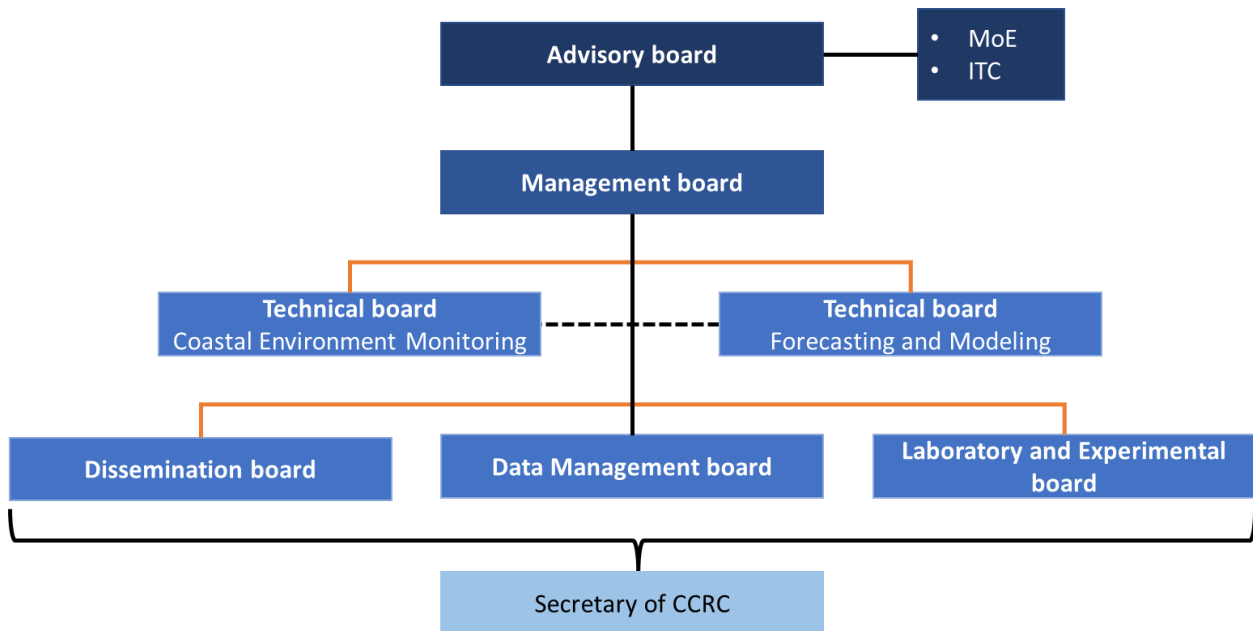


Figure 23. The possible management structure of CCRC.

➤ **Current collaborative partners**

National partners:

- Ministry of Environment (MoE)
- Ministry of Land Management, Urban Planning and Construction (MLMUPC)
- Ministry of Agriculture, Forestry, and Fisheries (MAFF)

International partners:

- Institut de Recherche pour le Développement (IRD)
- Joint International Laboratory LOTUS (LMI Lotus)
- Chulalongkorn University (CU)
- University of the Philippines Diliman (UPD)

➤ **Potential collaborative partners**

National partners:

- Ministry of Tourism (MoT)

- Ministry of Water Resources and Meteorology (MOWRAM)
- Royal University of Agriculture (RUA)
- Marine Conservation Cambodia (MCC)

International partners:

- University of Science and Technology of Hanoi (USTH)
- Global Green Growth Institute (GGGI)
- Japan International Cooperation Agency (JICA)
- World Bank (WB)

➤ **Next activity plan**

The establishment of CCRC is in the preparatory stage. More activity needs to be done to make a physical structure of CCRC. Although recognizing the physical structure of CCRC takes time, coastal environmental research activities are ongoing. We can start implementing a nonphysical structure until we find a potential fund to build a physical structure for CCRC. The nonphysical structure of CCRC would be involved in sampling/monitoring at the coastal and sample analysis at ITC.

➤ **Three Year Action Plan for the CCRC**

First year activities

- Agreement with MoE, and other partners
- Land ownership
- Establishment of CCRC's campus
- Procurement
- Installation of the laboratory (may be in ITC campus before moving to CCRC campus)
- Staff recruiting
- Inauguration ceremony

Second year activities

- Preparation of research proposal for research grant
- Data collection, measurement and management
- Dissemination (workshop, seminar, meeting, social media)
- Extension of the collaboration with government, national/international institutions and researchers, and others

Third year activities

- Coastal hydrochemistry (water quality, biodiversity conservation, and ecosystem)
- Coastal hydrodynamic Motion of the sea (waves, tides, current, storm surges), beach and nearshore physical system and coastline dynamics)
- Coastal hydrology (surface flow and groundwater flow modeling, flood risk assessment, seawater intrusion modeling, and sediment transport)
- Anthropogenic and climate change impact on coastal regions (land-use/land cover change, climate change, mangrove evolution).

5.3.3. SATREPS Project: « Establishment of Risk Management Platform for Air Pollution in Cambodia »

5.3.3.1. Introduction

Cambodia is a developing country with an economic growth of 7% of GDP over the last few years. Meantime, transportation, factory, resident, and tourist are significantly increased in South-East Asia. Social infrastructure is often inadequate in these countries, with severe environmental pollution and poor hygiene. Environmental stress, such as increased traffic, is evident, exceeding the allowable limit of the infrastructure, and deteriorating environmental pollution, and causing sanitation problems.

Various social infrastructures as an excellent water supply system have been constructed in Cambodia. Because of the rapid growth of the urban areas as the capital city of Phnom Penh, have been an increase in environmental issues such as noise, waste, and air pollution. Air pollution is a global and local issue because all the urban, industrial, and agricultural areas have air pollution from various sources such as traffic, construction, fuel combustion, agriculture residue burning, and forest fire. Because the pollutant spreads crossing borders, it is also a global issue. Airborne infection issues such as COVID-19 also suggest the importance of indoor air quality management. However, this actual situation is not being investigated at this moment.

The proposal was accepted on May 20, 2021, with a budget of 4.5 MUSD. The implementation period is expected from 1 July 2022 to 31 June 2027.

5.3.3.2. Goal and Objective of the project

Overall goal: To contribute to the creation and establishment of safe and comfortable living environment for residents and tourists from the viewpoint of air pollution, which leads to sustainable economic growth of Cambodia. The objectives of the project aim:

- To establish the structure/system to evaluate the present status and characteristics of air pollution in Cambodia
- To build the online network of monitoring sites with data management system
- To establish the structure/system to evaluate environmental risks
- To develop human resource, which is necessary for operation of the risk management platform for air pollution

5.3.3.3. Research Participants

Japanese counterparts:

- Kanazawa University
- Nagasaki University
- Osaka Ohtani University
- Partical Plus Co., Ltd.

Cambodian counterparts:

- Institute of Technology of Cambodia
- University of Health Sciences
- National University of Management

- Ministry of Environment
- Ministry of Education, Youth and Sport

5.3.3.4. Activities to be implemented

The 4 working groups are:

- Group 1: Overall management
- Group 2: Data sampling and monitoring setting up
- Group 3: Environmental risk assessment
- Group 4: Social implementation

5.3.3.5. Activities work plan for five years

1. The structure/system to evaluate the present status and characteristics of air pollution in Cambodia

- Understand status and characteristics of air pollution in Cambodia.
- Understand transboundary influences of air pollution.
- List emission sources up and prepare emission inventory.
- Visualize emission sources.
- Develop a low-cost and less-maintenance PM monitoring technology that can provide advanced information

2. Online network of monitoring sites with data management system

- Fundamental information for building the online network is surveyed and summarized.
- Preliminary test of the online monitoring network is conducted.
- The online monitoring network is built and started.
- Manage the monitoring and related environmental data.

3. The structure/system to evaluate environmental risks

- Extract macroscopic potential health risk factors
- Extract microscopic potential health risk factors.
- Examine scenarios for the mitigation of potential health risk.
- Prepare a risk data base for air pollution

4. Human resource, which is necessary for operation of the risk management platform for air pollution

- Determine the management policy of platform and roles of each participating organization.
- Propose action plans of the risk management platform of air pollution.
- Propose measures to mitigate potential health risks caused by air pollutants.
- Conduct advanced researches under the international collaboration and expand the human network between researchers over the world.

5.3.3.6. Activities in 2023-2024

➤ **Joint Workshop for SATREPS Project and Second Joint Coordination Committee Meeting (JCC)**

The collaborative workshop for the SATREPS project was effectively held on September 18, 2023, as depicted in Figure below. The event showed active participation from approximately 60 attendees, including students, researchers from ITC, partner universities, and government agencies. This workshop served as a technical session within the framework of the SATREPS Project focusing on establishing a risk management platform for air pollution. The workshop was structured with two primary objectives:

1. To provide an overview of the recent short-term training program that took place between July and August 2023 in Japan, featuring group reports from the trainees and pertinent insights shared by the trainers.
2. To facilitate the exchange of current insights from stakeholders concerning air pollution in Cambodia, encompassing statistics and policies related to PM2.5, traffic, waste management, agriculture, and associated policies.

Subsequently, the second JCC meeting was convened on September 19, 2023, at ITC, attracting distinguished guests from the Ministry of Education, Youth, and Sport (MOYES), alongside key project partners representing various institutions both in physical attendance and virtually. This JCC meeting primarily focused on monitoring and reviewing the progress of research activities over the past year while outlining plans for the upcoming year. Key highlights of the second JCC meeting included:

- Sharing project updates between the JCC and the research group.
- Introducing participating and collaborating institutions involved in the project.
- Reviewing the current status of project progress.
- Identifying and discussing any emerging issues within the project.
- Presenting an outline, progress reports, and plans for the second year of the project.
- Encouraging questions and comments from the JCC members to foster constructive dialogue and collaboration.

Overall, both the joint workshop and the JCC meeting were concluded successfully, enriching the collective understanding of the SATREPS project's objectives and progress among all stakeholders involved.



Figure 24. Poster of joint workshop on SATREPS Project.

➤ **Laboratory set up**

The laboratory for the project is on the fourth floor of building A, where it is accessible for outdoor air sampling. Currently, the room is renovated and clean for setting up all procured equipment from Japan and experimental activities have been started since April 2023.

➤ **Capacity building and training 2023-2024**

- **Capacity building training of researchers by Japan universities in Japan**

1) Training by Kanazawa University

The training of researchers from ITC and members from MoE (in total 4 researchers) by Kanazawa University (KU) was conducted on 26th July to 10th August 2023, called “SATREPS (Short-term training) Establishment of Risk Management Platform for Air Pollution”. The objective of the training is to provide technical skills training in the areas of filter preparation for sampling, weighing the Aerosol Nano Sampler (ANS) filters, calculating Particulate Matters (PMs) after weighing, and operating a carbon analyzer (Sunset). The training aims to equip members (ITC and MoE) with the ability to understand and prepare filters for sampling, follow weighing procedures including considerations for temperature and humidity, conduct weighing and calculate particulate matter mass, and understand the process of analyzing carbon using a carbon analyzer. Upon completion of the training, participants will be able to independently carry out these tasks effectively (Figure Below).

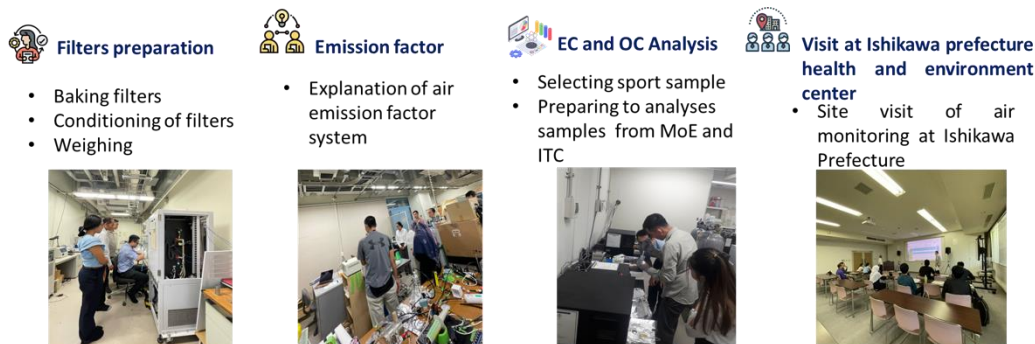


Figure 25. Activities during the laboratory training.

2) Training by Osaka Otani University

The training of researchers from ITC and members from ITC and UHS (in total 3 researchers) by Osaka Otani University was conducted on 26th July to 10th August 2023, with a purpose of training on molecular biology techniques (Polymerase Chain Reaction and 16S sequencing) to be applied in the risk assessment of bioaerosols in aquatic environment. After having trained the technique on water sampling, DNA extraction, and sequencing, the technique will be used for the analysis of bacterial community present in water samples in Phnom Penh as a suspected sources of bioaerosol posing health risk concern. The overview of activities, and experimental procedure during training was shown in Figure below from sampling to microbial DNA/RNA extraction, PCR and sequencing and microbial community analysis and data interpretation.

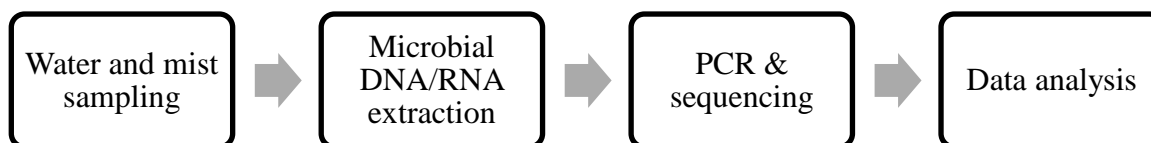


Figure 26. Overview of experimental step from sampling to microbial community analysis.



Figure 27. Water filtration during sampling (a, b); Bioaerosol sampling (c); DNA extraction (d); Nanopore sequencing (e)

3) Training by Nagasaki University

The training of researchers from ITC and members from University of Health Science (UHS) (in total 2 researchers) by Nagasaki University (NU) was conducted on 26th July to 10th August 2023, with the purpose to train on the technical skill related to:

- Sample preparation for Polyaromatic Hydrocarbons (PAHs) in Air pollution
- Upskill in chromatography techniques (HPLC-FLD) and Data analysis for sample from Air pollution

Following the training, the members (ITC and UHS) acquired the capability to comprehend and recognized the methodology, facilities, and equipment necessary for PAHs analysis. They are also proficient in preparing air samples for PAHs analysis. Furthermore, their skills in HPLC techniques and data analysis for PAHs analysis from air samples are enhanced. This training equipped them with the knowledge and expertise needed to effectively carry out PAHs analysis and contribute to the advancement of their analytical capabilities in the SATREPS project (Figure below).

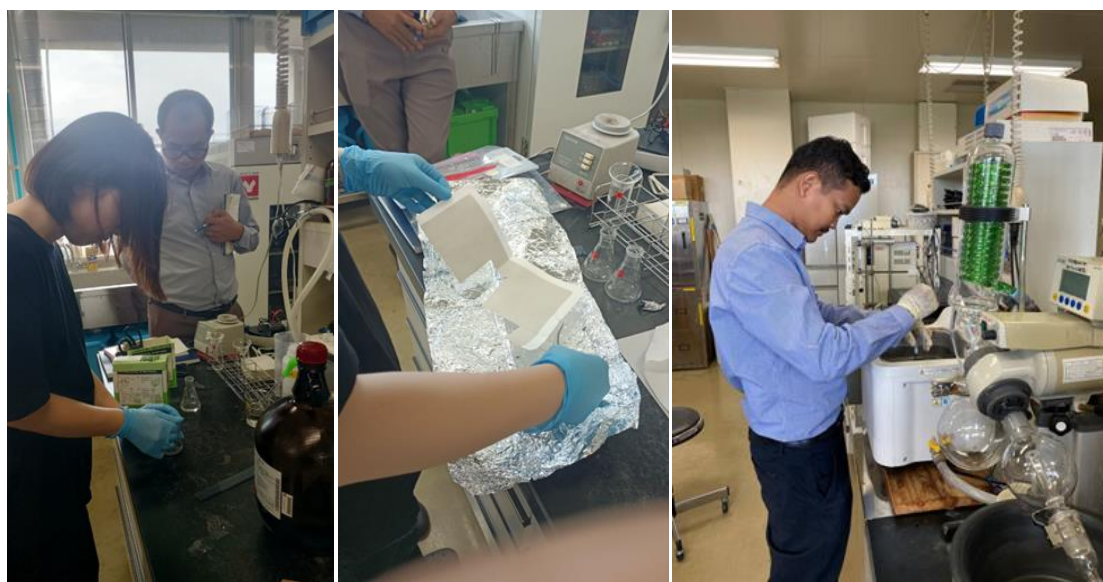


Figure 28. Activities during the training at Nagasaki University, Japan.

- **Special lecture on Introduction to Aerosol Measurement and Selected PM-measuring Techniques on 17th November 2023**

On November 17, 2023, a special lecture was delivered by Prof. Szymanski, an esteemed advisor of the SATREPS project (Figure below), at the Institute of Technology of Cambodia. Prof. Szymanski, with expertise in environmental science focusing on aerosols, air quality, and biotechnological applications, shared valuable insights ranging from air pollution fundamentals to advanced topics like aerodynamic sizing and particle detection techniques. The lecture, attended by 26 participants in person and 12 online, provided a wealth of knowledge essential for researchers and students at ITC and partner universities to enhance their skills for implementation of the SATREPS project.



Figure 29. Poster of SATREPS special lecture.



Figure 30. Photo during the lecture.

- **Monitoring and evaluation**
 - **Bi-weekly core member and monthly all-member meeting**

Core members of Cambodia and Japanese sides have been meeting every two weeks. While all member meetings have been held every month. The aim of the meeting is to discuss project activities and key challenges and seek a possible solution.

- **Activities by research group between 2023-2024**
 - **Group 1: Understanding air pollution**

Group 1 has been setting up laboratory for monitoring, sampling, chemical analysis, data management and development including education and training along with the following preliminary test and facilities installation. Some equipment has been installed and trained to key persons: Weighing facilities; Sampling facilities (PM_{2.5} sampler); Extracting facilities (for ions and WSOCs); Monitoring facilities (PM monitor).

Moreover, the team is also testing the preliminary test of monitoring and sampling in Cambodia. the expected output for this year includes:

- Preliminary test results of the particle monitoring by installed facilities will be obtained.
- Ambient particle will be sampled in ITC.

- Analysis results of particles taken in ITC will be summarized on some specific points.
- Information of emission and transboundary effect will be collected for discussion.

- **Group 2: Risk evaluation**

Group 2 members of Cambodian and Japanese sides held meeting every week to update the progress and plan for the next group activities (Figure below).

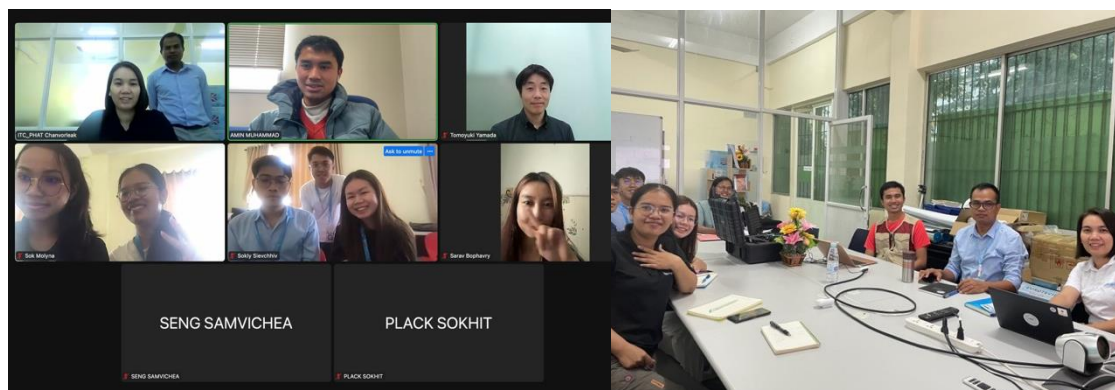


Figure 31. Group 2 weekly meeting.

- **Equipment training:** Moreover, technical equipment handling training was also conducted by Group 2 to build capacity for researchers and students at ITC to operate some equipment which are important for conducting the research activities such as: Nano partector 2, Personal sampler ATPS-20H, Personal sampler pumps, GPS watch, Centrifugal evaporator, weighting chamber.
- **Field visit to smoked fish village:** One of the scope of group 2 is related to extract macroscopic and microscopic potential health risk factors in work places and fish smoking was considered as one type of the work place. Therefore, a short visit was planned to Laver Am village to preliminarily observe the air quality and working conditions (Figure below).



Figure 32. Visit to smoke fish village to observe smoke generation from smoke fish technique.

➤ Overall management group and Group 3

Overall management group focused on overall management of all activities including organizing lecture, workshop, survey and decision making on facilities and instruments, and other relevant activities. Specifically, the current activities including conduct survey and summarize fundamental information for building the online network and conduct preliminary test of the online monitoring network.

While group 3 focused on human resource capacity building to operate the platform for air pollution in the future. Activities for Group 3 includes:

1. Determine the management policy of platform and roles of each participating organization.
2. Develop action plans of the risk management platform of air pollution.
3. Propose measures to mitigate potential health risks caused by air pollutants.
4. Conduct advanced researches under the international collaboration and expand the human network between researchers over the world.

Meanwhile, Group 3 is now focusing on realizing activity 1 to determine the management policy and responsibilities of each participating organization which is expected to be completed this year.

5.3.4. Higher Education Improvement Project

Higher Education Improvement Project (HEIP) are funded by an IDA Credit for improving the quality of higher education of Cambodia. The objective of HEIP is to improve the quality and relevance of higher education and research mainly in STEM and Agriculture at target higher education institutions, and to improve governance in the sector. The project is expected to be implemented over a 6-year period – starting in **September 2018 and ending in June 2024** with the total budget of 92.5 million USD. **Institute of Technology of Cambodia (ITC)** is funded by IDA Credit of **22.5 million USD** and by Counterpart Fund of 0.625 million USD to implement the project activities comprised of two components. Component 1: Improving Teaching and Learning Capacity - aims to enhance quality of teaching and learning capacity of targeted HEIs in the fields of STEM and agriculture (approximately US\$ 15.5 million equivalent). Three sub-components include sub-component 1.1: Improving Teaching and Learning (approximately US\$ 14.12 million equivalent), sub-component 1.2: Improving Institutional Capacity (approximately US\$ 1.38 million equivalent) and sub-component 1.4: HEIP Restructuring. **Component 2: Improving Research in STEM and Agriculture** (approximately US\$ 7.0 million equivalent) - aim to Improve the quality and relevance of Research in STEM and agriculture fields, to promote the research in the international publication, and to promote the research supporting Industrial partners and public policy making.

Under Component 2, ITC obtained 25 research projects with 7.92M USD grant (23 research projects linked with industries and 2 research projects supported policy). The research projects received the sub-grant agreement in two rounds:

- Round 1 (4.72M USD) obtained the sub-grant agreement in November 2019 till April 2020 and consists of 11 research projects linked with industry (window 1) and 1 research project supported policy (window 2), in which 3 research projects collaborated with industry led by female.

- Round 2 (3.02M USD) obtained the sub-grant agreement in February 2021 and consists of 12 research projects collaborated with industry and 1 research project supports policy (window 2), in which 5 research projects linked with industries and led by female.
- The sub-research projects granted by Royal Government of Cambodia (RGC) through the World Bank (WB) loan are displayed as Table below:

Table 14. Sub-research projects granted by Royal Government of Cambodia.

No	PI	Sex	Unit	Win.	Research title	Status of Completion
Round 1						
1	Dr. Kim Bunthern	M	MIT	1	Applied Control and Automation for Agriculture in Cambodia (ACAAC)	Completed
2	Dr. Pec Rothna	M	MIT	1	Toward Production Innovation via FabLab-ITC	Completed
3	Dr. Thoun Kosorl*	M	MIT	1	Initiative towards electrical and electronic products testing and certification by EMC Lab	Completed
4	Dr. Suong Malyna	F	FTN	1	Biotechnology for Integrated Pest Management towards pesticide reduction in Cambodia	Completed
5	Dr. Tan Reasmey*	F	FTN	1	Development of Fermentation Process of Cambodian Soy Sauce	Completed
6	Dr. Hin Raveth*	M	MSS	1	Chemical strengthening of large scale glass pieces for construction and other engineering applications	Completed
7	Dr. Vai Vannak*	M	ETM	1	Development of a virtual Cambodian power system – Towards an Innovation Micro-Grid in Cambodia	Completed
8	Dr. In Sokneang	F	FTN	1	Valorization of high-value dry food products (agricultural products including herbal and spices) and other by-products in Cambodia	Completed
9	Dr. Mith Hasika*	M	FTN	1	Improvement and development of rice-based products toward the growth of SMEs/Industries in Cambodia	Completed
10	Dr. Valy Dona	M	MIT	2	Ancient Manuscript Digitization and Indexation	Completed
11	Dr. Bun Kimngun*	M	MSS	1	Development and optimization of ceramic tile using Cambodian clays incorporating with industrial wastes	Completed
12	Dr. Yos Phanny	M	MSS	1	Cambodian Natural Rubber Composites with Different Type of Minerals Fillers for Floor Mat Shock Absorbing Applications	Completed

No	PI	Sex	Unit	Win.	Research title	Status of Completion
Round 2						
13	Dr. Or Chanmoly*	M	ETM	1	Applied geophysics for investigating hydrocarbon potential and study of depositional environment at Block VIII, Kampong-Som Basin, onshore of Cambodia	Completed
14	Dr. Eng Chandoeun*	M	ETM	1	Quality assurance of concrete pile integrity and soil properties investigation in Phnom Penh city using seismic and electrical resistivity tomography approaches	Completed
15	Dr. Bun Saret	M	WAE	1	Development of Eco-friendly and Low-cost Wastewater Treatment System as an On-site Product	Completed
16	Dr. Kret Kakda*	M	ETM	1	Investigation the production potential of the Cambodian offshore reservoir considering effects of phase behavior and rock-fluid interaction	Completed
17	Dr. Peng Chanthol*	F	FTN	1	Improvement and development of fish and meat products for better preservation using innovative technology	Completed
18	Dr. Houg Peany	F	FTN	1	Valorization of agricultural by-products in Cambodia through extractions and formulations of essential oils and bioactive compounds	Completed
19	Dr. Oeurng Chantha	M	WAE	2	Strengthening flood and drought risk management and early warning system in lower Mekong basin of Cambodia	Completed
20	Dr. Ket Pinnara*	F	WAE	1	Integrated approach of precise irrigation and sustainable Soil management to improve crop water productivity in Cambodia through ITC soil laboratory development: the focus on rice farming	Completed
21	Mr. Kong Sela*	M	FTN	1	Development of cooking oil processes for commercialization	Completed
22	Dr. Doung Piseth	M	MSS	1	Initiative on development of the wind load requirements for design of building structures in Cambodia	Completed
23	Ms. Hang Leakhena	F	WAE	1	Development of a Biofilter System Model to Control of Air Pollution toward Industrial Application	Completed
24	Dr. Song Layheang*	M	WAE	1	Development of Climate Data Information System for Cambodia	Completed
25	Dr. Heu Rina	F	WAE	1	Improving sustainable water supply and sanitation in Cambodia: case of Tonle Sap lake's floating villages	Completed

* Potential Achieved (80%)

With support of HEIP as well as the other projects, ITC are able i) to enhance the capacity of researchers in writing proposal to an acceptable standard quality; ii) to enhance research planning and management; iii) to enhance research capability in providing services to industries (research and development toward technology transfer and supply chain). Meanwhile, HEIP can increase the number of publication and the reputation of the institution, produce human resources to support social need, establish and upgrade laboratories to serve industries and SME, and develop prototypes qualified to market quality either national or international to boost economic growth.

As there are no activities in C2 of HEIP using the budget in 2024, the 25 sub-research projects in HEIP-ITC-C2 progressed with the actual expenditure of USD 6,423,616.28 (Round 1: USD 3,856,836.58 and Round 2: USD 2,566,779.70) equivalent to 81.01% of total budget. The procurement activities were completed (35/40); 5 packages plus 4 lots were deleted. Furthermore, the procurement expense is equivalent to total expenditure, 83.77%.

In accordance with the robust support mechanism and self-rating, ITC completed 12 sub-research projects (10 sub-research project linked with industries) in categories “Achieved” and 13 sub-research projects in categories “Potentially Achieved”; there is no fail sub-research projects (Table below). Furthermore, the number of sub-research project linked with industries led by female PI completed in categories “Achieved” are 5 sub-research projects whereas thereof in categories “Potentially Achieved” are 3 sub-research projects. As mentioned in the term above on the potentially achieved KPI, the activities are accomplished and waiting for the paper publication and student graduated. Therefore, the 25 sub-research projects are completed in which **23 sub-research projects linked with industries**, against 21 planned sub-research projects of Project Development Objectives (PDO), and **2 sub-research projects supported policy**. Among thereof, there are 8 sub-research projects linked with industries led by female principal investigators (PI) completed, against 5 planned sub-research projects of PDO.

Table 15. Achievement of HEIP-ITC.

Description	Achieved ⁴ (100%)	Potentially Achieved ⁵ (>80%)	Fail ⁶ (<80%)	Total
#sub-research project linked with industries (A)	10	13	0	23
#sub-research project linked with industries led by female PI	5	3	0	8
#sub-research project supported policy (B)	2	0	0	2
Total (A+B)	12	13	0	25

During the HEIP implementation, 115 researchers and academic staffs from ITC and above 60 members from partners universities and SME have been involved in the 25 sub-research projects. With such manpower along with the research governance and the existing facilities, ITC are able to achieve the planned indicators as shown in the Table below:

⁴ “Achieved” means all Key Performance Indicator (KPI) met the target as planned.

⁵ “Potential Achieved” means most KPI (80% or more) of the research objectives/KPIs but need to complete the remaining KPIs such as training/dissemination workshops, printing of booklets already in final drafts, publication of manuscripts already submitted/under review, and staff/students already enrolled but not yet graduated.

⁶ “Fail” means KPI of sub-research project be able to achieved less than 80%.

Table 16. KPI of HEIP-ITC.

KPIs	Expected	Status
# of article publications in peer-reviewed national journals*	14	20 (45)
# of article publications in peer-reviewed international journals*	39	73 (93)
# of international conference presentations (Proceeding)**	49	115 (115)
# of international conference presentations (Abstract)**	0	19 (19)
# of local conference presentations (Proceeding)**	34	87 (87)
# of local conference presentations (Abstract)**	0	30 (30)
# of products developed	0	0
# of prototypes developed	10	23
# of patents accepted/products registered	0	0
# of labs established or renovated	9	12
# of labs upgraded to ISO/national standards	0	0
# of staff graduated with master's degrees***	7	13 (16)
# of staff graduated with PhD degrees***	8	6 (18)

* Number of articles submitted in brackets and number of articles published outside brackets.

** Number of abstracts submitted in brackets and number of presentations already made outside brackets.

*** Number of enrolments in brackets and number of graduates outside brackets – studying.

****Number is used following the request of NOL for revision of student graduated.

➤ Publications

According to the Intermediate Result Indicator (IRI) of HEIP, 24 articles are expected to submit to the international peer-reviewed journals; moreover, 39 international journal articles are committed to submit. Up-to-date, **93 articles** have been submitted to the peer review international journals in which 73 articles were published. It has already achieved 388% of the end target (24 articles). **45 articles** have been submitted to peer-reviewed national journals in which 20 were published. Furthermore, there are **115 proceeding papers** presented in the international conferences and **87 proceeding papers** presented in the national conferences.

➤ Human resources

15 upgraded staff are expected to graduate within the projects: 7 Master Degree (1 Female) and 8 PhD Degree (3 Females); the upgraded staffs are co-funded from HEIP (Component 1 and Component 2) and other projects in term of research grant and/or tuition fee. By date, there are 34 enrollment of staff upgrade (16 Master Degree and 18 PhD Degree) in which **13 Master candidates graduated** (6 Female), and **6 PhD candidates graduated** (3 Females). The number of staffs graduated increase as the master and PhD candidates involve in HEIP graduated wish to work in ITC for support its vision. Furthermore, the students involved in the projects (enrollment students and staff upgrade) can support the social need in the specific fields in the number of: 22 enrolled PhD candidates (6 graduated), 74 enrolled Master candidates (60 graduated), and 226 involved engineering students graduated.

➤ **Laboratories**

9 laboratories are planned to set-up to serve their services to the industry. With the need to specific field and demand as well as project productivities with industries, 3 more laboratories are expected to establish. The **12 laboratories** are listed in Table below:


Table 17. New setup laboratories under HEIP-ITC.





No	Research Unit	New Laboratory
1	Energy Technology and Management (ETM)	1. Exploration Geophysics Laboratory 2. Smart Grid Laboratory
2	Food Technology and Nutrition (FTN)	3. Healthy Rice Laboratory 4. Drying Technology Training Center 5. Cereal-based Processing Laboratory
3	Mechatronic and Information Technology (MIT)	6. Digital Fabrication Laboratory 7. EMC Laboratory
4	Material Science and Structure (MSS)	8. Ceramic Laboratory 9. Rubber Processing Laboratory 10. Glass-Tech Laboratory
5	Water and Environment (WAE)	11. Water and Wastewater Laboratory 12. Air Pollution Laboratory





➤ **Prototypes**






10 Prototypes are planned to develop by the end of projects; with the right support mechanism and commitment of the researchers, **23 research prototypes** are currently developed that provide the fruitful results over the planned. The developed prototypes are shown in the Table below.




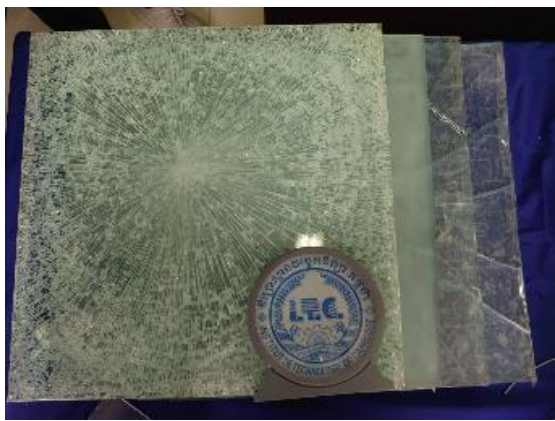
Table 18. Prototypes created under HEIP project.



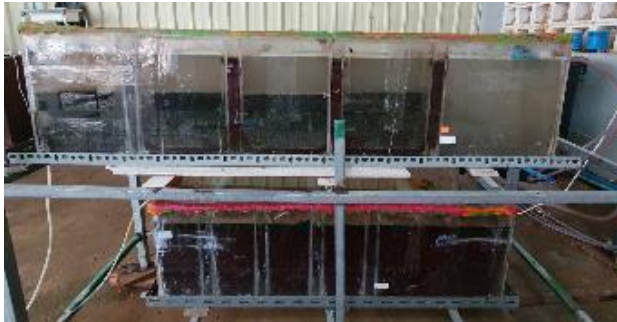

Research Unit	SGA#	Prototypes developed	Image
Food Technology and Nutrition (FTN)	SGA#05	1. Soy sauces	


Research Unit	SGA#	Prototypes developed	Image
	SGA#08	2. Seasoning spices (turmeric)	
	SGA#09	3. Grain cereals	
	SGA#09	4. Instant noodle	
	SGA#17	5. Fish nem (germinated fish roll)	

Research Unit	SGA#	Prototypes developed	Image
	SGA#17	6. Fish sausages	
	SGA#17	7. Fish cake	
	SGA#18	8. Essential oil	
	SGA#18	9. Soap	

Research Unit	SGA#	Prototypes developed	Image
	SGA#18	10. Pickled lime powder	
	SGA#18	11. Salted pepper	
	SGA#21	12. Soybean oil	
	SGA#21	13. Sachi inchi oil	
Mechatronics and Information Technology (MIT)	SGA#01	14. E-tuk tuk	

Research Unit	SGA#	Prototypes developed	Image
	SGA#01	15. Agri-robot	
	SGA#02	16. Smart irrigation device	
	SGA#02	17. Agri-parameter tester	
Materials Science and Structure (MSS)	SGA#06	18. Tempered glass	

Research Unit	SGA#	Prototypes developed	Image
	SGA#11	19. Roof tile	
	SGA#12	20. Floor mat	
Water and Environment (WAE)	SGA#15	21. Wastewater reactor	
	SGA#23	22. Bio-filter system	

Research Unit	SGA#	Prototypes developed	Image
	SGA#25	23. Bio-sand filtration	

5.3.5. Laboratory-Based Education (LBE) Project

The LBE project for strengthening engineering education and research for industrial development in Cambodia at ITC is funded by JICA. The five-year project will be completed in March 2024.

5.3.5.1. Project Goal and Purpose

Target universities enhance their education and research capabilities, which meet the needs of the industry sector in Cambodia. Institute of Technology of Cambodia (ITC) enhances its education and research capabilities as a national resource institution in the field of engineering.

5.3.5.2. Expected Outputs and Selected Projects

There are three main expected outputs as following description:

- Capabilities of ITC to implement Laboratory Based Education (LBE) are developed
- Capabilities of ITC strengthen capacities of other universities in LBE are developed
- University-Industry linkage is enhanced at ITC.

Regarding the results of the activities over the five-year period started in 20219, firstly, a total of 49 research grants were provided and currently 7 projects are ongoing. See Table below for a list of the 7 projects.

Table 19. LBE Research Project for 2019-2024.

No.	Batch	Name	Sex	Dept	Research Title
1	2023	CHHITH Saosometh	M	GIM	Experimental Identification of Hardening Behavior of G300 Steel Grade
2	2023	HEU Rina	F	WEE	Development of locally-produced ceramic pot filter for household groundwater purification in rural Cambodia

3	2023	KHON Kimsrornn	M	GEE	Optimal energy-management system in smart-building
4	2023	TY Boreborey	F	GCA	Development of monitoring and controlling of IoT-based aquaponics system using green energy (Acronym: Smart Aquaponic Project)
5	2023	PICH Bunchoeun	M	GGG	Fluid Inclusion and Geochronology of Igneous Rock at Memot Prospect, Choam Tamao Commune, Memot District, Tboung Khmum Province, Cambodia.
6	2023	SANG Davin	F	WEE	Development of Electrocoagulation-Floatation (ECF) Reactor for Removal Turbidity, Color, and Oil & Grease from Slaughterhouse Wastewater
7	2023	OR Chanmoly	M	RIC	Optimization of Algae Cultivation for Biofuel Production in Cambodia

Moreover, a total of 31 training programs/business trips were conducted, and a total of 48 faculty members from ITC and other universities visited Japan, Thailand and Malaysia for training and participation in various discussions and meetings, including PhD degree programs at the Tokyo Institute of Technology. In addition to the above, equipment worth approximately JPY 104,658,000 was procured to improve the research environment at ITC and other universities.

5.3.6. AFD/EU Projects

This project supports to Master Program of Urban Water and Sanitation Engineering and implements with the financial support of the European Union and administered by AFD. The project also supports research activity which is divided to two phases. In phase I, the 9 research projects were finished on 31st December 2021. In phase II, three new projects (Table 8) were funded to implement starting from July 2022 – June 2023. To follow up on the progress of research activity, each project must submit their monthly research progress report including the quarterly progress report regularly. Every three months, there is a meeting of the research progress workshop to keep track of the research progress and provide comments for improvement on research quality. The final progress meeting was conducted on September 6, 2023, and presented by a representative project PI and the steering committee was invited to join to evaluate the project output. 3 new research projects in the 2nd phase starting were successfully completed in June 2023. These projects help solving current social issues: water pollution, microplastics, building capacity for researcher and students (PhD, Master student, Engineering students), laboratory improvement, enhancing collaboration with industries and research partners (regional and international). From these three projects, our researchers can publish 3 internal conference proceeding, 4 local conference proceeding, and 2 papers submitted to journal (Table below). Successful conducted dissemination workshop on sharing research findings and consultation on the improvement of the Master Program of Urban Water and Sanitation Engineering on 31 May 2023.

3 research projects have been implemented in the Second Phase starting from July 2022 to June 2023 (Table below).

Table 20. AFD Research Project for 2022-2023 (Phase II).

No.	PI	Sex	Dept.	Unit	Research title
1	Dr. BUN Saret	M	GRU	WAE	Occurrence and Distribution Analysis of Microplastics in Different Environmental Mediums of Cambodia
2	Dr. HEU Rina	F	GRU	WAE	Investigation of the Effects of Algal Bloom in TSL Source Water on Water Supply Treatment Efficiency
3	Dr. TAN Reasmey	F	GCA	FTN	Removal of diclofenac and caffeine from different water sources using activated carbons made from different wastes

Table 21. List of all 3 research projects status (Phase II) with its achievement.

No.	Research Code	Research Title	Status	Comments/achievement
1	RP1	Investigating the Effects of Algae Bloom in Tonle Sap Lake source water on Water Supply Treatment Efficiency	Completed	<ul style="list-style-type: none"> • 1st Abstract preparation and submission to SEAMREEC 2023 in Philippines, Title: Assessment of the relationship between nutrient availability and Chlorophyll-a concentration in Stung Sen River, Cambodia • 2nd Abstract preparation and submission to SEAMREEC 2023 in Philippines, Title: Chlorophyll-a and its influence on environmental parameters in Tonle Sap Lake, Cambodia • Involve engineer and master students, and ITC lecturer(s) • Submitted a manuscript to ITC journal: Tropical level evaluation using nutrients and chlorophyll-a in Tonle Sap Lake and its tributary, Cambodia
2	RP2	Occurrence and distribution analysis of microplastics in different environmental mediums of Cambodia	Completed	<ul style="list-style-type: none"> • Involve engineer and master students, and ITC lecturer(s) • Conference proceeding: Microplastics in the Mekong River of Cambodia at IWASustainable Natural and Engineered Water Systems Management (SWSM) 2023 in Thailand • Conference proceeding: Analysis of Macroplastic and Microplastic Mass Concentrations in Seawater of Cambodia at the 12th Scientific Day
3	RP3	Removal of diclofenac and caffeine from different water sources using activated	Completed	<ul style="list-style-type: none"> • Involve engineer and master students, and ITC lecturer(s)

		carbons made from different wastes		<ul style="list-style-type: none"> ● Conference proceeding: Activated Carbon from Banana Peel: an Emerging Bio-based Material for Adsorption of Diclofenac at The 6th IWA International Conference on Eco-Technologies for Wastewater Treatment (ecoSTP-23), Spain ● Conference proceeding: Combination of Coagulation-Adsorption by using New Activated Carbon from Banana Peel for Diclofenac Removal in Surface Water at Bio & Chemical Engineering for Environmental Processes Conference (French-Thai Collaboration Workshop 2023), 15-16 June 2023, France. ● Conference proceeding: Production and Optimization of Activated Carbon from Coffee Waste for Caffeine Removal from Wastewater at the 12th Scientific Day
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5.4. Research Promotion and Collaboration

Creation of Research Unit

Based on the approval from the council administration 2015-2016, ITC has clustered the researchers in different units according to field of expertise and research. The researchers in each unit have been discussed and below is the way forward for each research unit.

5.4.1. Energy Technology and Management (ETM Unit)

Cambodia Context

Cambodia has sustained an impressive average annual economic growth. To ensure enduring and inclusive growth, the nation has embarked on a path to promote industrial development, aiming to foster economic diversification, bolster competitiveness, and enhance productivity. Consequently, there has been a notable surge in energy demand and consumption.

In pursuit of sustainable development, ensuring energy security holds paramount importance, necessitating the expansion of energy sector infrastructure and the development of human resources to keep pace with socio-economic progress. The Rectangular Strategy-Phase IV has underscored one of the lingering challenges in diversification and value creation in the industry and service sectors: high energy prices (electricity rates) compared to neighbouring countries.

However, the landscape is evolving. Until recently, the cost of renewable energy has witnessed a remarkable decline, particularly in solar photovoltaic and onshore wind energy technologies. Expanding the share of renewables in Cambodia's energy mix, alongside diversification and utilization of locally available resources, and the adoption of energy efficiency and conservation

measures, will be pivotal for the advancement of the energy sector in the country. In this context, innovations in the energy sector, including solar and wind energy, alongside initiatives like turning waste into warmth and energy efficiency enhancements in distribution systems through the integration of energy management systems and trading, conventional oil, gas and rare earth element exploration, present promising avenues for sustainable development and economic growth.

The Research Unit

The research unit, specializing in energy technology and energy management, boasts internationally recognized expertise in specific fields relevant to Cambodian requirements. This expertise contributes significantly to the exploration of conventional energy resources, as well as the advancement of new and renewable energy sources and energy efficiency and conservation efforts. This is achieved through extensive research, collaborations with international partners, private sectors, and pertinent government agencies, and the cultivation of skilled human resources.

The areas of research and collaboration prioritized by the unit encompass a wide range of topics, including but not limited to biomass and agricultural waste conversion for energy production, solar photovoltaic and thermal energy systems, wind energy technologies, innovative smart grid solutions, micro-grid development for remote areas, energy consumption measurement and analysis methodologies, energy management systems, simulation of large-scale energy systems, and exploration of conventional energy resources.

Vision

To be leading contributor in supporting national energy security through research and innovation, knowledge creation and technology transfer with focus on energy sources diversification, efficient use of energy and environmental friendliness.

Mission

- Producing competent human resources in energy related fields.
- Conducting researches in new and renewable energy, energy conversion and recovery, energy conservation, saving and management, and exploration of conventional energy resources to address local and regional issues.
- Closely collaborating with related Ministries, national and international partners and private sectors.
- Disseminate research findings and transfer technologies to the society

Research Themes

The multidisciplinary team addresses scientific issues in the following sectors:

- New and Renewable Energy: Biomass, Solar PV, Solar PV/T, and Wind Turbine with a focus on design and modelling of processes, fuel and emissions measurements, lab and pilot scale equipment.
- Energy Efficiency and Conservation: Heat recovery, Waste to energy, thermal systems optimization, energy consumption measurement and modelling.
- Smart grid: connexion from renewable sources and optimization of grid electricity distribution and micro-grid for remote areas.

- Energy Management: energy management system, modelling and optimization of large energy systems.
- Exploration of conventional energy resources: depositional environment and reservoir characterization, mapping of hydrothermal alteration related base metal deposits, geological mapping and investigation of hydrocarbon potential.

Projects and Research Topics

The list of projects and research topics that are implementing in ETM unit shows in the Table below. For more detail information refers to a table in Annex 16.

Table 22. Research topics in ETM unit for the academic year 2023-2024.

No.	Name of PI (FAMILY First name)	Sexe	Project/Research Topic	Funding source	Period	Collaboration scale *	Project Type*
1	Dr. Or Chanmoly	M	Applied geophysics for investigating hydrocarbon potential and depositional environment of sediments at onshore prospect, southern Cambodia	HEIP	2021-2023	I	1
2	Dr. Vai Vannak	M	Development of a Virtual Cambodian Power System-Towards an Innovation Micro-Grid in Cambodia	HEIP	2020-2024	I	2
3	Dr. Kret Kakda	M	Integration of Landsat-8, ASTER, and Sentinel-2 for mapping of mineral prospective, hydrothermal alteration and geological structures for porphyry copper and epithermal gold deposits in the north Cambodia.	JICA-LBE	2021-2023	I	2
4	Dr. Kret Kakda	M	Investigation the production potential of the Cambodian offshore reservoir considering effects of phase behavior and rock-fluid interaction	HEIP	2021-2023	I	2
5	Dr. Vai Vannak	M	Planning and Operation of Active Distribution Systems	JICA-LBE	2021-2023	N	2
6	Dr. Eng Chandoeun	M	Quality Assurance of Concrete Pile Integrity Soil Properties Investigation in Phnom Penh City using Seismic and Electrical Resistivity Tomography Approaches	HEIP	2021-2023	I	2

7	Dr. Vongchanh Kinnaeth	F	Study on impact of heat stress to human productivity and economic in Cambodia	CCCA3	2020-2023	I	1
8	Dr. Vongchanh Kinnaeth	F	Energy Manager and auditor Training Program	UNDP	Aug-20 to Nov-2023	N	2
9	Mr. Chhlonh Chhith	M	Optimal Fault Location, Isolation, and Restoration Procedure for LV Microgrids	BGF	2021-2024	I	1
10	Dr. Or Chanmoly	M	The Optimization of Algae Cultivation for Biofuel Production in Cambodia	JICA-LBE	2023-2024	N	2
11	Dr. KHON Kimsrornn	M	Optimal energy-management system in smart-building	JICA-LBE	2023-2024	N	2
12	Dr. Or Chanmoly	M	Accelerating Digital Transformation for Higher Education Institutions in Southeast Asia (DX.SEA)	Erasmus +	2023-2025	I	1

Researchers

Senior researchers (10M, 0F)

Dr. KRET Kakda, (Head of ETM Research Unit), Ph.D in Geophysics, Kyushu University, Japan
Geophysical exploration (seismic, magnetic, electrical and resistivity methods), Oil and Gas Exploration, remote sensing and GIS, economic geology.

Dr. OR Chanmoly (Director of RIC), Ph.D. in Petroleum Production Engineering, Kyushu University, Japan
Enhanced oil recovery; reservoir engineering; CO₂ sequestration; biomass to energy

Dr. CHAN Sarin (Head of Industrial and Mechanical Engineering Department), Ph.D. in Engineering, Institute of Technology Bandung, Indonesia and Keio University, Japan
Renewable energy, waste heat recovery and heat-activated cooling system

Dr. AM Sokchea, Ph.D in Energy Engineering, France
Energy Power System

Dr. BUN Long, Ph.D. in Electrical Engineering, INP Grenoble, France
Power system, renewable energy system, fault diagnosis

Dr. CHRIN Phok, Ph.D. in Electrical Engineering, Université Paul Sabatier, Toulouse, France
Renewable energy, frugal engineering, asynchronous generator

Dr. VAI Vannak, Ph.D. in Electrical Engineering, Université Grenoble Alpes, France
Power distribution system planning, Rural electrification, Optimization

Dr. KIM Bunthern, Ph.D in Electrical and Electronics Engineering, Toulouse INP, France
Control systems, Renewable energy, Robotics

Dr. ENG Chandoeun (Head of Faculty of Geo-resources and Geotechnical Engineering), Ph.D. in Geophysics, Kyushu University, Japan
Geophysical exploration, Economic geology, Oil and Gas Exploration

Dr. KHON Kinsornn (Head of Master program, ETM Research Unit), Ph.D, Power system, University of Toulouse III.
Power System, Microgrid, Optimization, Planning

Lecturer-researcher (1M, 1F)

Dr. VONGCHANH Kinnaleth, Ph.D. Institute of Technology Bandung (ITB) and Hokkaido University (HU)
Energy Efficiency, Renewable energy, Biomass energy, Drying, Heat Stress

Mr. HENG Ratha, Master degree, Institute of Technology of Cambodia
Petroleum Geology, Mineral and Petroleum Exploration, Characteristic of Mineral Deposit and Petroleum System

Fulltime-researcher (4M, 3F)

Mr. ETH Udaya, Master degree, Chulalongkorn University, Thailand
Renewable energy, Power system analysis, Energy efficiency, Rural electrification, control system

Ms. PECH Sopheap, Ph.D student, Geophysics, ITC
Petroleum geology

Mrs. SIO Sreymean, Ph.D student, Petroleum Geology, ITC
Petroleum Geology, Mineral and Petroleum Exploration, Characteristic of Mineral Deposit and Petroleum System

Mr. Heang Latin, Master degree, Institute of Technology of Cambodia
Biomass to energy, Mechanical design, Heat Stress

Mr. CHHLONH Chhith, Ph.D candidate, University Grenoble Alpes (UGA), France
Fault detection, reconfiguration, restoration, load balancing on LV system, Renewable Energy

Mr Sorn Darong, Université Grenoble Alpes (UGA), Ph.D candidate, Institut Teknologi Sepuluh November (ITS). *Distribution Management System, Renewable Energy Micro grid planning & Energy Storage, Distribution automation & Real time monitoring system*

Mrs Eng Samphors, Ph.D candidate, Université de Mons, *Distribution Management System, Renewable Energy Micro grid planning & Energy Storage, Distribution automation & Real time monitoring system*

Academic and Research Partners

Universiti Teknologi Malaysia (UTM)
University of Liège
Université Claude Bernard Lyon 1
Kyoto University (KU)
Université Grenoble Alpes (UGA)
Kyushu University
National University of Singapore (NUS)
The Hong Kong Polytechnic University (PolyU),
Kyoto University (KU)

Non-academic partners

Ministry of Mines and Energy, Cambodia
Ministry of Education, Youth and Sports, Cambodia
Ministry of Industry, Science, Technology and Innovation, Cambodia
Cambodian Climate Change Alliance
APSARA Authority
The Energy Conservation Center Japan (ECCJ)
Asean Center of Energy (ACE)
JICA
G2Elab

Industrial Partners and NGOs

Electricité du Cambodge
GERES
ORBIT P. A Co.,Ltd
Health & Environment International Trust (HEIT)
Institut Francais pour la Performance du Batiment (IFPEB)
EnergyLab
GGGI
ATS
Sevea Consulting
EnerCam Co.,Ltd
Samnang Angkor Development Co Ltd
IMECS (CAMBODIA) CO., LTD
SMEs involved in Solar Energy development
Angkor Resources Corp
Matlab Co., LTD
Renaissance Minerals (Cambodia) Limited

Publications of ETM researchers for the last 5 academic years

From 2019-2020 to 2023-2024, there are in total **128 research outputs** from ETM unit classified into three categories: Index publications, Non-index publications, and Conferences as shown in the Table below.

Table 23. Summary of number of publications in last 5 years.

Publication classification/year	2023-2024	2022-2023	2021-2022	2020-2021	2019-2020	Total
Index publications	15	5	12	10	11	53
Non-index publications	2	0	0	2	1	5
Conferences	23	37	5	4	1	70
Total	40	42	17	16	13	128

List of Index publications for academic year 2023-2024

1. Chhlonh, C., Alvarez-Herault, M. C., Vai, V., & Raison, B. (2023, October). Designing AC Low-Voltage Topologies for a Non-Electrified Area—A Case Study in Cambodia. In 2023 IEEE PES Innovative Smart Grid Technologies Europe (ISGT EUROPE) (pp. 1-6). IEEE.
2. Chhlonh, C., Alvarez-Herault, M. C., Vai, V., & Raison, B. (2023, October). Low-Voltage Microgrid Planning Strategies for an Isolated Village—A Case Study in Cambodia. In IECON 2023-49th Annual Conference of the IEEE Industrial Electronics Society (pp. 1-6). IEEE.
3. Pheak Kor, Kinnalesh Vongchanh, Latin Heang, Sarin Chan, Jackie Yang, (2023). MEASUREMENT SURVEY ON CONSTRUCTION LABOUR PRODUCTIVITY UNDER HEAT STRESS DURING THE COOL SEASON IN CAMBODIA, *Journal of emerging technologies and innovative research (JETIR)*, 10(10), e174-e180.
4. Pisal Ken, Kinnalesh Vongchanh, Sarin Chan, Latin Heang, Samoeurn Cheng, (2023). THERMAL PROPERTIES OF BIOMASS BRIQUETTES MADE FROM WASTE MATERIALS, , *Journal of emerging technologies and innovative research (JETIR)*, 10(10), e532-e538.
5. Sam Oeurn Cheng, Kinnalesh Vongchanh, Sarin Chan, Pisal Ken, Latin Heang, (2023). Experimental Study and Energy Analysis of Biomass Briquettes Produced from Dried Tree Leaves, Sawdust, Sugar Bagasse, and Rice Husk Using Fish Oil as a Binder, *Journal of emerging technologies and innovative research (JETIR)*, 10(10), e532-e538.
6. Pheakdey Choun, Viza Heang, Sarin Chan, Kinnalesh Vongchanh, (2023), Investigation of the Effectiveness of the Modeling on the Glazed Window by Energy Simulation using EnergyPlus, Case study: Phnom Penh City, Cambodia, *Journal of emerging technologies and innovative research (JETIR)*, 10(9), g114-g122.
7. Sophal Pey, Sarin Chan, Kinnalesh Vongchanh, Pheakdey Choun, (2023), Simulation of the Indirect Evaporative Cooling System using the 2-D Model Cross-flow for Cambodia's Climate Conditions, *Journal of emerging technologies and innovative research (JETIR)*, 10(10), c299-c309.
8. Phoeurng Tork, Sarin Chan, Kinnalesh Vongchanh, Pheakdey Choun, (2023) Feasibility Study on the use of rooftop solar-powered Air conditioning in Residential Building, Case study: Phnom Penh City, Cambodia, *Journal of emerging technologies and innovative research (JETIR)*, 10(10), c169-c177.
9. Mengly Morn, Kinnalesh Vongchanh, Sarin Chan, (2023) DESCRIPTIVE RESULTS OF THE PRELIMINARY DESIGN APPROACH OF THE SURVEY ON HEAT STRESS AMONG PRIMARY SCHOOL STUDENTS IN CAMBODIA, *Journal of emerging technologies and innovative research (JETIR)*, 10(10), e197-e205.
10. Kimhak Neak, Kakda Kret, Tola Sreu, Sirisokha Seang, Chanmoly Or. (2023). The Milestone of Cambodian First Oil Production in the Khmer Basin, Gulf of Thailand. *Open Journal of Yangtze Gas and Oil*. 10.4236/ojogas.2023.82003.
11. Kimhak Neak, Kakda Kret, Tola Sreu, Sirisokha Seang, Sokunthea Khoun, Chanmoly Or. (2023). Integrated Petrophysical and Petrographical Studies for Reservoir Characterization: A Case Study of the Khmer Basin in Cambodian Water, Gulf of Thailand. *International Journal of Oil, Gas and Coal Engineering*.
12. Sio, S., Or, Ch., Eng, Ch., Pech, S., Sreu, T. (2023). Review of Sedimentary Basin Evolution in Cambodia based on Tectonic Setting and Logical Information. *Berita Sedimentologi Indonesian Journal of Sedimentary Geology*, 9(2), 108-130. DOI: 10.51835/bsed.2023.49.2.403

13. Pech, S., Eng, C., Or, C., Rahim, A., Heng, R., Buth, C. and Sio, S. (2023) Depositional Environment of Sediments in Tonle Sap Sedimentary Basin, Western Part of Cambodia: Insights from Field and Geochemical Studies. *Open Journal of Geology*, 13, 651-666. doi: 10.4236/ojg.2023.137028.
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15. Eam, D., Vai, V., Chhlonh, C., & Eng, S. (2023). Planning of an LVAC Distribution System with Centralized PV and Decentralized PV Integration for a Rural Village. *Energies*, 16(16), 5995. DOI: <https://doi.org/10.3390/app11052146>

Non-index publication 2023-2024

1. K. Thieng, V. Vai, O. Eth, “A Study of Decentralized Battery Energy Storage Integration into an Optimal Grid-Connected PV System with Zero Power Injection Considerations”, *Techno-Science Research Journal*, Institute of Technology of Cambodia, Cambodia, 2023.
2. Y. Neov, K. Khon, O. Eth, “Comparative Analysis of Different Clustering Techniques in Hybrid AC/DC Microgrid”, *Techno-Science Research Journal*, Institute of Technology of Cambodia, Cambodia, 2023.

List of Conferences for academic year 2023-2024

1. Kakda Pov, Kakda Kret, Kimtho Po, Sirisokha Seang, Christophe Révillion, Thibault Catry, Renaud Hostache, Vincent Herbretreau, Vannak Ann. (2024). Land Surface Temperature and Green Health Vegetation Variability across Lithology and Land Use and Land Cover in the Chrey Bak catchment. Poster presentation in KHEOBS Day, Institute of Technology of Cambodia, Cambodia, 2024.
2. Chan Virak, Sirisokha Seang, Kakda Kret, Kotaro Yonezu, Koichiro Watanabe. (2024). Preliminary study on Petrography and Geochemistry of Basaltic rock in Ratanakiri province, Northeast Cambodia. Poster presentation in 13th Scientific day conference, Institute of Technology of Cambodia, Cambodia, 2024.
3. Jolsa Heng, Sirisokha Seang, Kakda Kret, Kotaro Yonezu, Koichiro Watanabe. (2024). The Quart veins, hydrothermal alteration, and ore mineralization of epithermal prospect, Phnom Sro Ngam, Chhouk district, Kampot province. Poster presentation in 13th Scientific day conference, Institute of Technology of Cambodia, Cambodia, 2024.
4. Yoklin Neov, Oudaya Eth, Kimsrornn Khon, “Comparative Analysis of Different Clustering Techniques in Hybrid AC/DC Microgrid”, 12th Scientific day conference, Institute of Technology of Cambodia, Cambodia, 2023.
5. Kimtheng Thieng, Vannak Vai, Oudaya Eth, Samphors Eng “Study of the Technical Impact of Battery Energy Storage on PV Hosting Capacity in LVAC Distribution System: A Case Study in Cambodia” 12th Scientific day conference, Institute of Technology of Cambodia, Cambodia, 2023.
6. Kakda Pov, Kakda Kret, Sirisokha Seang, Kotaro Yonezu, Koichiro Watanabe, Chanmoly Or. Kimhak Neak, Chanmaly Chhun, Seangleng Hoeun. (2023). Remote sensing techniques using advanced space-borne thermal emission and reflection (ASTER) and Landsat-8 in the

- detection of alterations in Preah Vihear, North Cambodia. International Symposium on Earth Science and Technology, Japan.
7. Vannak Por, Seang Sirisokha, Kakda Kret, Kimhouy Oy, Jaydee Ammugauan, 2023. Lithology, Ore Mineralization, and Hydrothermal Alteration of Canada Wall Porphyry Cu-Mo-Au at Andongmeas, Ratanakiri, Cambodia. The 12th Scientific Day Institute of Technology of Cambodia.
 8. Rorn Khanin, Seang Sirisokha, Kret Kakda, Kimhouy Oy. Lithology, 2023. Alteration Minerals, and Ore Mineralization in Memot, Tbong Khmum Province, Cambodia. The 12th Scientific Day Institute of Technology of Cambodia.
 9. Soy Makara, Sath Sithea, Muon Ratha, Seang Sirisokha, Kret Kakda, Ann Vannak, Pascal Jouquet , Rainer Zaiss, 2023. Use of historical aerial photographs for land use mapping in Stung Chrey Back catchment between 1952-1972. The 12th Scientific Day Institute of Technology of Cambodia.
 10. Pottheanaram Nhim, Sirisokha Seang, Kakda Kret, Kimhouy Oy, Jaydee Ammugauan Lithology, Ore mineralization, and Hydrothermal Alteration of Drill hole ZK_40 in Chhouk District, Kampot Province, Cambodia, 2023. The 12th Scientific Day Institute of Technology of Cambodia.
 11. Chandara Seng, Sirisokha Seang, Kakda Kret, Jolsa Heng, Yana Chhoeun, Ravey Chan, Mithona Horn, Vireak Chan, Muhammad Irman Khalif Ahmad Aminuddin, 2023. Preliminary Study on Petrography and Geochemistry of Basaltic Rock in Mondulkiri, and Ratanakiri Province, Northeast Cambodia, The 12th Scientific Day Institute of Technology of Cambodia.
 12. Kheng Rothana, Sirisokha Seang, Kakda Kret, Oy Kimhouy, Hang Bunna, Jaydee Ammugauan, Samnang Kong, 2023. Lithology, Hydrothermal Alteration, and Ore Mineralization of Area 5 in Koh Sla, Chhouk District, Kampot Province, Southern Cambodia. The 12th Scientific Day Institute of Technology of Cambodia.
 13. Kimhak Neak, Kakda Kret, Tola Sreu, Kakda Pov, Chanmoly Or, Sokunthea Khoun. (2023) Integrated Petrophysical and Petrographical Studies for Reservoir Characterization: A Case Study of the Khmer Basin in Cambodian Water, Gulf of Thailand. COORDINATING COMMITTEE FOR GEOSCIENCE PROGRAMMES IN EAST AND SOUTHEAST ASIA (CCOP), Thailand.
 14. Latin Heang, Kinnaeth Vongchanh, Pheak Kor, Sarin Chan, Yang Yang, A CASE STUDY OF HEAT STRESS AND CONSTRUCTION LABOR PRODUCTIVITY IN PHNOM PENH, CAMBODIA, Heat on Human Health Symposium 2023, 15-16 Nov 2023, Bangkok, Thailand.
 15. Kinnaeth Vongchanh, Heat stress investigation in industrial/workplace environment to prevent the productivity loses for Cambodia, 4th Asia Pacific Conference on Industrial Engineering and Operations Management in HCMC, 11-14 Sep 2023, Vietnam.
 16. Pheak Kor, Kinnaeth Vongchanh, Latin Heang, Jackie Yang Yang , Sarin Chan, Investigation on the Impact of Heat Stress on Construction Labor Productivity during the Cool Season in Cambodia, the 12 Scientific Day, 08-09 June 2023, Phnom Penh, Cambodia.
 17. Sophal Pey, Sarin Chan, Kinnaeth Vongchanh, Simulation of an indirect evaporative cooling system using the 2-D model cross flow for Cambodia's climates, the 12 Scientific Day, 08-09 June 2023, Phnom Penh, Cambodia.
 18. C. Chhlonh, M. -C. Alvarez-Herault, V. Vai and B. Raison, "Low-Voltage Microgrid Planning Strategies for an Isolated Village — A Case Study in Cambodia," IECON 2023- 49th Annual Conference of the IEEE Industrial Electronics Society, Singapore, Singapore, 2023, pp. 1-6, doi: 10.1109/IECON51785.2023.10312050.

19. Eng, S., Chou, K., Thourn, K., Vai, V., Kim, B., Thiriet, J. M., & Yahoui, H. (2023, March). "A Survey on Industrial Sector Status for Curricula Improvement Linked to Industry 4.0 in Electrical Engineering Program at ITC". In 2023 Joint International Conference on Digital Arts, Media and Technology with ECTI Northern Section Conference on Electrical, Electronics, Computer and Telecommunications Engineering (ECTI DAMT & NCON) (pp. 330-334), Phuket, Thailand, DOI: 10.1109/ECTIDAMTNCN57770.2023.10139750
20. Thourn, K., Kim, B., Eng, S., Vai, V., Chou, K., Thiriet, J. M., ... & Yahoui, H. (2023, March). "Center of Excellence for Control and Automation in the Context of ASEAN Factori 4.0 Project". In 2023 Joint International Conference on Digital Arts, Media and Technology with ECTI Northern Section Conference on Electrical, Electronics, Computer and Telecommunications Engineering (ECTI DAMT & NCON) (pp. 415-418), Phuket, Thailand, DOI: 10.1109/ECTIDAMTNCN57770.2023.10139649
21. Neov, Y., Khon, K., Eth, O., & Vai, V. Comparative Analysis of Different Clustering Techniques in Hybrid AC/DC Microgrid: Hierarchical Vs K-M, Malaysia, 2023 8th IEEE International Conference on Recent Advances and Innovations in Engineering (ICRAIE)-ICRAIE 2023.
22. Thieng, K., Eth, O., Samphors, E., Vai, V. A Study of Decentralized Battery Energy Storage Integration into an Optimal Grid-Connected PV System with Zero Power Injection Considerations, *Techno-Science Research Journal* 2023.
23. Heang, L., Vongchanh, K., Chan, S., Kor, P., & Yang, Y. (2023). Effects of Heat Stress on Cambodian Construction Productivity. The CCCA3 Knowledge Sharing Event 2023.

5.4.2. Food Technology and Nutrition (FTN Unit)

Cambodian Context

Although Cambodia is still mainly a rural country with 58% of the population being farmers, the processing of agricultural products is generally family-based or within informal industrial structures, with a low added value and a low level of technology, thus limiting their ability to compete in international markets. Only 10% of the industrial workers are in the food-beverage sector, a great majority (97%) of them working in micro-enterprises with no foreign investment. Besides the need of training technicians and engineers with a focus on agricultural products transformation and quality control, research centres with high level faculty staff are needed to do research on food processes, develop original and innovative products adapted to Cambodian tastes and habits (dry or fermented products), and assist the growing industrial sector in the quality and safety assessment of the food chain.

The Research Unit

The research unit Food Technology and Nutrition is established to enhance the development of food and beverage industries in Cambodia through cost-effective collaborative research and innovation programs between a diverse range of economic partners and the researchers of the Institute of Technology of Cambodia. The Research Unit promotes technical platforms and research projects to support the sectors of food and feed processing, food storage and preservation, and innovative products from agriculture and forestry. Other aspects as product design, cost-effectiveness, waste and by-products minimization, energy consumption reduction or valorisation of Cambodian biodiversity are also studied in the Research Unit. The main goal of this unit is to become a reliable center for research, training and consultancy services in food processing improvement, food fermentation, food product development and innovation, value addition of

agricultural products, food nutrition, food safety, food quality analyses and food preservation in order to sustain the development of Cambodia.

Vision

To be an excellent unit for research, innovation, training and consultancy services in the field of food science and technology contributing to sustainable development of Cambodia.

Mission

- To increase the visibility of FTN research unit by strengthening researchers' capacity in food related fields to be nationally and regionally recognized
- To create standardized laboratories for research and hall technology for pilot scale
- To boost the research activities through local and international collaborations (Universities, Government, SMEs, NGOs)
- To promote prototyping and technology transfer; and to provide training and consultancy services to food industries and relevant stakeholders
- To disseminate scientific outputs through national and international publications and scientific events

Research Theme

1. Drying technology
2. Biotechnology (fermentation, microbiology, plant)
3. Extrusion technology
4. Extraction and purification technology
5. Beverage technology
6. Food product development and innovation
7. Food safety and shelf-life improvement
8. Food composition and food contaminant analysis

Projects and Research Topics

The list of projects and research topics that are implementing in FTN unit as shown in the table below. For more detail information refers to a table in Annex 17.

Table 24. Research topics in FTN unit for the academic year 2023-2024.

No.	Name of PI (FAMILY First name)	Sex	Project/Research Topic	Funding source	Period	Collaboration scale * N = National R = Regional I = International	Project Type* 1= Basic 2 = Applied & Development 3 = Start-up 4 = Tech-transfer
1	Dr. SUONG Malyna	F	Biotechnology for Integrated Pest Management towards pesticide reduction in Cambodia	HEIP	2019-2023	I	2

2	Dr. IN Sokneang	F	Valorization of high-value dry food products (agricultural products including herbal and spices) and other by-products in Cambodia	HEIP	2019-2023	I	2
3	Dr. MITH Hasika	M	Improvement and development of rice-based products toward the growth of SMEs/Industries in Cambodia	HEIP	2019-2023	I	2
4	Dr. TAN Reasmey	F	Development of Cambodian Soy Sauce by Fermentation Method	HEIP	2019-2023	I	2
5	M. KONG Sela	M	Development of Cooking Oil Processes for Commercialization	HEIP	2021-2023	I	2
6	Dr. PENG Chanthol	F	Improvement and development of fish and meat products for better preservation using innovative technology	HEIP	2021-2023	I	2
7	Dr. HOUNG Peany	F	Valorization of agricultural by-products in Cambodia through extractions and formulations of essential oils and bioactive compounds	HEIP	2021-2023	I	2
8	Dr. HOUNG Peany	F	Agroecology and Safe Food System Transitions (ASSET)	EU/AFD and GRET	2020-2025	I	2
9	Dr. PENG Chanthol	F	Reducing Foodborne Pathogen Contamination of Vegetables in Cambodia: Innovative Research, Targeted Interventions, and Impactful, Cambodian-Led Engagement	USAID	2020-2024	I	2
10	Dr. YOEU Sereyvath	M	ASEAN Network for Green Entrepreneurship and Leadership/ ANGEL	Erasmus+	2021-2024	I	2
11	Ms. CHIN Lyda	F	Impact of initial composition and processing techniques on aromatic quality of mango	BGF & MoEYS, Tonle sap project	2021-2024	I	2
12	Dr. MITH Hasika	M	Development of high nutritional value farmed fish and safe processed products (smoked and fermented fish) in Cambodia	ARES	2022-2027	I	2
13	Dr. SUONG Malyna	F	HEALTH OF PLANTS IN THEIR SOCIO-ECOLOGICAL ECOSYSTEM (Plant Health)	GDA (MAFF)	2022-2024	I	2

14	Dr. SUONG Malyna	F	Deciphering the function of the plant parasitic nematode microbiome in suppressive soils (DEPPAS)	Agropolis Fondation	2022-2024	I	2
15	Dr. IN Sokneang	F	Improving fresh-water fish powder production for versatile use in Cambodian diets	CAPFish-UNIDO-EU	2023-2024	N	2
16	Dr. HOUNG Peany	F	Improvement of Dried Fish Quality through Drying Technology Development	CAPFish-UNIDO-EU	2023-2024	N	2
17	Ms. NET Marinh	F	Development of Instant Fish Soups for Commercialization	CAPFish-UNIDO-EU	2023-2024	N	2
18	Dr. EK Pichmony	F	Development of nutrient-dense waffle rolls for children by incorporating Cambodian freshwater fish powder	CAPFish-UNIDO-EU	2023-2024	N	2
19	Dr. MORM Elen	F	Shelf life improvement and development of fish Jerky products	CAPFish-UNIDO-EU	2023-2024	N	2
20	Dr. YOEU Sereyvath	M	Production of Organic-mineral Fertilizers from Local Raw Materials	MoEYS	2023-2024	N	2
21	Mrs. SIENG Sreyvich	F	Assessment of air quality and impact in potential areas in Cambodia	JICA/JST	2023-2026	R	1
22	Dr. TAN Reasmey	F	Development of oyster sauce from Cambodian oysters and green mussels for commercialization	CAPFish-UNIDO-EU	2023-2024	N	2
23	Dr. MITH Hasika	M	Health risk assessment and quality improvement of Cambodian smoked fish	CAPFish-UNIDO-EU	2023-2024	N	2
24	Dr. IN Sokneang	F	Improvement on quality, safety, and shelf-life (including packaging) of fermented Pangasius fish for accessing to new markets	CAPFish-UNIDO-EU	2023-2024	N	2
25	Dr. PENG Chanthol	F	Feasibility study of Siem Reap's Prahok toward Geographical Indication: History, technology, and quality	CAPFish-UNIDO-EU	2023-2024	N	2
26	Dr. IN Sokneang	F	Study on the effect of steam conditions (temperature, time, and green mussel size) on the organoleptic quality and safety quality of green mussels	CAPFish-UNIDO-EU	2023-2024	N	2
27	Dr. SUONG Malyna	F	Laboratory of Excellence in co-engineering for Sustainable Agrosystems	IRD	2024-2028	I	2

28	Dr. SUONG Malyna	F	Promoting integrated pest management and sustainability of the fragrant rice quality in Cambodia by valorization of native microbiota	Ministry of Europe and Foreign Affairs (via The Embassy of France)	2024-2026	I	2
29	Dr. SUONG Malyna	F	Soil-borne legacy and microbiota-mediated disease resistance in rice-based systems in Cambodia	Agropolis Fondation	2024	I	2
30	Dr. SUONG Malyna	F	Training in the use of molecular tools for diagnosis of rice diseases to support the transition towards integrated pest management	IRD	2024-2026	I	2

Researchers

Senior researcher (0M, 10F)

Dr. PHAT Chanvorleak (Head of FTN Research Unit), Ph.D in Food Chemistry, Chung-Ang University, Anseong, South Korea

Food chemistry, Food Contaminant Analysis, Agrochemical Analysis, Mycotoxin Analysis

Dr. TAN Reasmeay (Deputy Director of RIC), Ph.D in Bioengineering, Tokyo Institute of Technology, Japan

Food Biotechnology (Vegetable and cereal fermentation), Food Product Development and Innovation, Food and Water Microbiology, Anaerobic Digestion

Dr. IN Sokneang (Dean of Faculty of Chemical and Food Engineering), Ph.D in Science and Processes of Food and Bio-products, AgroParisTech, Paris, France

Food Safety and Risk Assessment, Nutrition, Food Processing

Dr. HOR Sivmey (Vice-Dean of Faculty of Chemical and Food Engineering), Ph.D in Biochemical and Physicochemical of Food, SupAgro Montpellier, France

Post-harvest Quality, Transformation of Tropical Fruits

Dr. HOUNG Peany, Ph.D in Chemical Science and Engineering, Tokyo Institute of Technology, Japan

Chemical Engineering

Dr. EK Pickmony, Ph.D. in Food Science, Washington State University, USA

Food Analysis, Cereal Science, Extrusion, Food ingredients, Food Quality, Starch, Biopolymers, Carbohydrates, Plant Proteins

Dr. SROY Sengly, Ph.D in Nutrition and Food Science, Montpellier SupAgro University, France

Food Nutrition, Food Processing and Food Development

Dr. MORM Elen, Ph.D in Chemical Engineering (Transfer, Interfaces and Processing), Free University of Brussels, Belgium

Drying of Agricultural Crops and Herbal, Bioethanol

Dr. PHUONG Heangsim, PhD in Processing Engineering, University of Nantes, France
Enzymes, Enzyme Activity, Biomass, Sugar, Proteins, Carbohydrate Biochemistry

Ms. YIN Molika, Ph.D in Food Science and Nutrition, Institute Agro/SupAgro Montpellier, France
Food Product Development and Sensory Evaluation

Lecturer-Researcher (3M, 3F)

Dr. MITH Hasika, Ph.D in Food Science, Université de Liège, Belgium.
Plant's Essential Oils/Extracts, Antimicrobials, Antioxidants, Food Microbiology, Food Preservation and Processing, Agro-Food Industry Management

Dr. YOEUN Sereyvath, Ph.D in Science, Chonnam National University, South Korea
Biotechnology, Organic Compounds Analysis (Pesticides and others)

Dr. SUONG Malyna, Ph.D in Bioengineering, University of Montpellier, France
Plant Biodiversity, Microbiology, Genetic Engineering

Ms. NAT Yukleav, Master in Chemical Engineering, Sirindhorn International Institute of Technology, Thammasat University, Thailand
Chemical Engineering

Mr. HENG Oudam, Master of Biotechnology, Royal Melbourne Institute of Technology (RMIT) University, Australia
Genetics and proteomic technology, Next generation sequencing

Ms. THENG Sokuntheary, Master of Sciences in Microbiology, Montana State University, Bozeman, MT, USA
Bacterial cell culture, Protein purification, Cloning, Data analysis

Full-time researchers (3M, 7F)

Ms. CHIN Lyda, Master in Agro-Industrial Product Development, Kasetsart University, Thailand
Food processing, Food product development

Mrs. THANH Channmuny, Master in Health and Food Science, University of Montpellier, France
Food science, Food microorganism

Ms. PHAL Sivchheng, Master in Environment Design, Kanazawa University, Japan
Environmental Design

Mr. LY Luka, Master in Agro-Industrial, Institute of technology of Cambodia, Cambodia
Food processing, Quality control

Mr. SAY Manith, Master of Science in Food Technology, Khon Kaen University, Thailand
Snacks production, Frying process

Ms. OEUM Kakada, Master of Science in Basic Science, Chungnam National University, South Korea
Cell Biology, Microbiology, Cancer Biology, Cell cycle, Immunology, and Entomology

Ms. MAO Socheata, Master in AgroFood Chain, UMR LEREPS/ENSFEA, France
Volatile compound analysis

Mrs. MOM Vattana, Master in Food Science, Kasetsart University, Thailand
Food processing, Food product development

Mr. LAY Sovannmony, Master in Chemical Engineering, De la Salle University, Philippines

Extraction

Ms. SIENG Sreyvich, Master in Chemical Engineering, Gadjah Mada University, Indonesia
Chemical Engineering

Academic and Research Partners

Tokyo Institute of Technology, Japan
Yamagata University, Japan
Université de Liège, Belgium
Université de Bruxelles, Belgium
SupAgro-Montpellier, France
AgroSup-Dijon, France
Polytech Lille, France
Institut National Polytechnique de Toulouse (INP Toulouse), France
French Agricultural Research Centre for International Development (CIRAD), France
Institut de recherche pour le développement (IRD), France
Aix-Marseille Université, France
Université Claude Bernard Lyon 1, France
Kasetsart University, Thailand
Hanoi University of Science and Technology (HUST), Vietnam
Chung-Ang University, South Korea
Chonnam National University, South Korea

Non-academic partners

Ministry of Education, Youth and Sports, Cambodia
Ministry of Industry and Handicraft, Cambodia
Ministry of Commerce, Cambodia
General Secretariat of the National Science and Technology Council, Ministry of Planning
National Productivity Centre of Cambodia (NPCC), Cambodia
Ministry of Environment, Cambodia
Tonle Sap Authority, Cambodia
Department of Agro-industry, Ministry of Agriculture, Forestry and Fisheries, Cambodia
Ministry of Rural Development, Cambodia

Industrial Partners and NGOs

LyLy Company Co. Ltd
Cambodia Brewery Limited
Baca-Villa Productions Co Ltd
Cambodia Beverages Company
Mee Chiet
Eche Ngov Heng Food Production of Kampot Co., Ltd
Kang Sosedo Enterprise
Phnom Penh Safe Food
Healthy Food Enterprise
Dara Food Enterprise
DKSH
Indochina Rice Mill Limited
Food Enterprise
Confirel
Golden Silk
Rosmeric Paper

Chaktomuk Pest Services Co., Ltd (Orkin Cambodia)
 Ringacam
 Khmer Fresh Milk Co., Ltd
 Bodia Spa
 Aprati Foods (Cambodia) Ltd

Publications of FTN researchers for the last 5 academic years

For the last 5 academic years, there are in total 171 research outputs from FTN unit classified into three categories: Index publications, Non-index publications, and Conferences as shown in the Table below.

Table 25. Summary of number of publications in last 5 years.

Publication classification/year	2023-2024	2022-2023	2021-2022	2020-2021	2019-2020	Total
Index publications	15	14	8	7	6	50
Non-index publications	4	6	7	14	1	32
Conferences	41	16	11	14	7	89
Total	60	36	26	35	14	171

List of Index publications for academic year 2023-2024

1. Thanh, C., Mith, H., Peng, C., Servent, A., Poss, C., Laillou, A., Phal, S., & Avallone, S. (2024). Assessment of the nutritional profiles and potentially toxic elements of wild and farmed freshwater fish in Cambodia. *Journal of Food Composition and Analysis*, 106357.
2. Lay, S., & Houg, P. (2024). Maximizing Yield of Phenolic Compounds Extracted from White Turmeric Through Extraction Process Design. In *Journal of Physics: Conference Series* (Vol. 2671, No. 1, p. 012018). IOP Publishing.
3. Say, M., Heng, P., Kong, S., & Tan, C. P. (2024). Sivchheng Phal, Yukleav Nat, Reasmey Tan. Characterization of Physicochemical Properties of Cooking Oils Sold in Phnom Penh, Cambodia. *Journal of Food Science and Nutrition Research*, 7, 28-36.
4. Rodriguez, C., Mith, H., Taminiau, B., Korsak, N., Garcia-Fuentes, E., & Daube, G. (2023). Microbial Food Safety Assessment of Organic Food and Feed: Notifications in the EU RASFF during 2020–2022. A Systematic Review. *Transboundary and Emerging Diseases*, 2023.
5. Kong, S., Keang, T., Bunthan, M., Say, M., Nat, Y., Tan, C. P., & Tan, R. (2023). Hydraulic Cold-Pressed Extraction of Sacha Inchi Seeds: Oil Yield and Its Physicochemical Properties. *ChemEngineering*, 7(4), 69.
6. Say, M., Kong, S., Nat, Y., Tan, C. P., & Tan, R. (2023). Oil extraction through hydraulic pressing from Cambodian soybean seeds and analysis of its physicochemical quality. *Journal of Food Technology*, 10(4), 93-102.
7. Mich, M., Kong, S., Say, M., Nat, Y., Tan, C. P., & Tan, R. (2023). Optimization of solvent extraction conditions of Cambodian soybean oil using response surface methodology. *Journal of Food Technology Research*, 10(1), 1-10.
8. Uon, K., Sorn, S., Stéphane, B., & Suong, M. (2023, November). The Effects of Soil Microbiomes on Preventing Nematode Damage to Rice Plants. In *Biology and Life Sciences Forum* (Vol. 27, No. 1, p. 49). MDPI.

9. Lay, S., Sen, S., & Houg, P. (2023). Assessment of Bioactive Compounds in Red Peppercorns (*Piper nigrum* L.) for the Development of Red Peppercorns Powder. *ChemEngineering*, 7(5), 83.
10. Chrun, R., Mith, H., Meng, S., Long, S., Born, P., & Inatsu, Y. (2023). Assessing Prevalence and Antibiotic Resistance of *Escherichia coli* and Other Enterobacteriaceae Isolated from Cambodian Fermented Fish and Vegetables. *Japan Agricultural Research Quarterly: JARQ*, 57(4), 311-320.
11. Nguyen, H. T., Vang, S., Phan, N. T., Czernic, P., Trinh, P. Q., Ha, C. V., ... & Bellafiore, S. (2023). Identification and characterization of a virulent population of *Meloidogyne graminicola*. *Australasian Plant Pathology*, 1-15.
12. Ly, L., Te, C., Chanto, M. T., & Tan, R. (2023). Impact of Different Raw Materials on Changes in Volatile Compounds during Moromi Fermentation. In *Biology and Life Sciences Forum* (Vol. 26, No. 1, p. 103). MDPI.
13. Bunthan, M. ., Say, M. ., Kong, S. ., Nat, Y. ., Tan, C. P. ., & Tan, R. (2023). Oil extraction through hydraulic pressing from Cambodian soybean seeds and analysis of its physicochemical quality. *Journal of Food Technology Research*, 10(4), 93–102. <https://doi.org/10.18488/jftr.v10i4.3545>
14. Choeng, L., Peng, C., Set, L., & Doeurn, S. (2023). Determination of Histamine Level and Its Correlation with Viable Bacterial Count in Cambodian Fermented Fish. *International Journal of Environmental and Rural Development*, 14(1), 52-58.
15. Chor, L., Sroy, S., Peng, C., Doeurn, S. (2023). Process Optimization and Quality Assessment of Nem, a Traditional Cambodian Lactic Acid Fermented Fish Product. *Journal of Food Science and Nutrition Research*, 6 (4)

List of Non-index publications for academic year 2023-2024

1. Peng, C., Choeng, L., Yoeun, S., Doeurn, S (2023). Evaluation of Histamine Content in Lactic Fermented Fish Product, Nem, by Enzymatic Test Kit. *STI Focus: Science, Technology and Innovation*, 2 (2), 27-31
2. S. Som, M. Buthan, S. Kong, Y. Nat, R. Tan (2023). Oil extraction from soybean seeds through hydraulic pressing and valorization of its by-product. *STI Focus: Science, Technology and Innovation*, 2 (2), 04-17
3. P. Yong, S. Soem, V. Mom, S. Theng, H. Mith (2023). Characterization of physicochemical properties and microbiological quality of Khmer Rice Vermicelli (*Num Banhchok*) collected in Phnom Penh Capital, Cambodia. *Techno-Science Research Journal* Vol 11, 66-73
4. S. Khut, O. Heng, C. Peng, D. Caruso. Preliminary study on physicochemical quality and antibiotic-resistant *E. coli* and *Aeromonas* spp. in aquaculture of *Pangasius* in Kampong Thom Province. *Techno-Science Research Journal* Vol 11, 46-52

List of conferences for academic year 2023-2024

1. Koemsros Khun, Seanghai Hoeun, Chanleak Lor, Chivorn Heng, Somprathna Y, Sokneang In. Quality Change of Koh Kong Green Mussels (*Perna viridis*) at Different Cooking Times. The 13th Scientific day Day jointly held with International Symposium on Water Supply and

- Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
2. Sokea Sien, Seanghai Hoeun, ChanLeak Lor, Sokneang In. The Study on Storage Stability of the Dried Fish Powder (Trey Riel). The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
 3. Koalyaney Souk, Chanleak Lor, Seanghai Hoeun, Sokneang In. Observe the effect of blanching durations and drying temperatures on the color and physicochemical properties of dried fish (Trey Riel). The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
 4. Eneang Ourn, Sothyra Khor, Chanchao Chem, Seyha Doeurn, Chanthol Peng. Effect of Nisin and Potassium Sorbate for Preserving Fermented Fish Products (Nem Trey) Stored at 4°C. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
 5. Vannet Roschhuk, Malyna Suong, Leanghok Bun, Sereyvath Yoeun, Chanvorleak Phat, Sreyvich Sieng, Kimsrong Uon, Sonsomony Srey. Assessment of Pesticide Contaminants in Vegetables from Cooperative Farms in Kampong Chhnang and Battambang Provinces. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
 6. Vattana Mom, Sovannmony Lay, Caroline Douny, Chanvorleak Phat, Marie-Louise Scippo, Hasika Mith. Observation on Smoked Fish Processing and Assessment of Polycyclic Aromatic Hydrocarbon Contaminants in Kampong Chhnang province. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
 7. Leanghok Bun, Malyna Suong, Vannet Chhuk Ros, Sereyvath Yoeun, Chanvorleak Phat, Sreyvich Sieng, Kimsrong Uon, Somony Son Srey. Assessment of Pesticide Contaminants in Leafy Vegetables from Different Markets in Phnom Penh. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
 8. Malis Hun, Manit Say, Monoreach Phang, Yukleav Nat. Extraction Sesame Seed Oil through Screw Press Technique. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
 9. Puthvimean Chhan, Mich Monika, Theng Koemlang, Nat Yukleav. Effect of Brine Solution Period on Refined Salt Quality Using Hydro-Extraction Technique. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.

10. Romney Kea, Pichmony Ek, Sengly Sroy. Development of Wafer Rolls with a High Content of Striped Snakehead Fish Powder. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
11. Pov Chamreoun, Pichmony Ek, Peany Houng. Comparison of drying rates and quality of dried fish (Giant snake head and Snake head fish) using different drying technologies. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
12. Kimhouy Nou, Vattana Mom, Caroline Douny, Chanvorleak Phat, Sereyvath Yoeun, Sovannmony Lay, Marie Louise Scippo, Hasika Mith. Assessment of Polycyclic Aromatic Hydrocarbons (PAHs) Contamination in Smoked Fish Collected from Orussey Market in Phnom Penh. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
13. Ester Chan, Viryanith Chan, Marinich Net Sela Kong, Monika Mich, Manit Say, Anil Kumar Anal, Reasmey Tan. Studying of Three Different Forms and Drying Times on Fish for Making Instant Fish Soup. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
14. Seavmey Svay, Marinich Net, Sela Kong, Monika Mich, Manit Say, Anil Kumar Anal, Reasmey Tan. Development and Quality Analysis of Instant Fish Broheu Soup Formulated from Khmer Traditional Recipe. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
15. Monoreach Phang, Yukleav Nat, Malis Hun, Manit Say. Effect of Screw Press Speed on Peanuts Oil Extraction. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
16. Pesey Ourk, Marinich Net, Sela Kong, Monika Mich, Manit Say, Anil Kumar Anal, Reasmey Tan. Development of Instant Khor Trey (Instant Caramelized Snakehead) Formulated from Khmer Traditional Recipe. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
17. Lyda Yuok, Reasmey Tan, Luka Ly, Monychot Tepy Chanto, Parakulsuksatid Pramuk. Preliminary Study of Physicochemical Characteristics of Black Soy Sauce by Fermentation. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
18. Sovannvotey Meakh, Malyna Suong, Pisei Peuv, Sereyvath Yoeun, Chanvorleak Phat, Sreyvich Sieng, Kimsrong Uon. Application of neem (*Azadirachta indica*) leaves crude extract as biopesticide against Golden Apple Snails (*Pomacea canaliculate*). The 13th Scientific day

- Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
19. Pisei Peuv, Malyna Suong, Sovannvotey Meakh, Sereyvath Yoeun, Chanvorleak Phat, Sreyvich Sieng, Kimsrong Uon. Application of Bandol Pech (*Tinospora crispa*) Stem Extract as Biopesticide Against Golden Apple Snail (*Pomacea canaliculata*). The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
 20. Sakonyvynich Kiv, Sengly Sroy, Pichmony Ek. Enhancement of nutritional quality and shelf life of dried fish powder made from Thai river sprat fish (*Clupeoides borneensis*) and striped snakehead fish (*Channa striata*). The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
 21. Seanghai Hoeun, Mouysean Khit, Sunhong Then, Sokhouy Chhorng, Sokneang In. The Study on Fermented Pangasius Fish Processing. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
 22. Monyneath Bunthan, Marinich Net, Manit Say, Vanna Chan, Nattapol Tangsuphoom, Reasmey Tan. Market Survey and Online Survey of Commercial Oyster Sauces Sold in Cambodia. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
 23. Sreylin Sea, Davin Sang, Sivchheng Phal, Sopanha Sim, Mouylen Pey, Chanpheng Say, Reasmey Tan. Comparative Study of Activated Carbon Made from Fresh and Dried Cassava Peels for Diclofenac Removal. The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
 24. Sovannmony Lay, Hasika Mith, Vattana Mom, Marie-Louise Scippo, Caroline Douny, Chanvorleak Phat. Proximate Compositions of Farmed and Wild Channa spp. (*Channa striata* and *Channa micropeltes*). The 13th Scientific day Day jointly held with International Symposium on Water Supply and Sanitation and The 1st Symposium of Food Technology Research and Innovation, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 6-7 June 2024.
 25. K. Oeum, M. Suong, L. Moulin. Exploration and exploitation of rice microbiome as sustainable agriculture in Cambodia. Transitioning Towards Agroecology and Regenerative Agriculture: A Contribution to Food Systems Transformation (TARASA23), 24 - 27 OCTOBER 2023, Borei Angkor Resort & Spa, SIEM REAP, CAMBODIA.
 26. M. Barbier, C. Perrollaz, J. Aribi, K. Uon, M. Suong, S. Bellafiore. Identification of suppressive soils against the plant-parasitic nematode, *Meloidogyne graminicola*: an alternative to the use of pesticides. Transitioning Towards Agroecology and Regenerative Agriculture: A Contribution to Food Systems Transformation (TARASA23), 24 - 27 OCTOBER 2023, Borei Angkor Resort & Spa, SIEM REAP, CAMBODIA.

27. K. Oeum, M. Suong, L. Moulin. Exploring and exploiting the rice-associated microbiome for Sustainable Rice Farming in Cambodia. 16th plant bacteria meeting, Aussois, March 20 - 24, 2023.
28. S. Curet, S. Nget, Boug, M. Eshiett, L. Boillereaux. Modelling bacteria inactivation during the steaming process: application to Cambodian pate pasteurization. Internation Congress on Engineering and Food (ICEF 14), Nantes, France, 20-23 June 2023.
29. S. Nget, H. Mith, S. Curet, Boillereaux, L. Improvement of Microwave Heating Uniformity by Moving Sliding Short Circuit: Application to 915 MHz Single-Mode Microwave Pasteurization of Solid Food. The 9th International Conference on Microwave and High Frequency Application: AMPERE 2023, Cardiff, UK, 11-14 September 2023.
30. K. Ly, P. Houng. Extration of bioactive compound from Kaffir lime peel using subcritical water. The 12th Scientific day Day, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 8-9 June 2023.
31. S. Sen, P. Houng. Determination of yield and bioactive compounds of oleoresin extracted from red pepper and its residues. The 12th Scientific day Day, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 8-9 June 2023.
32. H. Ly, R. Sovann, H. Mith, H. Phuong. Determination of the composition of different rice varieties collected from local markets in four provinces. The 12th Scientific day Day, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 8-9 June 2023.
33. D. Pheap, E. Morm, S. In. Study on physicochemical properties, nutritional values, and sensory evaluation of spicy sour seasoning developed from 8 different spices. The 12th Scientific day Day, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 8-9 June 2023.
34. S. Chhunry, P. Houng. Evaluation of the development of physicochemical properties from fresh key lime (*citrus aurantifolia*) to pickled lime. The 12th Scientific day Day, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 8-9 June 2023.
35. S. Chhoeung, S. Doeurn, C. Penh. Optimization of fish sausage processing methods based on physicochemical quality assessment and consumer acceptability. The 12th Scientific day Day, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 8-9 June 2023.
36. M. Vong, P. Cheng, S. Mao, R. Tan. Production of bacteriocin by Lactic Acid Bacteria for its potential use as natural preservative for fermented cucumbers. The 12th Scientific day Day, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 8-9 June 2023.
37. C. Vireak, S. Kong, M. Say, Y. Nat, R. Tan. Influnce of activated bleaching earth on the physicochemical quality of soybean oil. The 12th Scientific day Day, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 8-9 June 2023.
38. S. Toch, S. Mao, L. Ly, R. Tan, M. T. Chanto. Isolation for the desired yeasts from different types of food to improve soy sauce fermentation process and quality. The 12th Scientific day Day, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 8-9 June 2023.
39. S. Hoeun, S. Tin, S. In. Determination of curcuminoids in different types of Freez-dried Tumeric varities by HPLC. The 12th Scientific day Day, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 8-9 June 2023.
40. S. Kin, M. Suong, S. Yoeun, C. Phat, K. Uon, P. Sreng, V. Sreng, S. Sieng. Heavy metals analysis in rice grain collected from agrochemical-free paddy fields, Battambang province. The 12th Scientific day Day, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 8-9 June 2023.

41. P. Sreng, M. Suong, S. Yoeun, C. Phat, K. Uon, S. Kin, V. Sreng, S. Sieng. Analysis of heavy metals in soil collected from agrochemical-free paddy fields: a case study at Sangkae district, Battambang Province. The 12th Scientific Day, Institute of Technology of Cambodia, Phnom Penh, Cambodia, 8-9 June 2023.

5.4.3. Mechatronics and Information Technology (MIT Unit)

Cambodian Context

In Cambodia, the rapid growth of the IT and communications sector is at the heart of a digital transformation that spans across the entire nation, revolutionizing the way data is collected, transferred, and utilized. This evolution is especially significant in sectors such as agriculture, public health, and urban management, where the ability to generate vast amounts of data can lead to innovative solutions to pressing challenges. The emerging of generative AI and its popularity underscore the transformative potential of advanced technologies in creating new content, solving complex issues, and streamlining decision-making processes. Amidst this digital revolution, the integration of electronics and IoT technologies is pivotal for developing interconnected systems that enhance real-time data processing and communication capabilities. These technologies are crucial for facilitating immediate and effective responses to environmental crises, public health emergencies, and climate change challenges. Similarly, advancements in robotics and automation are driving significant improvements in efficiency and productivity across multiple industries, including food, mining, and manufacturing. By leveraging robotics, Cambodia is able to introduce smart, affordable, and innovative solutions that can automate complex processes, boost production efficiency, and foster the growth of SMEs with high-technology aspirations but limited capital.

As Cambodia navigates through these technological advancements, the emphasis on these key research areas is critical. These technologies not only promise to enhance the nation's responsiveness to immediate and long-term challenges but also pave the way for a future that embraces sustainable development and technological sophistication.

Vision

To be a center of excellence in developing innovative solutions within the realms of Intelligent Mechatronics, Artificial Intelligence, and Advanced Telecommunications.

Mission

To advance applied multidisciplinary research of Mechatronics, Artificial Intelligence, Telecommunication, and Aerospace through national and international collaborations for fostering national academic community and serving society.

The Research Themes

The combination of the different areas: information science and mechatronics allows developing specific topics related to the Cambodian context as:

- Aerospace and Space Engineering
- Artificial Intelligence (Machine Learning, Deep Learning, and Optimization)
- Intelligent Mechatronics
- Telecommunication and Internet of Things
- Operation Research

- Supply Chain Management

Projects and Research Topics

The list of projects and research topics that are implementing in MIT unit as shown in the table below. For more detail information refers to a table in Annex 18.

Table 26. Research topics in MIT unit for the academic year 2023-2024.

No.	Name of PI (FAMILY First name)	Sex	Project/Research Topic	Funding source	Period	Collaboration scale * N = National R = Regional I = International	Project Type* 1= Basic 2 = Applied & Development 3 = Start-up 4 = Tech-transfer
1	Dr. VALY Dona	M	Ancient Manuscript Digitization and Indexation	HEIP	2020-2023	N	2
2	Dr. VALY Dona	M	Plagiarism Detection System for Khmer Language	LBE JICA	2022-2023	N	2
3	Dr. PEC Rothna	M	Toward Product Innovation via FabLab-ITC	HEIP	2020-2024	N	2
4	Mr. CHHORN Sopheaktra	M	Controller system for smart greenhouse	HEIP + YG	2022-2023	N	2
5	Mr. CHHORN Sopheaktra	M	SOLAGEO's Internet of Energy	HEIP+Trade without Border	2022-2023	N	2
6	Ms. OUM Sotheara	F	Development of omnidirectional semi-autonomous mobile robots for robot competition	AI Farm	2022-2023	N	2
7	Mr. KEO Chivorn	M	Development of Dual Axes Solar Tracker for a use on a UAV	AOARD US Airforce	2022-2023	N	2
8	Dr. NGET Rithea	M	Design and Implementation of Health Data Collection Communication Protocol Using Physical-Layer Network Coding	LBE JICA	2022-2023	N	2
9	Dr. THOURN Kosorl	M	Initiative towards electrical and electronic product testing and certification by EMC Laboratory	HEIP	2019-2024	N	2
10	Mr. KUY Movsun	M	Investigation of configuration issues related to SDN/NFV deployments	ARES	2020-2024	I	2
11	Dr. KIM Bunthern	M	Contribution to the optimal design, control and diagnostic of an e-tuk-tuk	HEIP	2021-2024	N	2
12	Mr. CHIN Chan Daraly	M	The vehicle as an intelligent thing		2022-2025	I	2
13	Dr. CHRIN Phok	M	Smart farming for qualified vegetable using mechatronics techniques	LBE JICA	2022-2023	I	2
14	Mr. TEP Sovichea	M	Smart Mushroom Control System Development	iDE	2023-2024	N	2
15	Dr. VALY Dona	M	Integrated Decision Support System for Non-Communicable Ocular	ASEAN IVO	2023-2024	I	2

			Diseases using Machine Intelligence				
16	Ms. OUM Sotheara	F	Development of autonomous and semi-autonomous mobile robots to participate in Robocon 2024	Takahashi Foundation	2023-2024	N	2
17	Dr. SRANG Sarot	M	Development of APSARA-1 (2U CubeSat) Engineering Model	MoEYS	2022-2024	N	2
18	Dr. SRANG Sarot	M	Integrating the Electrification and Smart Mechanisation of Two-Wheel Tractors with Precision Agriculture for Improved Productivity and Sustainability	ACIAR	2024-2029	I	2

Researchers

Senior Researchers (10M, 0F)

Dr. VALY Dona (Head of MIT research unit), Ph.D. in Engineering Science and Technology, Université catholique de Louvain, Belgium.

Document Image Analysis, Computer Vision, Natural Language Processing

Dr. PO Kimtho, Ph.D. in Communication Engineering, Tokyo Institute of Technology, Japan.

Digital Signal Processing; radio communication; microwave and RF systems

Dr. SRANG Sarot, Ph.D. in Engineering, Tokyo Institute of Technology, Japan

Instrumentation, estimation, control and robotics, dynamic modelling, simulation, Artificial Intelligence.

Dr. PEC Rothna, PhD from Chung Ang University, Republic of Korea

Signal Processing and Mobile Communication

Dr. SRENG Sokchenda, Ph.D. in Telecommunication Engineering, INP Toulouse, France

Wireless communications, satellite communications, digital image processing

Dr. SIM Tepmony, Ph.D. in Information Science, Electronics and Communications, Telecom Paris, France

Markov theory; statistics; probability; maximum likelihood

Dr. THOURN Kosorl, Ph.D. in International Development Engineering, Tokyo Institute of Technology, Japan

Computational methods for electromagnetics, electromagnetic compatibility, wave propagation, pattern recognition, image processing, computer vision

Dr. PHAUK Sökkhey, Ph.D. in Interdisciplinary Intelligent System, majoring in Data Science, University of the Ryukyus, Japan

Educational Data Mining, AI in Education, Data Science in agriculture, and Data Science for Sustainable Development Goals (SDGs)

Dr. KIM Bunthern, Ph.D. in Electrical Engineering, INP Toulouse, France

Control system, robotics, renewable energy, automation, energy generation system

Mr. SOK Kimheng, Ph.D. candidate in Computer Science, Université de Namur, Belgium.

Privacy, Security, Blockchain

Lecturer-researchers (6M, 0F)

Dr. NGET Rithea, Ph.D. in information Science, Japan Advanced Institute of Science and Technology, Japan

Network coding and IoTs

Dr. KEAN Jeudy, Ph.D. in Telecommunication Engineering, INP-ENSEEIH T Toulouse, France.

Mr. HEL Chanthan, Master in Telecommunication, Chulalongkorn University, Thailand

Wireless communication, Technology for agriculture

Mr. CHHORN Sopheakra, Master in Electrical and Energy Engineering from Chulalongkorn University, Thailand.

Measurement instrument, Internet of Thing and Medical device

Mr. TEP Sovichea, M.Sc in Electronic System for Embedded and Communication Applications, INPT-ENSEEIH T, Toulouse, France.

Digital circuit design, PCB design and manufacturing, Internet of things, wireless sensor node, smart grid communication, industrial networks

Mr. KEO Chivorn, Master in Industrial and Mechanical Engineering from Institute of Technology of Cambodia, Cambodia.

Fulltime-researchers (5M, 1F)

Mr. KUY Movsun, Ph.D. candidate in Computer Network, Université de Namur, Belgium.

Mr. PICH Reatrey, Ph.D. candidate in Network and Cyber Security, Institute of Technology of Cambodia, Cambodia.

Mr. CHIN Chan Daraly, Ph.D. candidate in Network and Machine Learning, INP-ENSEEIH T Toulouse, France.

Mr. BUN Menghorng, Ph.D. candidate in Control and Diagnostic of Electrical System, INP-ENSEEIH T Toulouse, France.

Ms. OUM Sotheara, Master of Engineering in Robotics, Institute of Technology of Cambodia, Cambodia.

Mr. SREY Sokserey, Master of Engineering in Robotics, Institute of Technology of Cambodia, Cambodia.

Academic Partners

Tokyo Institute of Technology, Japan

Toyohashi University of Technology, Japan

INP Toulouse, France

Institut Mines-Telecom, France

Université de Namur, Belgium

Université de Liège, Belgium

Université catholique de Louvain, Belgium

Universitas Pendidikan Ganesha, Indonesia

Universiti Kebangsaan Malaysia, Malaysia

Non-academic partners

Asian Office of Aerospace Research and Development

Ministry of Education, Youth and Sports, Cambodia

Ministry of Water Resources and Meteorology, Cambodia
 Ministry of Rural Development, Cambodia
 Ministry of Industry and Handicraft, Cambodia
 Ministry of Public Works and Transport, Cambodia
 Ministry of Environment, Cambodia
 Ministry of Health, Cambodia
 Ministry of Culture and Fine Art. Cambodia
 JICA, Japan
 Institut Pasteur du Cambodge

Industrial Partners and NGOs

Solar Green Energy Co., Ltd. Cambodia
 Louvain Cooperation
 Eclosio
 iDE
 Yamato Green Co., Ltd.

Publications of MIT researchers for the last 5 academic years

From 2019-2020 to 2023-2024, there are in total 139 research outputs from MIT unit classified into three categories: Indexed Publications, Non-indexed Publications, and Conference Papers as shown in the Table below.

Table 27. Summary of number of publications in last 5 years.

Publication classification/year	2023-2024	2022-2023	2021-2022	2020-2021	2019-2020	Total
Indexed Publications	6	10	6	6	3	31
Non-indexed Publications	6	2	6	6	1	21
Conferences	40	45	1	0	1	87
Total	52	57	13	12	5	139

List of indexed publications for academic year 2023-2024

1. Movsun KUY, Laurent Schumacher, and Sokchenda Sreng. "Managing and Orchestrating Cross-Cloud VNFs with Deployable Sidecar VNF Coordinators". NetSoft2024
2. Chanreng Sey Nhim, Nita Chek, Chanthan Hel and Rothna Pec, "Experiment on Smart Mushroom Cultivation Using an Environmental Control System", International Journal of Environmental and Rural Development
3. Jeudy KEAN, Nathalie RAVEU, Hamza KAOUACH, Sokchenda SRENG, and Kosorl THOURN. "Analysis and Characterization of Electromagnetic Reverberation Chamber with Metamaterial Walls" In the 3rd IEEE International Conference on Signal, Control and Communication (SCC 2023).
4. K. Dinesh Kumar, Sarot Srang, and Dona Valy, " Visual Storytelling: A Generative Adversarial Networks (GANs) and Graph Embedding Framework". International Journal on Recent and Innovation Trends in Computing and Communication. 11, 9 (Nov. 2023), 1899–1906, Scopus Index.

5. Chivorn Keo, Sarot Srang, and Rattana Seng. "Performance Investigation of Low-Cost Dual-Axis Solar Tracker using Light Dependent Resistor." *International Journal of Robotics & Control Systems* 3, no. 4 (2023).
6. K. Dinesh Kumar, Sarot Srang, and Dona Valy, "Evaluating Text-to-Image GANs Performance: A Comparative Analysis of Evaluation Metrics", *International Journal on Recent and Innovation Trends in Computing and Communication*, vol. 11, no. 8s, pp. 618–627, Aug. 2023. Scopus Index.

List of non-indexed publications for academic year 2023-2024

1. Thavath Sai, Sovichea Tep, Chanthan Hel, Rothna Pec, "Development of IoT-based General Purpose Greenhouse Controller for Smart Agriculture and a Case Study on Mushroom Growth Control System", *Techno SRJ*, 2024.
2. Chanchen Pork, Dona Valy, Sokkhey Phauk. Text Image Reconstruction and Reparation for Khmer Historical Document. *Techno SRJ*, 2023.
3. Vannkinh Nom, Dona Valy, Sokkhey Phauk, Seng Hak Leng. Word Spotting on Khmer Palm Leaf Manuscript Documents. *Techno SRJ*, 2023.
4. Vannaroth Korn, Kimheng Sok, Dona Valy. Enhancing the accuracy and reliability of Docker image vulnerability scanning technology. *Techno SRJ*, 2023.
5. Seangleng Ny, Dona Valy, Phutphalla Kong. Lock and Unlock Door with Face Detection using OpenCV, Python, and Arduino Board. *Techno SRJ*, 2023.
6. Sochetra Than, Dona Valy, Phutphalla Kong. Crop Disease Dataset and Recognition using Convolutional Neural Networks. *Techno SRJ*, 2023.

List of Conference for academic year 2023-2024

1. NGIN Kimlong. A Deep Learning Approach for Identifying Individuals Based on their Handwriting. *The 13th Scientific Day*, 2024.
2. HENG Ham. Utilizing Online Khmer Handwritten Text Recognition for Educational Assistance. *The 13th Scientific Day*, 2024.
3. CHAN Both. CNN-based Reinforcement Learning with Policy Gradient for Khmer Chess. *The 13th Scientific Day*, 2024.
4. LY Kimleang. Exploring Deep Learning Techniques for Khmer Language: Fine-Tuning Models for Chatbot Tasks. *The 13th Scientific Day*, 2024.
5. KHON Yin Sakal. Khmer Large Language Model. *The 13th Scientific Day*, 2024.
6. POV Phannet. Bus Arrival Time Prediction Using Machine Learning Approaches. *The 13th Scientific Day*, 2024.
7. SAM Lyheng. A Comparative Study Between Machine Learning and Deep Learning Approaches for Predicting Student Dropouts. *The 13th Scientific Day*, 2024.
8. SEIREY Chhunheng. Utilizing Data Mining And AI To Enhance Cambodian High School Student Performance and Stakeholder Success. *The 13th Scientific Day*, 2024.
9. EM Hengly. Enhancing Word Spotting Accuracy for Khmer Printed Documents. *The 13th Scientific Day*, 2024.
10. CHUN Dara. Design of Inverted Planar F-Shape Antenna with Dual-Band Frequency for WiFi Application. *The 13th Scientific Day*, 2024.

11. HOR Hakeng. State Machine Development of a Takeoff and Landing Process of a Hybrid Unmanned Aerial Vehicle. The 13th Scientific Day, 2024.
12. HOR Hang. Temporal Graph Learning with Application to Large-Scale Flight Traffic Prediction. The 13th Scientific Day, 2024.
13. SUON Kosal. Examining Passenger Loyalty in Phnom Penh Public Bus System: A Structural Equation Modelling Approach. The 13th Scientific Day, 2024.
14. VEN Vannuth. Human Detection with WIFI CSI. The 13th Scientific Day, 2024.
15. YEN Oudom. Adapting an Access Control Model to Enhance Security for Distributed Ledger Access. The 13th Scientific Day, 2024.
16. SONG Selasak. Security Management of Reputation Records in the SelfSovereign Identity Network for the Trust Enhancement. The 13th Scientific Day, 2024.
17. CHHAY Monyvann. Enhanced Robot Navigation Through Reinforcement Learning with Khmer Direction Recognition. The 13th Scientific Day, 2024.
18. SEK Pechmunivann. Fine-Tuning Pretrained Models Using Siamese Networks on a Cambodian Face Dataset. The 13th Scientific Day, 2024.
19. NUON Roatny. Predictive Analysis of Stock Closing Prices: A Comparative Study of SVM, XGBoost, and LSTM. The 13th Scientific Day, 2024.
20. LY Nita. Unlocking Agricultural Potential with Machine Learning Approach: A Soil-Centric Approach to Crop Selection in Cambodia. The 13th Scientific Day, 2024.
21. HAN Chandeth. Rubber Prices Forecasting: Comparative Study of ARIMA, 1D CNN, Ensemble, and Hybrid Model. The 13th Scientific Day, 2024.
22. HENG Seyha . Comparative Study of Clustering Analysis: on KIVA-Enhancing Microfinance Impact through Cluster-driven Loan Strategies in Cambodia. The 13th Scientific Day, 2024.
23. SENG Vichka. Testing Quadcopter With Adaptive Controller Based on Estimated Random Parameters for Quadcopter Trajectory Tracking Control. The 13th Scientific Day, 2024.
24. BUN Raksmeay. Automatic recognition of Cambodian license plates. The 13th Scientific Day, 2024.
25. HOEM Rachhat. Flight Simulation and Control of a Fixed-Wing UAV Using LQR Controller. The 13th Scientific Day, 2024.
26. PHON Lundy. Machine Learning-based Battery State-of-Health Estimation for Railway applications. The 13th Scientific Day, 2024.
27. HIM Vannthorng. Designing a Self-Stabilized Thrust Vector Control System for Small-Scale Rockets. The 13th Scientific Day, 2024.
28. TANG Sou Bun. Smart Motor Driver for DC Motor. The 13th Scientific Day, 2024.
29. Nita Chek, Sebastian Harispe, Rothna Pec, and Sokchenda Sreng. "Tuning Hyperparameters on Gym Environment Inverted Pendulum". LMSDec2023.
30. Heng Ham and Dona Valy. "Online Khmer handwritten text recognition for teaching and learning assistance". LMSDec2023.
31. Hengly Em and Dona Valy. "Word Spotting on Khmer Printed Document". LMSDec2023.
32. Kimleang Ly and Dona Valy. "Khmer Chatbot Using Deep Learning Technique". LMSDec2023.

33. Hong Longkim, Leangseng Mok, Sothida Neang, Pichvirakbot Chou, Panhapiseth Pov, Puthboratvimol Keo, Chivorn Keo, and Sarot Srang. "Structural Design and Aero-Dynamics Simulation of Fixed-Wing UAV". LMSDec2023.
34. Monnin Pich, Rattanak Prim, Chivorn Keo, and Sarot Srang. "Design and Fabricate Low-cost 4-axis CNC Foam Cutting". LMSDec2023.
35. Both Chan and Dona Valy. "Khmer Chess using Reinforcement learning". LMSDec2023.
36. HORT Sovanvichea, HIM Vannthorng, and SRANG Sarot. "Detection of Apogee with Kalman Filter for Flight Avionic of Solid Rocket". LMSDec2023
37. Hakeng HOR, Rachhat HOEM, Chivorn KEO, and Sarot SRANG. "Case Study on Low-Cost Adaptive Light Intensity Sensor for Solar Tracker by Using Light Dependent Resistor". LMSDec2023.
38. Leakana Ouk, Rothna Pec, and Sopheaktra Chhorn. "Development of Cell Identification Technique for 5G New Radio Terrestrial Cellular System". LMSDec2023.
39. Heng Ham and Dona Valy. Online Khmer Handwritten Text Recognition Dataset. ACET 2023.
40. Sophy Huon and Dona Valy. Khmer Text Semantic Similarity: Developing a Deep Learning Model for Sentence Vectorization and Comparison. ACET 2023.

5.4.4. Materials Science and Structure (MSS Unit)

Cambodian Context

To achieve the Sustainable Development Goals (SDGs), Cambodia has embraced the UN 2030 Agenda for SDGs. The country aims to become an upper middle-income status by 2030. To achieve this, the government has set up a policy to push up research and innovation that reflects the country's needs. Promoting domestic products is one of the focuses of the policy that requires research and innovation, specifically in engineering and construction materials.

Currently, raw rubber in Cambodia is one of the main agro-industrial products contributing about USD 400 million in 2021 to the country's economy through exportation. With the limitation of knowledge in rubber technology in Cambodia, almost all the value-added rubber products such as rubber bands, gloves, flip flops, and rubber inner tubes are imported to support the needs of the country. Moreover, if looking at the construction sector, new challenges have to be met: the construction sector boomed in 2016 with a total investment of 8.5 b\$. There are over 900 high-rise buildings (more than 5 floors), the majority of them in Phnom Penh and Sihanoukville. The fast evolution of Cambodian cities causes issues of quality (qualified human resources, redefining building standards), sustainability (depletion of local resources in construction materials), and affordability with eco-friendly materials that can adapt to local resources.

The MSS is not limited to the building industry, as there are also big challenges in recycling or recovering materials from waste, replacing polymers from fossil origin with natural polymers, and producing sustainable products from local materials. The Materials Science and Structure Research Unit was established to build up a group of researchers with similar skills and working fields as an interdisciplinary to achieve a common goal.

The Research Unit

The Material Sciences and Structure Research Unit (MSS) focuses on research and innovation trends in engineering and construction material, especially with low carbon impact materials and light structures, including geotechnical engineering, underground structures, structural engineering, minerals, polymers, ceramics and alloys to address specific needs for Cambodia. The research unit also pays attention to the Architectural Engineering field, especially the studies on affordable housing. Our researchers work closely with local and international partners to push applied research and transform it into innovation for promoting the economic growth of the country.

Vision

The vision of the MSS Research Unit is to be a national leading and excellent center for research, development, and innovation that can offer advanced technology and technical solutions in the fields of materials and structures to the industries. MSS Research Unit will be a source for technical innovation transfer, and producing scientists and engineers.

Mission

- Conduct basic and applied research focused on materials and structure
- Promote R&D linkage between government, universities, and private sectors
- Promote research capacity, scientific communications, and entrepreneurship
- Promote technology transfer, develop product prototypes, and push for commercialization

Research Theme

- Mineralization
- Engineering Materials
- Ceramic and Construction Materials
- Structural Engineering
- Architectural Engineering
- Building Information Modelling (BIM)
- Heritage Preservation
- Air Pollution Control

Projects and Research Topics

The list of projects and research topics that are being implemented in the MSS unit is shown in the Table below. For more detailed information refer to Annex 19.

Table 28. Research topics in MSS unit for the academic year 2023-2024.

No.	Name of PI (FAMILY First name)	Sex	Project/Research Topic	Funding source	Period	Collaboration scale * N = National R = Regional I = International	Project Type* 1= Basic 2 = Applied & Development 3 = Start-up 4 = Tech-transfer
1	KAN Kuchvichea	M	Evaluation technico-socio-économique des infrastructures routières au Cambodge	ARES	2023 - 2025	I	2
2	AUN Srean	F	SATREPS Project: « Establishment of Risk Management Platform for Air Pollution in Cambodia, “Air sampling”	JST-JICA	2022 - 2027	I	1
3	AUN Srean	F	Development of Starch-Based Film for Biodegradable Packaging Using Cambodian Cassava as Starch Source	Takahashi	2023-2024	N	2
4	SOM Chansamnanng	M	Effect of The Addition of Natural Fibers on Shrinkage, Cracking Risk and Healing Capacity of Cementitious Materials	BGF-ITC	2023-2026	I	1
5	KETH Kannary	F	Managing the interdisciplinary collaboration in construction 4.0: ITC’s workshop case	ARES-Cambodia	2021-2024	I	1
6	TAING Kimnenh	F	Green BIM - Analysis of BIM approach for designing a bioclimatic building	ARES	2020-2024	I	1
7	LONG Makara	M	Sustainable building designs integrated life-cycle assessment (LCA), for best strategies to design the green residential building in Phnom Penh, Cambodia	ARES – COMBOdIA Project	2021-2025	I	2
8	PROK Narith	M	Performance of Tyfo(R)Fibr-Anchor under axial load	Fyfe Asia	2023 - 2024	N	1
9	DOUNG Piseth	M	Energy-based design for buildings and Steel ring damper for seismic application	KMUTT	2020-2024	R	2
10	OEUNG Thaileng	M	Investigation of Steel-Concrete Composite Structural Elements under Various Loadings	TMU	2024 - 2025	I	1
11	Yos Phanny	M	ERASMUS KA-171 (French Partners): Capacity building on Materials Engineering	Erasmus	2022-2025	I	2
12	DOUNG Piseth	M	Initiative on the development of wind load for design of building structures in Cambodia	HEIP	2020-2023	N	1
13	HIN Raveth	M	Chemical Strengthening of Large-scale glass Pieces for Construction and Other Engineering Applications	HEIP	2020-2023	I	2
14	PROK Narith	M	Performance of FRP Anchor Embedded into Concrete Cylinder	Fyfe Asia	2022-2023	N	1
15	Yos Phanny	M	FSPI-R: metal-related skill and create link with archeo-metal activities in Cambodia	French Embassy	2023-2024	I	1
16	Chhit Saosometh	M	Experimental Identification of Hardening Behavior of G300 Steel Grade	JICA-LBE	2023-2024	N	1

Researchers

Senior Researchers (8M, 2F)

Dr. DOUNG Piseth (Head of MSS Research Unit), PhD in Civil Engineering, Tokyo Institute of Technology, Japan

Steel structures, Tall steel/concrete building systems, Earthquake engineering, and Structural engineering

Dr. YOS Phanny, PhD in Materials Engineering, Kyushu University, Japan

Natural rubber, Natural rubber latex, Polymer composites

Dr. HAN Virak, PhD in Civil Engineering, Kochi University of Technology, Japan

Civil engineering materials, Concrete, Modeling

Dr. HIN Raveth, PhD in Material Engineering, University of Rennes 1, France

Mechanical Behavior of Materials, Glass Structures, Civil Engineering

Dr. PROK Narith, PhD in Civil Engineering, Kochi University of Technology, Japan

Soil-structure interaction; earthquake; tsunami

Dr. KAN Kuchvichea, PhD in Civil Engineering, Université Libre de Bruxelles, Belgium

Soil mechanics, Construction materials

Dr. BUN Polyka, PhD in Material Engineering, Institute of Technology of Cambodia, Cambodia

Simulation of thin wall structures, and Concrete and ceramic materials

Dr. SEANG Sirisokha, PhD in Economy Geology, Kyushu University, Japan

Earth mineral, Mineralization, Geology

Dr. HENG Sounean, D. Eng., INSA Rennes, France

Mechanics of materials and structures

Dr. OEUNG Thaileng, D. Eng., INSA Rennes, France

Steel-concrete composite materials and structures

Dr. CHHIT Saosometh, D. Eng., University of Ghent, Belgium

Materials Science

Lecturer-Researchers (1F)

Mrs. AUN Srean M. Eng., Chulalongkorn University, Thailand

Biomaterials/ Bioplastic innovation, Air pollution control

Full-time Researchers (3M, 2F)

Ms. KETH Kannary, PhD candidate, Université Libre de Bruxelles, Belgium

Architectural design, Building Information Modeling (BIM)

Ms. TAING Kimnenh, PhD candidate, Université Libre de Bruxelles, Belgium

Sustainable design, Architecture, Numerical model

Mr. LONG Makara, PhD candidate, Université Libre de Bruxelles, Belgium

Sustainable building design, Life cycle assessment, Green building

Mr. SOM Chansamng, PhD candidate in Civil Engineering, INSA Rennes, France
Effect of the addition of natural fibers on shrinkage, Cracking risk, and Healing capacity of cementitious materials

Mr. PLACK Sokhit, PhD candidate, Institute of Technology of Cambodia
Research area: Transport Engineering, Traffic and Air pollution

Academic and Research Partners

King Mongkut's University of Technology Thonburi (KMUTT), Thailand
Chulalongkorn University, Thailand
Universiti Sains Malaysia
International University of Batam, Indonesia
Tokyo Institute of Technology, Japan
Kyoto University, Japan
Kyushu University, Japan
Kanazawa University, Japan
INSA de Rennes, France
Université Libre de Bruxelles, Belgium
Université de Liege, Belgium
University of Stuttgart, Germany
Toronto Metropolitan University

Non-Academic Partners

Ministry of Education, Youth and Sports, Cambodia
Ministry of Public Works and Transport, Cambodia
Ministry of Culture and Fine Arts, Cambodia
Ministry of Mines and Energy, Cambodia
Ministry of Environment, Cambodia
Cambodia Rubber Research Institute, Cambodia

Industrial Partners and NGOs

SNP-PT International Co., Ltd, Thailand
Minebea (Cambodia) co.ltd
Edotco Cambodia Co., Ltd
Nikko-Kinzoku (Cambodia) Co.,Ltd
Fyfe Asia Pte Ltd, Singapore
IKEE group, Cambodia
HILTI, Thailand
Cart Tire Co., Ltd.
Tang Peng Por Glass Tempering Factory

Publications of MSS researchers for the last 5 academic years

From 2019-2020 to 2023-2024, there are in total 112 research outputs from the MSS unit classified into three categories: Indexed Publications, Non-indexed Publications, and Conference Papers as shown in the Table below.

Table 29. Summary of number of publications in last 5 years.

Publication classification/year	2023-2024	2022-2023	2021-2022	2020-2021	2019-2020	Total
Indexed Publications	7	5	2	3	2	19
Non-indexed Publications	2	3	1	2	1	9
Conference Papers	31	41	9	2	1	84
Total	40	49	12	7	4	112

List of Index publications for academic year 2023-2024

1. Pisey Keo, Thaileng Oeng, Mohammed Hjiyaj. (2024) Mixed-formulation with non-penetration constraint for planar composite beams in partial interaction. Journal of Computational Mechanics. <https://doi.org/10.1007/s00466-024-02476-2> (IF = 4.1)
2. Sreng, L., Yos, P., Seang, S. and A.A, Rashid (2024) Effect of pottery clay on mechanical and impact absorption properties of natural rubber floor mat. J Rubber Res. <https://doi.org/10.1007/s42464-024-00264-4>
3. Chea, L., Doung, P., Leelataviwat, S. (2023) Relation Between Input Energy and Equivalent Monotonic Response Curve, IWEBSE 2023, Lecture Notes in Civil Engineering, vol. 236. Springer Nature. https://doi.org/10.1007/978-3-031-36562-1_7
4. Lin, C., Chhin, R., Han, V., Doung, P. (2023) Determination of Basic Wind Speed for the Design of Buildings in Cambodia, IOP Conference Series: Earth and Environmental Science, Vol. 1205 (1), 012044. <https://doi.org/10.1088/1755-1315/1205/1/012044>
5. Taing, K., Andre, P., & Leclercq, P. (2023). Analysis of Thermal Performance of Naturally Ventilated Residential Building in Tropical Climate: Case Study of Phnom Penh, Cambodia. IOP Conference Series: Earth and Environmental Science, 1199(1), 012038. <https://doi.org/10.1088/1755-1315/1199/1/012038>
6. Keth, K., Ben Rajeb, S., & Han, V. (2023). Identification of Workflow in Construction Projects in Cambodia: With and Without Building Information Modeling/ Models/Management Approaches. International journal on advances in intelligent systems, 16(1942-2679), 3-4, 74-88.
7. Kan, K., & François, B. (2023). Triaxial tension and compression tests on saturated lime-treated plastic clay upon consolidated undrained conditions. Journal of Rock Mechanics and Geotechnical Engineering. <https://doi.org/10.1016/j.jrmge.2023.03.017> (IF = 5.915)

List of Non-Index publications for academic year 2023-2024

1. Chann, S., Hin, R., Sangleboeuf, J.-C., (2024) Experimental study on the improvement of bolted connection of glass structure by using ion-exchange. Techno Science Research Journal. 12 (1)
2. Doung, P., Lin, C., Vong, S., Sion, R., Chhin, R., Han, V. (2023) Basic Wind Speed Prediction for the Design of Building in Siem Reap, Cambodian Journal of STEM and Education Research, 1(1). (in Khmer)

List of Conferences for academic year 2023-2024

1. Taing, K., Jeunejean, A., Han, V. (2024) VIRELI : Visualisation de processus de design à travers les ressources, les moyens de conception et les livrables, ModACT 2024 Conference, Paris, France
2. Sreyya YIV, Srean AUN, Yukleav NAT, Chanbormey MIEN, Siekheng RAKSMEY, Sreynith KOU, Sovannleakhena HAK, Bunhav HUN. (2024) Development of Native Cassava Starch/Poly(lactic acid) for film sheet fabrication, The ITC's 13th Scientific Day, 6-7 June 2024
3. Siekheng RAKSMEY, Srean AUN, Yukleav NAT, Bunhav HUN, Sreyya YIV, Chanbormey MIEN, Sovannleakhena HAK, Sreynit KOU. (2024) Cassava Starch Extraction for Film Fabrication, The ITC's 13th Scientific Day, 6-7 June 2024
4. Raksa Ren , Worradon Phairuang, Mitsuhiko Hata, Masami Furuuchi, Muhammed Amin, Chhaytong Meng, Chanmoly Or, Koemlang Theng, Srean Aun. (2024) Preliminary study of the diurnal and nocturnal size-segregated particulate mass concentration in atmospheric air quality, The ITC's 13th Scientific Day, 6-7 June 2024
5. Chhaytong MENG, Srean AUN, Worradon Phairuang, Mitsuhiko Hata, Masami Furuuchi, Muhammed Amin, Raksa REN, Chanmoly OR, Koemlang THENG. (2024) Difference of Particulate Matter in Ambient Environment during Daytime and Nighttime in Phnom Penh City, The ITC's 13th Scientific Day, 6-7 June 2024
6. Chanseyha But, Kuchvichea Kan, Bertrand François. (2024) Various Pavement Management Systems (PMS), already applied or to be applied, for road management in Cambodia, The ITC's 13th Scientific Day, Phnom Penh, 6-7 June 2024
7. But, C., **Doung, P.** (2023) Updating Basic Wind Speed for Wind Load Design in Sihanoukville, International Conference on Earth Resources and Geo-Environmental Technology 2023, 23-25 September 2023, Phnom Penh, Cambodia
8. Thai, R., **Doung, P.** (2023) An Investigation of External Pressure Coefficient for Low-Rise Building: A Comparison between CFD and ASCE7-22 Models for Cambodia Wind, International Conference on Earth Resources and Geo-Environmental Technology 2023, 23-25 September 2023, Phnom Penh, Cambodia
9. Vong, S., Chin, R., **Doung, P.** (2023) Evaluation of Gust Loading Effects on Tall RC Building in Cambodia: A Comparison between International Load Standards. Extended Abstract of The ITC's 12th Scientific day, 8-9 June 2023, Cambodia
10. Thai, R., Chhin, R., Han, V., **Doung, P.** (2023) A comparative evaluation of directionality factor between international load codes for low-rise steel building and their conformity to Cambodia wind. Extended Abstract of The ITC's 12th Scientific day, 8-9 June 2023, Cambodia
11. Sovann, D., Heng, S., **Doung, P.** (2023) Evaluation of strength and failure of post-installed bundled rebar in concrete using finite element analysis. Extended Abstract of The ITC's 12th Scientific day, 8-9 June 2023, Cambodia
12. Mengla A., Narith P., Sovann Sathya R., Sovanvichet L., Wee Keong O. (2023) Experimental and Numerical Study of Tyfo(R)FibrAnchors Embedded in Low Compressive Strength Concrete Cylinder. The 14th AUN/SEED-NET Regional Conference on Geological and Geo-Resources Engineering, Phnom Penh, Cambodia.
13. Lymeng T., Narith P., Sovann Sathya R., Sovanvichet L., Wee Keong O. (2023) Experimental and Numerical Study of Tyfo(R)FibrAnchors Inserting to Concrete Cylinder Confined by Glass Fiber Reinforcing Polymer. The 14th AUN/SEED-NET Regional Conference on Geological and Geo-Resources Engineering, Phnom Penh, Cambodia.

14. S. Chann, R. Hin, J. C. Sangleboeuf, 2023, Experimental study on the improvement of bolted connection of glass structure by using ion-exchange. The 2nd International Conference on Earth Resources and Geo- Environment Technology 2023 (EraGET2023), Phnom Penh, Cambodia
15. Ngoun, P., **Srean, A**, Muhammad A., Hang, L., Hata, M., Taing, C., Kong, S., Or, C., Um, D., Furuuchi, M. (2023). "Monitoring Particulate Matters and Total Suspended Particles Along the Roadside and Public Area in Phnom Penh" *2nd ASEAN International Conference on Energy and Environment*. [doi:10.1088/1755-1315/1199/1/012020](https://doi.org/10.1088/1755-1315/1199/1/012020)
16. Chy, S., **Srean, A**, Hang, L., Hata, M., Mitsuhiko, H., Or, C., Kong, S., Taing, C., Um, D., Furuuchi, M. (2023) "Determination of Particulate Matters and Total Suspended Particles emitted from Incense Burning" *2nd ASEAN International Conference on Energy and Environment*. [doi:10.1088/1755-1315/1199/1/012019](https://doi.org/10.1088/1755-1315/1199/1/012019)
17. Phairuang, W., Hata, M., Takao, M., Taing, C., Ho, S., **Aun, S.**, ... & Furuuchi, M. (2023, July). Ten Years Behavior of Carbonaceous Ultrafine Particulate Matter (PM_{0.1}) in Phnom Penh, Cambodia. In *IOP Conference Series: Earth and Environmental Science* (Vol. 1199, No. 1, p. 012024). IOP Publishing
18. Taing, K., Leclercq, P., Han, V. (2023) Visualisation d'une design timeline et des outils mobilisés en conception architecturale bioclimatique, ModACT Conference, Paris, France
19. Taing, K., Han, V., Leclercq, P. (2023) BIM Model and BES Model Approach in Designing a Bioclimatic Building, The 12th Scientific Day 8-9 June 2023, Phnom Penh, Cambodia
20. Keth, K., Han, V., Rajeb, B-S. (2023) Guideline/Protocols for Collaborative Design and Build Process in Cambodia, ITC's 12th Scientific day, 8-9 June 2023, Cambodia
21. Long, M., Han, V., Leclercq, P., Reiter, S. (2023) Sustainable Building Design Strategy from Life Cycle Thinking Perspective Case Study: A Townhouse in Phnom Penh, Cambodia, ITC's 12th Scientific day, 8-9 June 2023, Cambodia
22. Vong, S., Chin, R., Doung, P. (2023) Evaluated Evaluation of Gust Loading Effects on Tall RC Building in Cambodia: A Comparison between International Load Standards. Extended Abstract of The ITC's 12th Scientific day, 8-9 June 2023, Cambodia
23. Thai, R., Chhin, R., Han, V., Doung, P. (2023) A comparative evaluation of directionality factor between international load codes for low-rise steel building and their conformity to Cambodia wind. Extended Abstract of The ITC's 12th Scientific day, 8-9 June 2023, Cambodia
24. Sovann, D., Heng, S., Doung, P. (2023) Evaluation of strength and failure of post-installed bundled rebar in concrete using finite element analysis. Extended Abstract of The ITC's 12th Scientific day, 8-9 June 2023, Cambodia
25. Raksa, S., S, Aun., Worrador, P., Mitsuhiko, H., Leakhena, H., Muhammad, A., Chanmoly, O., Masami, F. (2023) Seasonal Variation of Carbon Composition in Total Suspended Particles in Phnom Penh, Cambodia. Extended Abstract of The ITC's 12th Scientific day, 8-9 June 2023.
26. Muhammad, A., S, Aun., Leakhena, H., Chanmoly, O., Mitsuhiko, H., Masami, F. (2023) Preliminary assessment of personal exposure to ultrafine particle (UFP) in Phnom Penh, Cambodia. Extended Abstract of The ITC's 12th Scientific day, 8-9 June 2023.
27. E, Torabi., S, Aun., M, Hata., M, Amin., Leakhena, H., M, Furuuchi. (2023) Development of a Small Nano-Particle Sensor Using Light Scattering and its Application to On-line Ambient Monitoring. Extended Abstract of The ITC's 12th Scientific day, 8-9 June 2023.
28. Keth, K., Ben Rajeb, S., Han, V. (2023) Collaborative Works in Construction Project in Cambodia: Toward a Workflow Scenario Identification. COLLA 2023: The Thirteenth

International Conference on Advanced Collaborative Networks, Systems and Applications 13-17 March, 2023 - Barcelona, Spain.

29. Rorn, K., Seang, S., Kret, K., Oy, K. and Ammugauan, J. (2023) Lithology, Alteration Minerals, and Ore Mineralization in Memot, Tbong Khmum Province, Cambodia. Proceedings of the ITC's 12th Scientific Day, 8-9 June 2023
30. Por, V., Seang, S., Kret, K., and Oy, K. (2023) Lithology, Ore mineralization, and Hydrothermal Alteration of Canada Wall Porphyry Cu-Mo-Au at Andongmeas, Ratanakiri, Cambodia. Proceedings of the ITC's 12th Scientific Day, 8-9 June 2023
31. Rothana Kheng, Sirisokha Seang, Kotaro Yonezu, Kimhouy Oy, Kakda Kret, Koichiro Watanabe, Seangleng Hoen, Panhavong Ly, Bunna Hang (2023) Hydrothermal Alteration, Mineralization and Geochemistry of Igneous rocks of Area-5 in Koh Sla, Kampot province, Southwestern Cambodia. Proceedings of the International Symposium on Earth Science and Technology, Japan.

5.4.5. Water and Environment Unit (WAE Unit)

Cambodian Context

Water is a huge issue in the world and particularly in Cambodia. Although the country is crossed by the Mekong River and possesses a large fresh water lake (the Tonle Sap Great lake), Cambodia is vulnerable to the succession of annual floods and droughts with severe episodes. Many problems arise due changes in land use, natural resources exploitation and climate change. Moreover, there is concern with current and future situation of intensive use of ground water for irrigation in the dry season, sea water intrusion in the coastal areas, heavy metals release due to mining activities, non-point source pollution from agriculture, soil erosion, air pollution, and urbanization with no waste water treatment. Besides regional water environmental issues, the quality of water is low in rural areas or low-income urban environments with contamination of crops, faecal contamination and strong arsenic concentration in ground water in the Lower Mekong area.

Research plays a pivotal role in environmental protection by providing the knowledge to better understand and manage issues such as climate change and water quality & availability. In parallel, the development of innovative and environmentally friendly technologies can offer sustainable economic opportunities through the responsible management of both natural and man-made resources. Often, environmental challenges go beyond national frontiers and require a coordinated approach in ASEAN and at global level.

Vision

Our vision is to become a well-known knowledge hub to provide the scientific research information on utilization and management of water and environment for sustainable development in the region.

Purposes

- To bring together institutional-wide centers and researchers to tackle national, regional and global water and environmental issues through multi and interdisciplinary research under Research and Innovation Center.

- To develop and offer graduate program on Science in Water and Environmental Engineering that support to country development and benefit to civil society.
- To provide knowledge, skill, tool, and awareness pertaining to water and environmental quality and human-environment interactions in order to improve and sustain the function of environmental systems, protect human health and economic growth.

Mission

1. Conducting multi-disciplinary and interdisciplinary both basic and applied research on the utilization and protection of the environment, minimization and treatment of pollution particularly to the water resources, hydrological and ecological systems.
2. Developing, demonstrating and disseminating new finding and methodology supporting to science and engineering for the environmental management and monitoring, disaster management, ecological restoration, treatment and disposal of pollution.
3. Collaborating on the local and global scale in research and education to protect the precision resources that comply with national policy and SDG to sustain human life.
4. Educating and training personnel for management, supervision and operation of water resources and environmental systems.

Research Theme

The research unit Water and Environment is established to address the needs of Cambodia in this very large field. The research Unit has strong interactions with a worldwide community of researchers and stakeholders focused on various research theme. The research activity and themes include the following but not limited to:

1. **Hydrology and Water Resources Management:** Hydrological Modeling and Analysis, Hydrogeological Analysis, Groundwater and surface water interaction, Water Balance, Soil Erosion, River Bank Erosion and failure, Land Use Change, Environmental Modelling, Watershed Carrying Capacity, GIS and Remote Sensing, Hydraulic Structure ...
2. **Climate Change and Disaster Risk Management:** Weather Forecasting, Weather Forecasting, Climate Change Modeling, Climate Change Downscaling, Climate Change Impacts, Climate Change Vulnerability and Adaptation, Tropical Meteorology, Flood/Drought Management, other hazards...
3. **Urban Water Supply, and Wastewater Treatment:** Drinking Water Assessment and Treatment, Pollution Management, Waste Water Treatment, WASH, Water Treatment Technology, Microbiology, Water Quality Modeling, Water Biochemistry...
4. **Coastal and Marine Environment (CME):** Seawater Intrusion, Coastal Processes and Sediment Transport, Coastal Wetland Ecosystem, Sea Surface Current, Sea Grass and Coral Protection, Wave Impact on Coastal and Offshore Structures, Coastal Karst Landforms, Coastal Geology, Coastal Flood Management...
5. **Soil and irrigation:** Soil-Plant-Water Relation, Agricultural Water Management, Soil Quality...
6. **Urban Environmental Management (UEM):** Air Pollution Management, Solid Waste Management, Hazardous Waste Management, Environmental Health and Risk Assessment...

Projects and Research Topics

The list of projects and research topics that are implementing in WAE unit as shown in the Table below. For more detail information refers to Annex 20.

Table 30. Research topics in WAE unit for the academic year 2023-2024.

No.	Name of PI (FAMILY First name)	Sex	Project/Research Topic	Funding source	Period	Collaboration scale * N = National R = Regional I = International	Project Type* 1= Basic 2 = Applied & Development 3 = Start-up 4 = Tech-transfer
1	Dr. OR Chanmoly	M	SATREPS: Establishment of Risk Management Platform for Air Pollution in Cambodia	JICA-JST	2022-2027	I	2
2	Dr. DOUNG Ratha	M	Water Evolution and Vulnerability Under Global Changes in Coastal Catchments of Cambodia	IRD	2019-2023	I	1
3	Dr. BUN Saret	M	Occurrence and Distribution Analysis of Microplastics in Different Environmental Mediums of Cambodia	EU/AFD	2022-2023	N	1
4	Dr. HEU Rina	F	Investigation of the Effects of Algal Bloom in TSL Source Water on Water Supply Treatment Efficiency		2022-2023	N	1
5	Ms. AUN Srean	F	Air pollution in Phnom Penh/East Asia-Nanoparticle monitoring network (EA-Nanonet)	Kanazawa University	2011-Present	I	1
6	Dr. HANG Leakhena	F	Development of a bio-filter system model to control air pollution toward industrial application	HEIP	2021-2023	I	2
7	Dr. HEU Rina	F	Improving Sustainable Water Supply and Sanitation in Cambodia: Case of Tonle Sap Lake's Floating Villages		2021-2023	N	2
8	Dr. KET Pinnara	F	Integrated approach of precise irrigation and sustainable soil management to improve crop water productivity in Cambodia through ITC soil laboratory development: the focus on rice farming		2021-2023	N	1
9	Dr. BUN Saret	M	Development of Eco-Friendly and Low-Cost Wastewater Treatment System as an On-Site Product		2021-2023	N	2

10	Dr. SONG Layheang	M	Development of Climate Data Information System for Cambodia		2021-2023	I	2
11	Dr. OEURNG Chantha	M	Strengthening Flood and Drought Risk Management and Early Warning System in Lower Mekong Basin of Cambodia		2021-2023	N	2
12	Dr. CHAN Rathborey	M	Development of Electrocoagulation Reactor Integrated Sedimentation for Turbidity and Color Removal from Industrial Wastewater	LBE-JICA	2021-2023	N	2
13	Dr. THENG Voulay	F	Preventing zoonotic diseases emergence	AFD-RD	2022-2027	I	1
14	Dr. PEN Sytharith	M	Ecosystem-base Adaptations for Sustainable Groundwater Resources Management in the Transboundary Cambodia-Vietnam Mekong Delta Aquifer, Lower Mekong Region (GEBA)	Stockholm Environment Institute (SEI)	2022-2023	R	1
15	Dr. SANG Davin	F	Development of Electrocoagulation-Floatation (ECF) Reactor for Removal Turbidity, Color, and Oil & Grease from Slaughterhouse Wastewater	LBE/JICA	2023-2024	N	2
16	Dr. HEU Rina	F	Development of locally-produced ceramic pot filter for household groundwater purification in rural Cambodia	LBE/JICA	2023-2024	N	2
17	Dr. TY Boreborey	F	Development of monitoring and controlling of IoT based aquaponics system using green energy (Acronym: smart aquaponics project)	LBE/JICA	2023-2024	N	2
18	Dr. THENG Vouchlay	F	Photoproduction of radicals and their effects on carbon dynamics in tropical lakes (JSPS-Photochem)	JST	2023-2027	I	1
19	Dr. SOK Ty	M	Development and social implementation of greenhouse gas emission reduction technologies in paddy fields of west Tonle Sap lake by establishing a large paddy area water management system	JST/JICA	2024-2028	I	1
20	Dr. SOK Ty	M	Integrated River Basin Management of the Mekong Basin Tributary for Adaptation to Climate Change	Mekong Korea Cooperation Fund (MKCF)	2024-2027	I	2

21	Dr. BUN Saret	M	Stopping Macro- and Microplastic Pollutants by Installing Solar-Powered Air Bubble Screening (SBS) Device at Discharge Wastewater Canal to the Sea of Sihanoukville, Cambodia	UNDP	2024	N	3
22	Dr. BUN Saret	M	Rural Community Training on Safe Water Quality and its On-site Demonstration Testing	SUMERNET	2024	N	4
23	Dr. BUN Saret	M	Addressing Water Scarcity through Groundwater Use: Development of Solar-Powered Groundwater Treatment System for Remote Area of Cambodia	MTT-RRP	2024-2025	R	2
24	Dr. SUONG Malyna (Dr. EANG Khy Eam is one of work package leader)	M	Laboratory of Excellence in co-engineering for Sustainable Agrosystems (LMI-LEAD)	IRD	2023-2028	I	2
25	Dr. Ratha MUON	F	Réhabilitation et gestion durable de la fertilité des sols pour une agriculture durable et résiliente au Cambodge (ReaSol)	IRD	2023-2025	I	2
26	Mr. SOK Kimhuy	M	Research collaboration on sustainable water resources management in Koh Ker and Preah Vihear heritage sites	National Authority for Preah Vihear (NAPV)	2024-2025	N	1

Researchers

Senior Researcher (7F, 4M)

Dr. PENG Chanthol (Head of WAE Research Units), Dr. Eng. in Life Science and Technology, Tokyo Institute of Technology, Japan.

Food and Environmental Microbiology, Water Quality Monitoring

Dr. CHHOUN Kong, Ph.D. in Environmental Engineering, University of the Philippines-Diliman and Tokyo Institute of Technology, Japan.

Environmental Hydrology, integrated water resources management, watershed hydrology

Dr. ANN Vannak, Ph.D in Water Science and Technology, Universitat de Girona, Spain
Water-Soil-Plant-Microorganism Interactions and Biodiversity, Hydrologic processes in a river basin, Climate change-related topics

Dr. KET Pinnara, Ph.D. in Agricultural Science and Biological Engineering, University of Liege-Gembloux Agro-Bio Tech, Belgium

Irrigation water saving for crop production

Dr. TY Bore Borey, Ph.D. in Environmental Engineering, University of the Philippines-Diliman and Hokkaido University, Japan

Leaching, Wastewater Treatment, Water and Wastewater Treatment, Ion Exchange Resins

Dr. KHOEURN Kimleang, Ph.D. in Sustainable Resources Engineering, Hokkaido University, Japan.

Water and Wastewater Treatment, Mine Water and Remediation, Heavy Metal Leaching and speciation, Extraction, Sorption-Desorption Processes, Environmental Chemistry, Geochemical Modeling, Environmental Pollution and Waste Management

Dr. THENG Vouchlay, Dr.Eng. in Civil and Environmental Engineering, Tokyo Institute of Technology, Japan.

Water Quality Modelling and Assessment, Water and Wastewater Treatment

Dr. SANG Davin, PhD in Chemistry and Process Engineering (Double degrees) from École Nationale Supérieure de Chimie de Rennes (ENSCR), France.

Water and wastewater treatment, Environmental Analysis, Water Analysis, Liquid chromatography, Adsorption, Membrane bioreactor, Treatment of micropollutants, Activated carbon production from solid waste.

Mrs. HANG Leakhena, M. Eng. in Environmental Engineering, University of The Philippine Diliman, Philippine.

Indoor/Outdoor air pollution

Dr. BUN Saret, PhD in Environmental Engineering from Chulalongkorn University, Thailand.

Water and Wastewater Engineering

Dr. HAM Phaly, PhD in Environmental Engineering from Chulalongkorn University, Thailand.

Water and wastewater, air pollution control.

Lecturer-Researcher (4F, 6M)

Dr. DOUNG Ratha, PhD in Environmental Engineering, University of Philippines Diliman (UPD) and Tokyo Institute of Technology (TIT), Japan

Hydrogeology; groundwater modeling; coastal aquifer management

Dr. PEN Sytharith, Ph.D in Environmental engineering, Hokkaido University, Japan

Bed instability in suspended load dominated environments

Dr. EANG Khy Eam, Ph.D. in Sustainable Resources Engineering, Hokkaido University, Japan.

Environmental Geochemistry, Water Environment, Hydrogeology, Geochemical Modeling and Solute Transport, Sustainable Resources Management, Geomechanics and Rock Slope Stability

Dr. SOK Ty, PhD in Functional Ecology and Environment (Double Degree) from National Polytechnic Institute of Toulouse (INP-Toulouse), France.

Hydrology, Water Resources, Climate change and Environmental Monitoring and Assessment

Dr. SONG Layheang, PhD in Continental Surfaces and Interfaces, Hydrology, Université Toulouse III - Paul Sabatier, France.

Hydrology, Soil Erosion, Disaster and Agricultural Irrigation and Modeling.

Dr. HEU Rina, Dr. Eng. in Civil and Environmental Engineering, Tokyo Institute of Technology, Japan.

Water Quality and Environmental Assessment, Water Treatment Technology, Environmental Ecosystems, Water Supply and Sanitation

Ms. DOEURN Seyha, Master in Environmental Management, Kyoto University, Japan
WASH (Water, Sanitation, and Hygiene), Drinking water quality, Water Supply, and Wastewater characterization

Dr. MUON Ratha, PhD in Environmental Science (Double Degree) from Sorbonne Université, France.
Soil Science, Mapping (GIS), Ecosystem services provide by termite mounds

Dr. SAO Sokchan, PhD in Agricultural and Environmental Engineering from Iwate University, Japan
Soil-Water Physicochemical, Microbial Communities in Floodplain Soil

Mr. CHORK Vuthy, Master in Water and Environmental Engineering from Institute of Technology of Cambodia, Cambodia
Water and Environmental Engineering, Water Quality Assessment and Management, Hydrology, Hydrogeophysic

Full-time Researcher (3F, 4M)

Ms. PHOEURN Chanarun, Master in Environmental Engineering, University of the Philippines-Diliman
Water Quality, GIS, Irrigation System

Mr. Kimhuy Sok, Master in Water Resources Engineering, Chulalongkorn University, Thailand
Water Resources Management, Drought Assessment, Shoreline Evolution, Nearshore Sediment Transport, Radiometric Dating of Sediment

Ms. LAI Chenda, Ph.D candidate (double degree) in Water and Environment, Institute of Technology of Cambodia, Cambodia and Agronomy and Bio-engineering at ULiège, Belgium.
Water Quality, Nutrient Leaching Management, Soil Science, Agronomy, Plant Nutrition

Mrs. CHANTO Monychot Tepy, Ph.D candidate (year 1), Master in Environmental Design, Kanazawa University, Japan
Water Quality and Pollution, Biological Wastewater Treatment, Environmental Biotechnology, Microbial Community Analysis, Environmental and Food Microbiology

Mr. CHAN Ratboren, Ph.D candidate (year 1), M. Eng. in Environmental Engineering, Kasetsart University, Thailand.
Water Quality Assessment, Water and Wastewater Treatment, Membrane Bioreactor, Antibiotics Treatment.

Mr. HOUT Meng Hour, Master in Hydrology and Water Resource Engineering from Hohai University, China
Hydrology and Water Resources

Mr. SOK Serei Vathana, Ph.D candidate (year 1), Master in Water and Environmental Engineering, Insitute of Technology of Cambodia, Cambodia
Water Quality, Activated Carbone, Micropollutant

Academic Partners

Royal University of Agriculture, Cambodia

Royal University of Phnom Penh, Cambodia

Tokyo Institute of Technology, Japan

Tokyo University of Agriculture and Technology, Japan

University of Girona, Spain
 Université de Toulouse, France
 Université de Liège-Gembloux, Belgium
 CARE, Ho Chi Minh City, Vietnam
 Guilin University of Technology, China
 Wuhan University, China
 Kanazawa University, Japan
 Kyoto University, Japan
 Chulalongkorn University, Thailand
 University of Nantes, France
 CNRS, France
 IRD, France
 Etc.

Non-academic partners

Ministry of Education, Youth and Sports, Cambodia
 Ministry of Water Resources and Meteorology, Cambodia
 Ministry of Rural Development, Cambodia
 Ministry of Industry and Handicraft, Cambodia
 Ministry of Public Works and Transport, Cambodia
 Ministry of Environment, Cambodia
 JICA, Japan
 JST, Japan
 AFD, France
 APN, Japan
 Etc.

Industrial Partners and NGOs

Phnom Penh water supply Authority
 SAFEGE
 BORDA
 GRET
 B2G
 Weventure

Publications of WAE researchers for the last 5 academic years

In last five academic year from 2019-2020 to 2023-2024, there are in total 165 research outputs from WAE unit classified into three categories: Indexed Publications, Non-indexed Publications, and Conference Papers as shown in the Table below.

Table 31. Summary of number of research publications in last 5 years.

Publication classification/year	2023-2024	2022-2023	2021-2022	2020-2021	2019-2020	Total
Indexed Publications	22	27	10	14	9	82
Non-indexed Publications	4	7	6	3	5	25
Conference Papers	18	25	15	-	-	58
Total	44	59	31	17	14	165

(-) stand for missing information.

List of Index publications for academic year 2023-2024

1. Theng V., Sith T., Uk S., Yoshimura C. (2023). Phytoplankton productivity in a tropical lake/floodplain system revealed by a process-based primary production model. *Ecological Modelling*. (IF: 3.1)
2. Ly, S., Uk, S., Theng, V., Kaing, V., & Yoshimura, C. (2024). Integration of life cycle and habitat conditions in modeling fish biomass in the floodplain of the Lower Mekong Basin. *Ecological Modelling*. (IF: 3.1)
3. van Emmerik TH, Schreyers LJ, Mellink YA, Sok T, Arias ME. Large variation in Mekong river plastic transport between wet and dry season. *Frontiers in Environmental Science*. 2023 May 9;11:539. (IF: 4.6)
4. Mohamed CA., An, S., Pradit S., Loh, PS., Nitiratsuwan, T., Kobkeathawin, T., Noppradit, P., Le, TP., Oeurng, C., Sok, T., Lee, CW. (2023). Depth Profiles of Microplastic in Sediment Cores in the Mangrove Area of Kuala Gula Mangrove, Malaysia. *Journal of Marine Science and Engineering*. 2023 Jun 14;11(6):1223. (IF: 2.9)
5. Hu, J., Siriporn P., Pei SL., Zengxuan C., Chuanyi G., Thi P., Oeurng, C. et al. (2023). Storage and dynamics of soil organic carbon in allochthonous-dominated and nitrogen-limited natural and planted mangrove forests in southern Thailand. *Marine Pollution Bulletin* 200 (2024): 116064. (IF: 10.1)
6. Kaing, V., Zhongyu, G., Sok, T., Dilini, K., Florian, B., Yoshimura, C. (2023). Photodegradation of biodegradable plastics in aquatic environments: Current understanding and challenges. *Science of The Total Environment* (2023): 168539. (IF: 10.75)
7. Try, S., Takahiro, S., Sophea, RP., Sok, T., Ly, S., Oeurng, C. (2023). Assessing the impacts of climate change and dam development on potential flood hazard and damages in the Cambodian floodplain of the lower mekong basin. *Journal of Hydrology: Regional Studies* 49 (2023): 101508. (IF: 4.7)
8. Lai, C., Muon, R., Touch, V., Hin, S., Podwojewski, P., Ket, P., Jouquet, P., Degré, A., Ann. V. (2023). Impact of Biochar from Rice Husk on Nutrient Distribution and Rice Growth and Yield. A Soil Column Experiment. *Soil and plant nutrition*, 2023. (IF: 3.9)
9. Phoeurn, CA., Orn, C., Tho, T., Degré, A., Ket, P. (2023). Assessing the Feasibility of Alternative Wetting and Drying (AWD) Technique for Improving Water Use Efficiency in Dry-Season Rice Production. *Paddy and Water Environment*, submitted, 2023.
10. Tha, S., Sot, C., Phol, S., Yan, S., Lai, C., Ket, P. (2023). Estimating Irrigation requirement and scheduling for major crops: Case Study in Kampong Thom, Cambodia. *IOP Conference Series: Earth and Environmental Science*, submitted, 2023
11. Pang, B., Sou, K., Kit, K., Huor, S., Chhim, S., Khorn, S., ... & Bun, S. (2023). Performance evaluation of anaerobic baffled reactor and filter for treating medium-strength wastewater using natural sludge growth and different hydraulic retention times. In *IOP Conference Series: Earth and Environmental Science* (Vol. 1199, No. 1, p. 012040). IOP Publishing. (IF: 2.25)
12. Bou, K., Poev, S., Chan, R., Ham, P., & Bun, S. (2023). Destabilization of Emulsion Oil Separation by using Chemical Coagulation Process: Preliminary Investigation for Effective Analysis. In *IOP Conference Series: Earth and Environmental Science* (Vol. 1199, No. 1, p. 012041). IOP Publishing. (IF: 2.25)
13. Choun, C., Bun, S., Ham, P., & Chan, R. (2023). Removal of Turbidity, Color, and Oil using Aerated Electrocoagulation-Flotation Reactor. *AIP Proceeding*, 2785 (1), 030044.

14. Ham, P., Bun, S., Wongwailikhit, K., & Painmanakul, P. (2023). Effect of Catalyst and Irradiation Characteristics on Volatile Organic Compounds Degradation in Aqueous Phase using TiO₂ Photocatalyst. *AIP Proceeding*, 2785 (1), 030032. **(IF: 0.41)**
15. Heang, B., Bun, S., Chan, R., & Ham, P. (2023). Comparative Study of Septic Tank, Anaerobic Filter, and Anaerobic Baffled Reactor for Treating Domestic Wastewater. *AIP Proceeding*, 2785 (1), 030030. **(IF: 0.41)**
16. Seng, P., Bun, S., Chan, R., & Ham, P. (2023). Optimize System Configuration and Operation Condition of Anaerobic Baffled Reactor (ABR) and Anaerobic Filter (AF) for Treating Domestic Wastewater. *AIP Proceeding*, 2785 (1), 030042. **(IF: 0.41)**
17. Pen, B., Bun, S., Fagkaew, P., & Painmanakul, P. (2023). Effect of Solid Media Addition on Mass Transfer and Bubble Dynamics in Bubble Column Reactor. *AIP Proceeding*, 2785 (1), 060006. **(IF: 0.41)**
18. Theam, A., & Bun, S. (2023). Optimization of Iron Co-Presence in Airlift Reactor for Arsenic (III) Removal using Respond Surface Methodology. *AIP Proceeding*, 2785 (1), 030040. **(IF: 0.41)**
19. Eng, K., Chan, R., Bun, S., Chan, R., Ham, P., & Sok, T. (2023). Optimization of Nitrate Production from Aquaculture Wastewater in a High-Rate Aerobic Reactor for a Hydroponic Spinach Growth. *AIP Proceeding*, 2785 (1), 030041. **(IF: 0.41)**
20. Muon, R., Ket, P., Sebag, D., Boukbida, H.A., Podwojewski, P., Hervé, V., Ann, V., Jouquet, P., 2023. Termite constructions as patches of soil fertility in Cambodian paddy fields. *Geoderma Reg.* e00640. <https://doi.org/10.1016/j.geodrs.2023.e00640> **(IF = 4.2)**
21. Muon, R., Lai, C., Hervé, V., Zaiss, R., Chassagne, F., Bureau-Point, E., Marchand, S., Audibert, M., Berger, J., Wieringa, F., Saviouré, A., Sok, K., Meunier, J., Ann, V., Jouquet, P. (2023). Abundance, perceptions and utilizations of termite mounds in Cambodia. *Soil Use Manag* 1–13. <https://doi.org/10.1111/sum.12893> **(IF: 3.8)**
22. Jouquet, P., Muon, R., Traoré, S., Harit, A. (2023). From Thai to Zai : Insects as Example of Threatened Nature-Based Solutions for Sustainable Food Production. *Biodivers. Online J.* 3(4), 1–4. <https://doi.org/BOJ.000566>. 2023. **(IF: NA)**

List of Non-index publications for academic year 2023-2024

1. Oeurng, C., Sok, T., Chan, R., Hour, H.M., Koun, P. (2023). Report on Community Fish Refuge (CFR) Pond Monitoring: Surface and Groundwater Study at Sras Ang CFR, Prey Veng Province. *Techno-Science Research Journal*. (2023).
2. Theam, A., Bun, S., Ham, P., Chan, R (2024). Oxidative Precipitation of Arsenic (III) with Iron (II) in Synthetic Groundwater using Diffused Aerator. *Techno-Science Research Journal*. (2024) [In Press]
3. Ngorn, K., Bun, S., Ham, P., Chan, R. (2024). Groundwater Quality Assessment Towards Sand Filter Modification for a Rural Community of Cambodia. *Techno-Science Research Journal*. (2024) [In Press]
4. Chork, V., Chhuon, K., Eang, K.E., Lun, S., Doung, R., & Massuel, S. (2023). Investigating Surface Water and Groundwater Interactions Using Ground Electrical Conductivity Measurement in the Bassac River Floodplain. *Techno-Science Research Journal* 11 (1), 1-6.

List of Conferences for academic year 2023-2024

1. Theng, K., Aun, S., Amin, M., Nat, Y. (2024). Measurement and Evaluation of Particle Number Concentration and Lung Deposited Surface Area Concentration in Open Public Space. The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.
2. Ren, R., Phairuang, W., Hata, M., Furuuchi, M., Amin, M., Meng, H., Or, C., Theng, K., Aun, S. (2024). Preliminary Study Of Diurnal And Nocturnal Size-Segregated Particulate Mass Concentration In Atmospheric Air Quality. The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.
3. Meng, C., Aun, S., Phairuang, W., Hata, M., Furuuchi, M., Amin, M., Ren, R., Or, C., Theng, K. (2024). Difference of Particulate Matter in Ambient Environment during Daytime and Nighttime in Phnom Penh City. The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.
4. Khor, S., Nhet, V., Pen, S. (2024). Rainfall Trend Anayis in Cambodia. The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.
5. Brang, S., Uk, S., Pen, S., Doung, R., Theng, V., Chork, V., Sok, K. (2024). Shoreline Evolution Over the Past Four Decades in Koh Kong, Cambodia. The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.
6. Nuth, P., Brang, S., Ban, L., Pen, S. (2024). Extrem Rainfall Event Analysis in Cambodia. The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.
7. Ban. L., Pen, S. (2024). Assessment of an Ungauged Catchment of Rongea River in Koh Ker Heritage Zone, Cambodia. The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.
8. Chy, V., Hout, M., Ich, I., Koun, P., Sok, T. (2024). Evaluation of Naïve Bayes and Naïve Bayes Tree of Machine Learning performance for flood model for the Prek Thnot River Basin.

The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.

9. Samai, S., Theng, V. (2024). Predictive Model of Eutrophication in Tonle Sap Lake Using Machine Learning. The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.
10. Krin, K., Ich, I., Meng, H., Song, L., Sok, T. (2024). Reappraisal of Modelling Streamflow in the Mekong River Basin Using the SWAT Model. The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.
11. Pen, S., Kuch, S., Min, T. (2024). Assessment of Flow Characteristics in Flate Terrain under Effect of Drainage Physical Property. The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.
12. Or, S., Hout, M., Song, L., Ich, I., Sok, T. (2024). Water Balance of Catchment Scale in Prek Thnot River of Cambodia and Setting Up for Quantify Nature-Based Solutions Efficiency. The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.
13. Thai, V., Vat, N., Ma, L., Menh, L., Pa, V., Noem, S., Heu, R. (2024). Assessment of Heavy Metals Pollution in Groundwater at the Rural Area of Cambodia. The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.
14. Pa, V., Thai, V., Noem, S., Menh, L., Heu, R. (2024). Seasonal Assessment of Groundwater Quality at Tonle Sap Lake Floodplain Area in Cambodia. The 13th Scientific Day of ITC Jointly held with International Symposium on Water Supply and Sanitation and the 1st Symposium of Food Technology, Research and Innovation, 06-07 June 2024, Institute of Technology of Cambodia, Phnom Penh, Cambodia.
15. Doung, R., Koa, Ch., Pao, L., Koun, P., Heng, S., Tha, S., 2023. Urban Flood Modeling in Prek Phnov District, Phnom Penh, Cambodia. The 12th Scientific day of ITC, 08-09 June 2023, Institute of Technology of Cambodia, Phnom Penh, Cambodia
16. Vaythouke, S., Doung, R., Sylvain, M., 2023. Seawater Intrusion Modeling in Coastal Aquifer of the Sihanoukville City by using SEAWAT-GMS Model. The 12th Scientific day of ITC, 08-09 June 2023, Institute of Technology of Cambodia, Phnom Penh, Cambodia

17. Oeurn, S., Sorn, P., Sem, S., Eang, K.E., & Massuel, S. (2023). Hydrogeochemistry and Quality Assessment of Groundwater in Coastal Area, Sihanoukville. The 12th Scientific Day of ITC "Engineering Technology and Innovation toward the Development of Digital Economy and Society", June 08-09, 2023. Institute of Technology of Cambodia.
18. Ly, V., Peng, C., Heng, O., Domenico, C. (2023). Antibiotic-Resistant *Escherichia coli* and *Aeromonas* spp. in Mono Cage Culture of Channa Micropeltes. The 14th International Conference on Environmental and Rural Development, at Angkor Paradise Hotel, Siem Reap, Cambodia, 03-05 March, 2023.

5.5. Research Facilities

Due to the international collaboration (Embassy of France, ARES-CCD, AUF), ITC is able to launch the teaching activities and research. From 2010-2011, ITC has received a number of new equipment from Japanese government. Other equipment has been supported during 2014-2015 due to the research project financed by ARES-CCD. These equipments will facilitate the research activities, teaching and strengthen the cooperation activities with industries. It is important to note that the SATREPS project, approximately 1.5 M\$ are reserved for the purchase of new equipment for research. About 90% of research equipment has been delivered to ITC. In 2019, ITC received 350 MRiels from the government of Cambodian through the ministry of education, youth and sport for research facility. Furthermore, ITC also received 7.9 M\$ from the government of Cambodia under HEIP project. Table below presents the total of 38 research laboratories of ITC by research unit.

Table 32. Laboratories of ITC by research unit.

Research unit	Name of laboratory
ETM	<ol style="list-style-type: none"> 1. Power System Lab 2. Renewable Energy and Energy Efficiency Lab 3. Biomass Energy Lab 4. Geophysics Laboratory 5. Energy management/Smart Grid Laboratory 6. Fossil fuel exploration
FTN	<ol style="list-style-type: none"> 1. Drying technology lab. 2. Rice-based product lab. 3. Physicochemical lab. 4. Healthyrice lab. 5. Cereal-based processing lab. 6. Fermentation lab. 7. Extraction lab. 8. Hall Technology 9. Chromatography Lab (ASS, HPLC and GC-MS) 10. Plant Biotechnology Lab
MIT	<ol style="list-style-type: none"> 1. Dynamic and Control Lab 2. Control System Lab 3. Electronics Fablab 4. EMC Lab 5. Computer Vision and Natural Language Processing Lab

MSS	<ol style="list-style-type: none"> 1. Nano-structure and Chemical Analysis Lab 2. Glass Structure Lab 3. Rubber Processing lab 4. Ceramic Lab (Materials Science and Engineering Lab) 5. Materials Science and Engineering Lab 6. Geotechnical Lab 7. Civil Engineering Lab (Asphalt Lab, Materials Engineering Lab and Soil Mechanic Lab) 8. XRD and XRF Lab
WAE	<ol style="list-style-type: none"> 1. HydroMet and Disaster Management Lab. 2. Water Environment Lab* 3. Soil Lab* 4. Topography Lab* 5. GIS and Remote Sensing Lab* 6. Coastal & Wetland Environmental Lab. 7. Environmental Chemistry Lab (SATREPS Lab.) 8. Environmental Microbiology Lab (SATREPS Lab.) 9. Air Pollution Lab <p><i>*Lab served for both practice and research, the rest serve for only research purpose</i></p>

5.6. Research and Innovation Dissemination

5.6.1. Techno-Science Research Journal

Techno-Science Research Journal (Techno SRJ) is a peer reviewed Journal that is hosted and published by Research and Innovation Centre (RIC) of ITC. In 2013, Techno-Science Journal was published its first volume containing 11 research papers and covering various engineering fields such as Chemical Engineering and Food Technology, Civil Engineering, Electrical and Energy Engineering, Geo-resources and Geotechnical Engineering, Industrial and Mechanical Engineering, Information and Communication Technology, and Rural Engineering. In 2023, volume 11 (2 issues) of 20 papers (Annex 21) has been published. Therefore, in total, there are 11 volumes (14 issues) of Techno-Science Research Journal with a total paper of 141 research papers have been published by December 2023. In addition to the publication activity, Techno-SRJ have done other activities to support the research and publication as listed in table below.

To disseminate the research output, the research findings in those search papers have been organized to share in national and international conferences as well as in Techno-SRJ online platform. Moreover, RIC has applied for ISSN and E-ISSN to international ISSN system. RIC will also apply for Asean Citation Index (ACI) in February 2024. The ISSN and E-ISSN and journal platform is available as follows:

- ISSN: 3006-4988
- E-ISSN: 3006-4996
- Link to Techno-SRJ: <http://techno-srj.itc.edu.kh/>

Table 33. Activity of Techno-Science Research Journal in 2023-2024.

No.	Activity	Schedule	Remark
1	3 rd workshop on “Improving of Scientific Paper Writing”	05 April 2023	Targeted junior researchers, graduate students, and year 5 engineering students at ITC
2	Publication of Volume 11, Issue 1	June 2023	All articles are available online in Techno-SRJ website (http://techno-srj.itc.edu.kh/). There are 10 articles from WAE (3), FTN (4), and ETM (3).
3	Publication of Volume 11, Issue 2	December 2023	All articles are available online in Techno-SRJ website (http://techno-srj.itc.edu.kh/). There are 10 articles from MIT (5), MSS (1), WAE (1), ETM (1), and others (2) – Data Science and Transportation.
4	Join workshop organized by MoEYS on online local journal	March 2023	Workshop organized at Battambang University
5	Complete development of Techno-SRJ online platform and uploaded all previous articles. (http://techno-srj.itc.edu.kh/)	2023	
6	ASEAN Citation Index (ACI) submission	February 2024	Waiting for the result release in June 2024
7	Join workshop organized by MoEYS on Enhancing Support for Higher Education Institutions in Establishing Research Journals	March 2024	Workshop organized at National University of Battambang
8	Preparing Volume 12, Issue 1 for publication	June 2024	There are total of 10 articles: MIT (5), FTN (2), ETM (2), and others (1) – Transportation.

5.6.2. RIC Website

The Research and Innovation Center (RIC) of ITC launched its own website (<https://ric.itc.edu.kh/>) in 2018, supported by ARES-CCD. The website was designed with two primary objectives: to offer comprehensive information about research units and the research potential of RIC, and to facilitate both internal and external communications. Since its inception, the website has been instrumental in data management and record-keeping, including the provision of an online researcher application form, which has been in use since 2018 until 2021. However, the functionality for online permissions through this website was postponed, as it became available on the ITC website starting October 2023.

Throughout the academic year 2021-2022, as part of the Key Performance Indicator (KPI) improvement initiative under the HEIP project, efforts were directed towards enhancing the RIC

website for smoother operation. Despite this, the website continues to fulfill crucial roles in various functions such as online research applications, managing the research project database, payroll management, KPI record-keeping, and more.

Looking ahead, there is a strong intention to further elevate the website by making it more dynamic and fully functional for project management and dissemination purposes. Collaborative efforts with partners are underway to improve the platform to better align with the evolving needs of the Research and Innovation Center at ITC.

5.7. Conclusion

In conclusion, the establishment of research units at ITC has been a significant step towards advancing research endeavors within the institution. The ongoing research activities at ITC play a pivotal role in fostering innovation and knowledge dissemination. The provision of new equipment and the establishment of the Research and Innovation Center further enhance research and teaching activities, fostering collaboration between ITC and various industries and partners. The dedication of ITC to financing research activities is evident, with 20% of its annual budget allocated towards research and innovation since 2012. Moreover, the positive support from the Cambodian government, with a substantial investment of 7.92 million USD towards research and innovation, signifies a promising trajectory for ITC.

In comparison to previous years, the number of research projects at ITC has remained stable, with approximately 100 ongoing projects. Notably, there has been a significant increase in the number of full-time researchers pursuing PhD degrees, indicating a promising trend in human resource development that bodes well for the future growth and development of ITC. Among the ongoing projects, a majority focus on applied and developmental research, contributing to social development and fostering stronger collaborations with industries. For instance, projects like SATREPS have made substantial contributions to society, aligning with the policies of governmental bodies such as the Ministry of Environment, Ministry of Water Resources and Meteorology, and the Tonle Sap Authority.

Collaborative efforts with private sectors, exemplified by initiatives such as the Higher Education Improvement Project, ARES-CCD projects, Pierre Fabre, and Erasmus+ projects, highlight ITC's commitment to engaging with industry partners. Furthermore, numerous smaller research projects with SMEs underscore the practical collaborations between departments and private enterprises.

Indeed, while these projects contribute significantly to Cambodia's development through research applications, it's imperative for RIC to continue enhancing research governance and fostering a conducive research environment to ensure sustainability and continued progress.

6. National and International Cooperation

6.1. Memorandum of Understanding and Memorandum of Agreement

In the context of internationalization, the ITC, like major schools around the world, wishes to have newer local, regional and international partners, to be able to develop collaborations and expand its multilateral relations. As a result, for the 2023-2024 academic year, 20 memorandums of understanding, 8 framework agreements were signed between ITC and its partners. The following table only illustrates the MoU and MoA with academic partners.

No	Name of institution	Country	Date	Type (MoU/MoA)
1	Chitose Institute of Science and Technology	Japon	2024-06-07	MoU
2	ERIA Digital Innovation and Sustainable Economy Centre	Japon	2024-05-30	MoU
3	Ministry of Industry, Science, Technology & Innovation	Cambodge	2024-05-08	MoU
4	Prince Huan Yu Real Estate (Cambodia) Group Co., Ltd	Chine	2024-04-30	MoU
5	SNKRP Co., Ltd	Cambodge	2024-03-22	MoU
6	Lotte Global scholarship	Corée	2024-01-29	MoU
7	International Peace Youth Group (IPYG)	Corée	2024-01-27	MoU
8	Ecole Nationale Supérieure de Chimie de Rennes (ENSCR)	France	2024-01-18	MoA
9	SAILUN Tire, Scholarship	Chine	2023-12-20	MoA
10	Université de Montpellier	France	2023-12-15	MoA
11	Northern Illinois University	USA	2023-12-13	MoU
12	Meng Yee Garment Manufactory Co., Ltd.	Chine	2023-11-30	MoU
13	Guilin University of Technology	Chine	2023-11-29	MoU
14	DENSO (CAMBODIA) Co., Ltd.,	Japon	2023-11-13	MoU
15	Nortwestern Polytechnical University	Chine	2023-11-10	MoU
16	Université de Rennes 1	France	2023-10-26	MoA
17	Institut National Des Sciences Appliquees RENNES (INSA Rennes)	France	2023-10-19	MoA
18	K & K Pipe (Cambodia) Co., Ltd.	Cambodge	2023-10-04	MoU
19	Cambodian Water Supply Association	Cambodge	2023-10-04	MoU
20	Université de Liège	Belgique	2023-09-22	MoA
21	Research and Development Center, Nippon Koei Co., Ltd.	Japon	2023-09-21	MoU
22	Kagoshima University	Japon	2023-09-04	MoU
23	Hohai University	Chine	2023-08-14	MoA
24	UNESCO UNITWIN Cambodia, Data Sciece	UNESCO University Network	2023-08-04	MoU
25	Universitas Negeri Yogyakarta	Indonésie	2023-07-31	MoU
26	Hohai University	Chine	2023-07-23	MoU
27	UHS, CTU (Czech Technical University) and ITC	Czech Republic	2023-07-20	MoU
28	LBL International Co., Ltd	France	2023-07-18	MoA

6.2. Internship and visit

6.2.1. Foreign student at ITC

As part of multilateral inter-university exchanges, for the first semester of this 2023-2024 school year, the number of foreign students is 26 students, 6 of whom come from the international program with ECAM LaSalle Cambodia. This is a good indicator which testifies to the resumption of academic activities and international mobility within the framework of interuniversity partnerships and we hope that this number does not stop increasing next semester. Detail information is shown in Annex 27.

6.2.2. Foreign Students and Organizations on ITC campus

As the Cambodia Institute of Technology places more emphasis on research and innovation, we have foreign organizations on our campus that are involved in different areas of research with ITC researchers. These international partners are as follow:

1. Agence Universitaire de la Francophonie (AUF),
2. Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD),
3. Institut de Recherche pour le Développement (IRD),
4. Laboratory Based-Education (LBE),
5. Global Green Growth Institute (GGGI),
6. Establishment of Risk Management Platform for Air Pollution (ERMPAP-SATREPS Project).

For the operation of these organizations, they employ 35 people of different nationalities (researchers and international experts) who are in full activity coming from different countries: France, India, Nepal, Bangladesh, Korea, États-Unis (16 Japanese and 13 French).

6.3. Collaboration with industries

The University-Industry Linkage Office (UIL) at the Institute of Technology and Cambodia (ITC) is committed to facilitating productive collaborations between academia and the private sector. This report provides a comprehensive overview of the collaborative endeavors undertaken by UIL during the period of June 2023 to May 2024, between this timeframe, ITC engaged in a total of 154 collaborative activities with the private sector (Table below), exemplifying its dedication to fostering partnerships and knowledge exchange. Specifically, within the realm of collaboration between ITC and industries, a strong synergy was evident through various initiatives. The detail of each activity is shown in the following Tables:

Table 34. Activities of UIL collaboration with industries for 2023 and 2024.

No.	Collaboration with industries	Number of collaborations	
		2023	2024
1	Organizing seminar and workshop for lecturer and student	36	43
2	Joining seminar and workshop organized by organization/ministries/universities/abroad	10	23
3	Industry visit ITC	36	30
4	ITC lecturer and student visit industry	35	19
5	Event organization	2	3
6	Project and training developed with/for private sectors and other services	13	27
7	MoU and MoA with industry	15	9

Notes: 2023 counts from June 2022 - May 2023; 2024 counts from June 2023 to May 2024

Based on the above table, a notable highlight was the organization of 43 seminars and workshops aimed at disseminating valuable experiences and knowledge encompassing both hard and soft skills to ITC lecturers and students (See in Annex 28). These events served as platforms for professional development and enrichment. Outcome: Enhanced skill sets and knowledge acquisition among lecturers and students, thereby strengthening their preparedness for the demands of the industry.

UIL actively participated in 23 seminars and workshops hosted by external organizations, ministries, and universities abroad. These engagements provided representatives from ITC with invaluable insights and expertise in relevant fields (See in Annex 29). Outcome: Enriched understanding of emerging trends and best practices, facilitating the integration of cutting-edge knowledge into academic curricula and research endeavors.

Demonstrating a proactive approach, ITC welcomed 30 companies and industries to its campus, fostering collaborative discussions and exploring avenues for future joint projects. These visits fostered meaningful interactions and laid the groundwork for future partnerships (See in Annex 30). Outcome: Cultivation of strategic alliances and opportunities for knowledge exchange, paving the way for collaborative research initiatives and internship programs.

Lecturers and students from various faculties and departments embarked on visits to 19 companies and industries, aiming to deepen collaboration and provide students with firsthand exposure to real-world applications of their studies (See in Annex 31). Outcome: Bridging the gap between theory and practice, enhancing students' understanding of industry dynamics, and fostering the acquisition of practical skills.

UIL successfully organized 3 flagship events annually, namely the Industry Consortium, the Scientific Day and the International and Regional Conference. These events provided platforms for stakeholders to convene, share insights, and explore avenues for collaboration (See in Annex 32). Outcome: Facilitation of knowledge dissemination, networking opportunities, and the showcasing of innovative research and industry-academic partnerships. The 6th Industrial Consortium Event brings industry and academia together to discuss graduate quality, future industry skills, and sustainable collaboration. The arrangement of this event was a bit different from the previous year. After opening remarks and introducing the purposes of the meeting by our director general and following by the presentations by the relevant key speakers on the changes and implement activities/results from previous industrial consortium; professional training/return to industry and research to commercialization, the leaders and representatives from companies, enterprises, and industrial sectors, totally 40 participants, along with lecturers and researchers were invited to join group discussion on three different themes: Group A: Theme “Construction, Testing, and Material”; Group B: Theme “Manufacturing”; Group C: Theme “Electronic and Electric”. Three topics were discussed, firstly, the discussion centered around curriculum adaptation to align with the evolving needs of companies, enterprises, and industrial. This adaptation aims to address both technical and soft skills, with a focus on staying abreast of current technologies and anticipating future trends crucial to meeting industry demands. The second focus area involved exploring staff exchange initiatives between ITC and partnering companies. This included understanding the potential for securing funding to conduct brief training sessions for company employees, utilizing resources like Skills Development Fund (SDF funds) or other available sources. Simultaneously, there was a consideration for providing short-term training opportunities for ITC staff within the partnering companies. Lastly, the gathering addressed the exploration of research projects for potential joint ventures with industry partners. The intention was to collaboratively identify areas of mutual interest and possibility, with inputs received from the companies serving as valuable insights for the ongoing development of ITC. During the workshop, a comprehensive online questionnaire survey was conducted to gauge the interest and needs of companies regarding professional training provided by ITC (see detail [20231215 Report of Industry Consortium 2023.pdf](#)). Then, the results were used as a reference for developing a training proposal (28 training courses) to get fund from SDF (Program with School).

Following reciprocal visits, ITC successfully developed 27 projects in collaboration with SMEs, companies, and industries in Cambodia, showcasing its commitment to fostering innovation and addressing industry needs. These projects included short-course training, joint-research and consultancy (See in Annex 33). Outcome: Generation of solutions to industry-specific problems, fostering entrepreneurship, and providing students with hands-on learning experiences.

UIL signed a total of 9 documents, including 7 memoranda of understanding and 2 framework agreements with industry partners. These agreements delineated mutual commitments and areas of collaboration (See in Annex 34). Outcome: Formalization of partnerships, laying the groundwork for sustained cooperation, and the pursuit of shared goals

Conclusion

The collaboration between ITC and the industry has experienced a significant surge compared to the previous year. To further promote ITC's business services and collaboration, the following strategies will be implemented:

- Development and regular updating of promotional booklets showcasing ITC services.
- Continuous updates on social media platforms such as the Facebook page, Telegram Channel, and website of UIL-ITC.
- Scheduling regular meetings with industries to foster ongoing dialogue and collaboration.
- Actively engaging private sectors in research projects to leverage expertise and resources.
- Organizing a series of events including seminars, workshops, career fairs, industry consortiums, and open houses to facilitate networking and knowledge exchange.
- Strengthening internal support and collaboration by conducting bi-annual meetings with UIL representatives from all faculties, departments, and research units. This will provide a platform to address challenges, gather feedback, and implement suggestions to enhance the efficiency of the UIL Office. Recognizing and incentivizing active participation, awards will be presented to the top three faculties and research units excelling in providing business services to private sectors, as well as individual awards for lecturers and researchers demonstrating outstanding contributions to UIL's initiatives.

Moreover, the UIL main office has relocated to a new building (J-101), which will serve as a dedicated career and training center. Additionally, this space will be available for private sector rental to host events and showcase their products/services. Furthermore, it will provide a platform for ITC students and researchers to exhibit their product prototypes, fostering collaboration and promoting ITC's capabilities to the private sector.

Annex

Annex 1. Minutes of the International Consortium Meeting on 27-28 March 2024.



**COMPTE-RENDU DE LA RÉUNION DU CONSORTIUM
INTERNATIONAL D'APPUI À L'ITC
Les 27 et 28 mars 2024, à l'ITC, Phnom Penh**

MEMBRES DU CONSORTIUM 2024

I. Établissements étrangers

No	Nom de l'établissement	Sigle	Pays
1	Ambassade de France	AF	France
2	JICA Cambodia Office	Jica	Japan
3	Ministère de l'Éducation, de la Jeunesse et des Sports	MoEYS	Cambodge
4	Ministère des Mines et de l'Énergie	MME	Cambodge
5	Agence Universitaire de la Francophonie	AUF	AUF
6	Centre international de recherche agricole pour le développement	CIRAD	France
7	Chambre de Commerce et d'Industrie France Cambodge	CCIFC	France
8	DevKhmer SARL	DevKhmer	Cambodge
9	École Nationale Supérieure de l'informatique pour l'Industrie et l'Entreprise	ENSIIE	France
10	École Catholique des Arts et Métiers	ECAM LaSalle	France
11	École Nationale des Ponts et Chaussées	ENPC	France
12	École Nationale Supérieure en Génie des Technologies Industrielles (ENSGTI), UPPA	ENSGTI	France
13	IMT Mines Alès, représentant Institut Mines-Télécom	IMT Mines Alès	France
14	INSA Lyon	INSA Lyon	France
15	INSA Toulouse	INSA Toulouse	France
16	Institut de Recherche pour le Développement	IRD	France
17	Institut National des Sciences appliquées de Rennes	INSA Rennes	France
18	Institut National Polytechnique de Toulouse	INP Toulouse	France
19	Institut Pasteur du Cambodge	IPC	Cambodge
20	Institut Universitaire de Technologie d'Orsay	IUTO	France
21	IUT de Saint-Nazaire	IUT	France
22	KASETSART University	KU	Thaïlande
23	KYUSHU University	KU	Japon

24	Montpellier SupAgro	Montpellier SupAgro	France
25	Northeastern Illinois University	NIU	USA
26	Polytech Lille	Polytech Lille	France
27	Schoolab / Hexagon	Schoolab	France
28	Tokyo Tech	Tokyo Tech	Japon
29	Université catholique de Louvain	UCLouvain	Belgique
30	Université de la Réunion	UR	France
31	Université de Liège	ULiège	Belgique
32	Université de Liège, Gembloux Agro-Bio Tech	Gembloux Agro-Bio Tech	France
33	Université de Mons	UMONS	Belgique
34	Université de Namur	UN	Belgique
35	Université de Rennes	UNIV Rennes	France
36	Université Libre de Bruxelles	ULB	Belgique
37	Université Paris-Sud	UPS	France
38	Université Paul Sabatier	UPS	France
39	Université Sorbonne Paris Nord	UP 13	France
40	VOLTRA Co., Ltd.	VOLTRA	Cambodge

II. Partenaires institutionnels

1. M. Pierre VINCENT, Conseiller de coopération et d'action culturelle, ambassade de France
2. S.E. le Dr. OM Romny, Secrétaire d'État au ministère de l'éducation, de la jeunesse et des sports
3. S.E. Mme PEN Chhorda, Secrétaire d'État au ministère des mines et de l'énergie
4. M. SERMET Laurent, Directeur Asie-Pacifique de l'AUF
5. M. THLANG Peaktra, Représentant de la AFD au Cambodge
6. M. KOICHIRO Watanabe, Senior Advisor of JICA
7. Mme GROS-MARTIAL Adèle, Représentante au pays chez l'IRD
8. M. ROGER François, Centre international de recherche agricole pour le développement
9. M. JULLIARD Charles, Chambre de Commerce et d'Industrie France Cambodge (CCIFC)

III. Entreprises

10. M. Franck TOUCH, DevKhmer SARL Co., Ltd.,
11. M. VAUDIN Yann, VOLTRA Co., Ltd.,
12. M. Arthur Mossa, Schoolab / Hexagon

IV. Membres invités

13. Mme Thi Anh-Dao TRAN, Attachée de Coopération Universitaire et Scientifique
14. Mme Élodie WYNAR, Attachée de Coopération pour le français
15. M. SAN Chandaron, Responsable de l'Antenne AUF de Phnom Penh
16. Mme Toyama Haruko, Senior Program Officer of JICA Cambodia
17. M. JUN-ICHI Takada, Tokyo Tech
18. M. THOEUN Vongdy, Jica Cambodia Office
19. Mme TRIA Assia, IMT Mines Alès
20. Mme ANDRE Françoise, IMT Mines Alès

21. M. DESPLANCHE Didier, ECAM LaSalle de Lyon
22. M. AUBERT Pascal, Université Paris-Saclay
23. M. VINCKE Bastien, Université Paris-Saclay
24. Mme THIBON Isabelle, Institut National des Sciences appliquées de Rennes
25. M. VERLEYSEN Michel, Université catholique de Louvain
26. M. DEBASTE Frédéric, Université Libre de Bruxelles
27. Mme DASNOY Christine, Université de Liège
28. Mme DEGRE Aurore, Université de Liège
29. M. GOSSELIN Bernard, Université de Mons
30. M. LEYS Christophe, Université Libre de Bruxelles
31. M. DAUBY Pierre, Université de Liège
32. M. LECLERCQ Pierre, Université de Liège
33. M. Kylie STRINGFELLOW, Griffith University
34. Mme SHOMI Kim, Global Green Growth Institute
35. M. ANGLES Paul, INSA Toulouse
36. M. SKRZYPEK Thibaut, École nationale des ponts et chaussées
37. M. CYR Martin, Université Paul Sabatier
38. M. OBRECHT Christian, INSA de Lyon
39. M. Kévyn JOHANNES, INSA de Lyon
40. M. KUZNIK Frédéric, INSA de Lyon
41. M. Nora Tufenkjian, INSA de Lyon
42. Mme WYNAR Elodie, Ambassade de France
43. M. DARRACQ Bruno, Institut Universitaire de Technologie d'Orsay
44. M. SANGLEBOEUF Jean-Christophe, professeur des universités, Université de Rennes
45. M. MASSUEL Sylvain, IRD
46. Mme WARAPA Mahakarnchanakul, KASETSART University
47. Mme CHAISERI Siree, KASETSART University
48. Mme LEGEAIS Béatrice, IUT de Saint-Nazaire
49. Mme MIYAKE Chiho, LBE Project
50. Mme Stéphanie LEROY, CNRS/Université Paris Saclay)
51. Mme AVALLONE Sylvie, Montpellier SupAgro
52. Mme LENCZEWSKI Melissa, Northeastern Illinois University
53. M. CHABRIAT Jean-Pierre, Université de la Réunion
54. M. CHARLES Yann, Université Sorbonne Paris Nord
55. M. Guy DIRRAS, Université Sorbonne Paris Nord
56. Mme José MORALES, Université Sorbonne Paris Nord
57. M. DOSSANTOS-UZARRALDE Pierre, École Nationale Supérieure de l'informatique pour l'Industrie et l'Entreprise
58. M. Cathal GURRIN, Dublin City University

V. Équipe de direction de l'ITC

V. 1. Direction

59. S.E. le Dr. PHOEURNG Sackona, présidente du Conseil d'Administration et ministre de la culture et des beaux-arts
60. S.E. le Prof. PO Kimtho, directeur de l'ITC
61. M. SOY Ty, directeur adjoint
62. M. BUN Kim Ngun, directeur adjoint
63. M. NGUON Kollika, directeur adjoint

- 64. M. PROTIN Ludovic, directeur honoraire de l'ITC
- 65. M. CHUNHIENG Thavarith, conseiller pour la coopération
- 66. M. NUTH Sothân, conseiller pour les affaires académiques
- 67. M. PENH San, conseiller pour l'administration

V.2. Facultés, départements et sections

- 68. M. OR Chanmoly, directeur du centre de recherche et d'innovation ((RIC)
- 69. M. LIN Mongkolserey, vice-directeur du centre de recherche et d'innovation, coordinateur de l'ITC Tbongkhmum et doyen de la faculté des sciences appliquées et chef de département des mathématiques appliquées et statistiques
- 70. M. SIM Tepmony, directeur de la formation de 3^{ème} cycle (GS)
- 71. M. SIEANG Phen, responsable du bureau des relations internationales (RI)
- 72. M. HAN Virak, doyen de la faculté de génie civil (GCI)
- 73. M. CHHUON Kong, doyen de la faculté d'hydrologie (GRU)
- 74. M. IN Sokneang, doyenne de la faculté de génie chimique et alimentaire (GCA)
- 75. M. ENG Chandoeurn, doyen de la faculté de génie de géo-ressources et de géotechnique (GGG)
- 76. M. CHRIN Phok, doyen de la faculté de Génie Électrique et Énergétique (GEE)
- 77. M. BUN Long, vice-doyen de la faculté de Génie Électrique et Énergétique
- 78. M. CHAN Sarin, doyen de la faculté de génie industriel et mécanique (GIM)
- 79. M. LAY Héng, vice-doyen de la faculté de génie électrique (GIC) et chef du département de Génie Informatique et Communication (GIC)
- 80. M. PHUN Veng Kheang, chef de département de génie des transports et des infrastructures (GTI)
- 81. Mme SREY Malis, chef du département du Tronc Commun (TC)
- 82. Mme KHEMTRAN Krasel, responsable de la section de français (SF)
- 83. M. SO Phea, responsable de la section d'anglais (SA)
- 84. M. SOK Kimheng, responsable de la Bibliothèque
- 85. Mlle SANG Davin, chef adjoint des relations avec les entreprises (UIL)
- 86. M. KHIEV Samnang, responsable du service informatique (IT)
- 87. Dr. SRENG Sochenda, chef de département télécommunications et réseaux (GTR)
- 88. Dr. SRANG Sarot, responsable du génie mécanique et des systèmes de contrôle au Département de génie industriel et mécanique et coordinateur du programme international ECAM LaSalle-ITC
- 89. Mme HANG Leakhena, responsable d'assurance de qualité interne (QA)

Cette année, la réunion du Consortium international d'appui à l'ITC a repris son rythme habituel, soit une journée et demie, la quasi-totalité des membres en présentiel. Toutefois, étant donné que certains de nos membres étaient dans l'impossibilité de déplacement pour diverses raisons, nous avons décidé d'organiser une réunion hybride pour les séances plénières et les discussions dans les départements respectifs. Pour comprendre plus précisément, nous vous invitons à lire l'ordre du jour présenté ci-dessous:

Mercredi 27 mars 2024 :

7h30 - 8h00 : Accueil des participants

8h00 - Session plénière dans la salle A-110

8h00 - 10h30 :

- Discours de bienvenue de S.E. PHOEURNG Sackona, Présidente du CA de l'ITC

- Méthodologie de travail et objectifs de la réunion du consortium 2024
- Bilan d'activités 2023 - 2024

10h30 - 10h50 : Pause-café

10h50 - 12h00 : Perspective et Stratégie 2024-2025

12h00 - 13h30 : Déjeuner

13h30 Sessions par groupe

13h30 - 17h30 : Travail en groupe dans les Départements/3^{ème} Cycle/Recherche

18h30 - Diner convivial organisé par la direction de l'ITC

Jeudi 28 mars 2024 :

8h30 : Session plénière dans la salle A-110

8h30 - 12h00 : Présentation des synthèses des groupes de travail

En introduction, **S. E. Mme PHOEURNG Sackona**, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC, salue tous les membres et surtout les nouveaux membres du Consortium international d'appui à l'ITC, de France, du Japon, de Belgique, de Thaïlande et d'autres pays, en présentiel et en ligne. Ce regroupement multilatéral permet toujours de renforcer le développement de l'ITC. Cette rencontre représente un plus grand nombre que celui de la réunion du Conseil d'Administration. Cette année, nous plus d'une centaine de personnes qui se retrouve pour ce rendez-vous technique, académique et scientifique.

Pour commencer, elle invite tous les partenaires à faire le tour de table. C'est le représentant de l'Ambassade de France, M. Pierre VINCENT qui glisse ses petits mots comme les suivants :

.....

M. Pierre VINCENT, Conseiller de Coopération et d'Action Culturelle de l'Ambassade de France et directeur de l'Institut Français du Cambodge

***Merci Madame la Ministre,
Bonjour à toutes et à tous,***

Je partage comme vous, Madame la ministre, la joie de voir chaque année de plus en plus de partenaires se joindre à nous. Je comprends qu'il y a une forte délégation belge cette année donc elle est particulièrement bienvenue aujourd'hui à ce consortium. Ce dynamisme et... Bien, Madame la ministre, c'est le succès et la bonne tenue de ce consortium chaque année, grâce à vos équipes, grâce au directeur général Monsieur PO Kimtho, grâce aussi à tous les doyens, les vice-doyens et Monsieur SIEANG Phen, le directeur des relations internationales. Permettez-moi, Madame la ministre aussi de rappeler l'attachement fort de la France envers le Cambodge et à cet égard, je citerai les entretiens de haut niveau entre les chefs d'État et de gouvernement qui se sont déroulés récemment à Paris et le lien tout particulier qui attache la France à l'ITC. Vous le savez, vous l'avez mentionné, Madame la ministre, son 30 ans de coopération, l'ITC a accueilli des organismes de recherche à former des étudiants et nous avons parmi ces organismes de recherche des représentants ici que je salue comme l'IRD, le CIRAD et grâce à ce partenariat et bien nous sommes arrivés à un niveau aujourd'hui où l'ITC a une reconnaissance non pas simplement niveau national et régional mais international et j'en cite la preuve, la présence de tous nos partenaires et internationaux étrangers. L'accueil d'organismes de recherche qui se traduit par plusieurs points je peux juste être très rapidement, c'est la recherche aux projets qui se développe avec un travail collaboratif entre les équipes internationales et les équipements

cambodgiennes et c'est aussi la soumission des appels aux projets en commun et la levée de fonds auprès des bailleurs. Je citerai aussi les publications conjointes qui sont un élément fondamental de la recherche et qui sont en croissance ici à l'ITC et c'est un phénomène que je salue particulièrement. C'est un travail remarquable qui est effectué par une équipe de recherche ici à l'ITC. L'ITC est au niveau de l'excellence internationale, c'est aussi grâce à la politique de standard international à laquelle l'ITC est soumis. C'est une excellente chose que je salue aussi au nom de toute la coopération française. Enfin, sur ces points permettez-moi la ministre de dire que ce succès n'aurait pas été possible sans la participation de collègues et notamment de collègues français je n'en citerai peut-être qu'un aujourd'hui car il nous est cher et il a dû nous quitter définitivement ces derniers jours pour rejoindre la France je pense au conseiller Monsieur Bruno DAGUES et permettez-moi madame la ministre de le saluer et de le remercier pour toutes ses années passées auprès de l'ITC. Je serai pas plus long et je me féliciterai une nouvelle fois de l'équipe de direction et tous les partenaires pour faire de ce consortium ce qui est chaque année un lieu d'échange de débat de réflexion pour porter au plus haut l'excellence de l'ITC et du Cambodge dans le monde de la recherche internationale. Merci infiniment, Madame la ministre et bon Consortium.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Merci monsieur le Conseiller. Nous avons aussi le représentant des collègues belges qui sont partenaires de l'ITC depuis 1997. La parole est accordée maintenant à M. Michel VELEYSSEN.

M. Michel VELEYSSEN, représentant des partenaires belges

*Merci Madame la Présidente,
Bonjour à toutes et à tous,*

Avant tout, merci pour le formidable accueil que l'ITC offre en permanence à ses partenaires étrangers. Je pense qu'on se sent bien accueilli quand on vient ici ou quand on collabore à distance et c'est vraiment très très important. C'est l'essentiel même de des collaborations en termes d'enseignement en termes de recherche en termes de valorisation. Je voudrais remercier toutes les personnes avec lesquelles nous travaillons parce que c'est vraiment un plaisir de collaborer comme vous l'avez dit ça fait à peu près 25 ans que l'ITC a la collaboration avec les partenaires belges et ça fait si les renseignements que mes collègues m'ont fourni, il y a quelques minutes, sont vrais que nous avons un programme qu'on appelle l'appui institutionnel et donc c'est un programme de recherche mais qui vivent à développer et à collaborer avec l'institution ITC dans son ensemble ce qu'on a vu depuis c'est 17 ans une évolution vraiment phénoménale de ITC. On a on a commencé par des collaborations au niveau de l'enseignement au niveau du bac, au niveau du bachelier puis du Master, du doctorat, de la recherche de la valorisation de la recherche, de la cellule d'interface et maintenant la collaboration principale est transversale de l'institution, elle concerne la structuration d'un certain nombre de parties de l'institution et des compétences des personnes et on a vu cette évolution phénoménale de l'ITC ces dernières années et donc je voudrais en féliciter de l'équipe de direction bien entendu, mais également tous les membres de l'ITC qui contribuent à cette évolution très très importante. En dehors de cette de ce programme, il faut pas oublier que qu'avec la Belgique il y a également d'autres collaborations sur des programmes plus spécifiques sur un domaine de recherche ou d'enseignements. Il y a pas mal de possibilités, il y a même je dirais des extensions de possibilités par rapport à ce qu'il y avait. Il y a quelques années, je les encouragerai à postuler à ce programme. Je pense que malgré tout le succès qu'il y a et je n'ai minimisé absolument pas mais je pense qu'encore avoir davantage de collaboration je pense qu'à partir du moment où il y a de la volonté de la part de membres de

l'ITC il y aura toujours dans nos universités en Belgique dans les 5 universités qui collaborent avec l'ITC des réponses et une preuve qui a été mentionnée par monsieur le Conseiller c'est que la délégation n'était jamais aussi nombreuse. Nous sommes 8 ce matin. Donc, voilà encore merci pour cet accueil et félicitations à l'équipe de l'ITC pour ce formidable développement qui est devenu une véritable collaboration d'égal à égal entre l'ITC et les universités en Belgique. Je pense qu'on est plus dans un mode de coopération d'aide au développement. Je pense que nous avons aussi beaucoup à apprendre de l'ITC à chaque fois que nous venons ici à l'ITC, merci beaucoup.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Merci monsieur le professeur. Now, I would like to turn to our colleagues from Japan. Yes, when we talk about ITC, we immediately think of cooperation with France. But I always remember, in 2000, I got an invitation from AUN-SEED/Net. This means networking universities in ASEAN. ITC was invited to join this networking. When I went with His Excellency POK Than, Secretary of State at the Ministry of Education, Youth and Sport at that time, to join the meeting at Chulalongkorn University. So that, our cooperation started from that day until now 23 years already. You can see now, the real results from that. We have human resources trained from Japan, other ASEAN countries, France, Belgium. These are our young professors and researchers who are in action in different fields. So, I am so happy to see that. Now, I would like to give the floor to Professor Watanabe who represents Japanese universities. Professor, please.

Prof. KOICHIRO Watanabe, Representative from JICA Headquarter

Good morning et bonjour. I am from JICA Headquarter. I worked for AUN-Seed/Net for a long time and now I work at Jica headquarter as an advisor. I'm also professor Emeritus of Kyushu University. I am happy to know that ITC is promoting the internationalization. Probably later, we will discuss about that. So I hope to have a good discussion later. Thank you.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Thank you, Professor. On peut maintenant commencer notre travail. J'aimerais préciser que vous avez les documents devant vous et puis dans celui du bilan d'activités, vous avez le programme de notre réunion. D'abord, une matinée bien chargée et l'après-midi touche les discussions dans les départements respectifs. Et demain, on va se réunir encore ici. Je vous invite donc à voir cet ordre de jour. Si vous n'avez pas de commentaires, je considère ce programme est adopté. Ce matin, on écoute les rapports des activités réalisées pour cette année et une séance questions/réponses. Aussi dans ce document, vous avez une liste des membres répartis en fonction du département avec lequel ils travaillent. Si vous ne voyez pas votre nom, pas de problème parce qu'on n'est pas encore sûr de volonté de discussion avec tel ou tel département. Pour ceux et celles qui sont en rouge, ils nous joignent en ligne. Après les présentations, vous pouvez vous inscrire dans le/les département/s vous voulez intervenir. C'est notre modalité de travail. Ce matin, il s'agit de la présentation globale des activités de l'ITC mais quand vous allez cet après-midi, vous allez discuter de l'état du lieu, des ressources humaines, du curriculum, du nombre d'étudiants, des bourses, des projets de recherche, de l'avancement du troisième cycle et des perspectives du département pour 2024-2025. Dans ce cas-là, vous avez le temps de discuter avec nos collègues cambodgiens des programmes des techniciens, des ingénieurs de master et doctorat, de la codiplomation et du transfert de crédits, de la promotion des programmes internationaux, du renforcement et du développement des relations avec les entreprises, de l'amélioration des programmes pour le troisième cycle et la recherche, des

publications, du transfert de nouvelle technologie, du développement des prototypes et des start-ups. Les avis de nos partenaires étrangers sont chers. Demain matin, chaque département a 8 minutes pour faire une présentation résumant tout cela. Je demande donc à chaque département de choisir son rapporteur.

Pour continuer, M. SOY Ty va présenter le suivi des avis du Consortium et les décisions du CA 2023.

Le suivi des avis du Consortium :

- 1- Renforcer la compétence transversale en développant des relations avec les partenaires publics et privés, et les Alumni (REALISE).
- 2- Tout diplôme d'ingénieurs (Engineering Degree) nécessite une durée de cinq ans. (REALISE).
- 3- Une augmentation de nouvelles options, de nouveaux travaux pratiques entraîne plus de dépenses mais l'ITC et ses partenaires peuvent les assurer. (REALISE).
- 4- Au niveau des ingénieurs, essayer de rendre transversaux certains cours : entrepreneurship ou marketing par exemple. (REALISE).
- 5- L'orientation pour promouvoir une nouvelle option ou un nouveau département est indispensable. La mise en place du département des Mathématiques appliquées et statistiques (Data Science) nécessite une campagne de sensibilisation pour que les étudiants comprennent bien leurs emplois attendus. (REALISE).

Le relevé des décisions du Conseil d'administration 2023 :

- 1- Reclasser les projets par nature, par niveau (ne pas les mettre tous ensemble) (EN COURS DE REALISATION)
- 2- La durée de Bachelor of ITC dure 5 ans (REALISE)
- 3- L'ITC va discuter avec le MEJS et donner le titre « Professeur Émérite aux dirigeants et les professeurs de l'ITC qui sont à la retraite. (EN COURS DE REALISATION)
- 4- Ingénieurs : ITC-Phnom Penh=1300 étudiants (80 bourses); ITC Tbong Khmum=120; Techniciens=1000 étudiants (15% bourses) (REALISE).
- 5- Droits de scolarité : Ingénieurs : (800USD/650USD pour les filles); Techniciens (350USD/250USD pour les filles) (REALISE).
- 6- Nomination de l'équipe de direction de l'ITC (REALISE).

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Merci et je donne la parole à SE PO Kimtho pour présenter les événements marquants de l'ITC. Pour ne pas alourdir le texte, je n'en cite que les titres.

- 1- Cérémonie de la pose de la première pierre du centre de formation et de recherche au nouveau campus de l'ITC;
- 2- Visite de SE HANG Chuon Naron, vice-premier Ministre et Ministre de l'Éducation, de la Jeunesse et des Sports;
- 3- De nouvelles initiatives en faveur de la Jeunesse francophone d'Asie-Pacifique (CONFRASIE);
- 4- Nouveau projet financé par JICA;
- 5- Visite de SEM Yann CHANTREL, sénateur français;

- 6- Visite de M. Pierre VINCENT, Conseiller de Coopération et d'Action Culturelle et Directeur de l'Institut Français du Cambodge;
- 7- Visite de Mme Garmen GERVET, Directrice de l'unité de recherche ESPACE DEV de l'IRD (France);
- 8- Visite de hauts délégués de l'ARES;
- 8- Visite de SE Madame Dominique Hasler, Ministre des affaires étrangères, de l'éducation et des sports de Liechtenstein;
- 10- Visite de M. Luis Benveniste, global Director for Education of World Bank;
- 11- La 14ème Conférence régionale AUN/SEED-Net (RCGeoE) et la 2ème Conférence internationale (EraGET2023);
- 12- Visite de Sailun Cambodia-Vietnam factories.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Thank you. Now, I return to Mr. SOY again who will present the activities of ITC.

(Pour ne pas alourdir le texte, je vous prie de consulter le document si vous souhaitez avoir plus d'information.)

Thank you. Now, I give the floor to Dr. SIM Tepmony who will present the master et PhD program.

(Pour ne pas alourdir le texte, je vous prie de consulter le document si vous souhaitez avoir plus d'information.)

Thank you. Now, I give the floor to Mr. LAY Heng who will present E-Learning Center.

(Pour ne pas alourdir le texte, je vous prie de consulter le document si vous souhaitez avoir plus d'information.)

Thank you. Now, I give the floor to Mr. SOK Kimheng who will present the library of ITC.

(Pour ne pas alourdir le texte, je vous prie de consulter le document si vous souhaitez avoir plus d'information.)

Thank you. Now, I give the floor to Dr. OR Chanmoly who will present the Research and Innovation Center.

(Pour ne pas alourdir le texte, je vous prie de consulter le document si vous souhaitez avoir plus d'information.)

Thank you. Now, I give the floor to Mr. SIEANG Phen who will present the capacity building and professor dispatch.

(Pour ne pas alourdir le texte, je vous prie de consulter le document si vous souhaitez avoir plus d'information.)

Thank you. Now, I give the floor to Dr. SANG Davin who will present the industrial collaboration.

(Pour ne pas alourdir le texte, je vous prie de consulter le document si vous souhaitez avoir plus d'information.)

Pause-café / Coffee Break

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Bonjour M. SERMET Laurent. Merci d'être parmi nous aujourd'hui. La parole est à vous maintenant.

M. SERMET Laurent, Directeur Asie-Pacifique de l'AUF

Merci Madame la Présidente.

Bonjour à toutes et à tous,

J'ai écouté de bonnes présentations. C'était enrichissant, informatif et instructif. Je vois également que l'AUF a été cité à plusieurs reprises. Je vous remercie. Je souhaite madame la présidente dire un petit mot par rapport à la présentation de notre collègue Phen concernant la mobilité des étudiants. L'AUF va mettre au point un programme international de mobilité et d'employabilité francophone. Ce programme va permettre aux étudiants d'avoir une mobilité courte, soit un à trois mois. Lorsqu'un étudiant va dans un pays étranger pour acquérir de nouvelles connaissances, il revient dans le pays avec un diplôme qui n'est pas reconnu forcément par le pays. Nous avons beaucoup parlé avec la Belgique, la France et le Cambodge sur la reconnaissance de diplômes. Si nous n'avons pas de période diplômante, nous avons la période certifiante. Dès que nous avons ce programme PIMEF (Programme International et d'Employabilité Francophone), il est offert aux établissements membres de l'AUF dont l'ITC fait partie. Il est pour une période de trois mois. L'idée est que ce programme fonctionnera comme une bourse de mobilité. Dans ce cas-là, l'ITC peut accueillir 10 étudiants et à l'inverse, il peut envoyer ses étudiants en stage dans une université ou une entreprise partenaire. Il s'agit d'une mobilité de recherche ou académique. Je crois que chère madame la présidente, chers collègues, ce PIMEF est particulièrement adapté au besoin et à la capacité de l'ITC. Une lettre officielle sera envoyée par monsieur le recteur dès que possible au vice-premier ministre et ministre de l'éducation, de la jeunesse et des sports pour que le Cambodge participe à titre officiel à ce programme de mobilité. Une fois encore, je pense que l'ITC comme d'autres établissements membres, vous avez la chance, en termes de capacité, de réussir ce PIMEF. Je souhaite que vous entendiez ce message et que ce programme sera validé en octobre prochain lors de la rencontre des chefs d'État et de gouvernement au sommet de la Francophonie 2024, à Paris, avec les premières mobilités de l'AUF en 2025. Voilà c'est le point qui concerne la mobilité que je voulais compléter. Merci madame la présidente.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Merci beaucoup monsieur le Directeur. C'est bien noté. Ces bourses seront disponibles pour nos étudiants en 2025. Pour vu que le Cambodge soit élu comme pays d'accueil de ce sommet en 2026. Je crois que tous nos ministères sont prêts pour organiser ce sommet, avec bien sûr toutes les directives du ministère des affaires étrangères et de la coopération internationale. Je souhaite aussi que ce programme PIMEF soit validé et qu'il soit mis en place à la disposition de nos étudiants pour la mobilité dans les deux sens, soit la mobilité entrante et sortante.

Maintenant, je donne la parole à Dr. BUN Kim Gnou qui va présenter les perspectives pour 2024-2025 and after the floor is open for everyone.

(Pour ne pas alourdir le texte, je vous prie de consulter le document si vous souhaitez avoir plus d'information.)

Les présentations se terminent et les discussions commencent.

Yann Charles, Chargé de Mission “Asie Pacifique” à la Direction des Relations Internationales de l’USPN:

I like to have more details about the proposition to change the name from materials science and structure to materials and build environment.

Dr. OR CHanmoly, Director of Research and Innovation Center

Thank you very much for your question. Last time, we put Materials Science and Structure. But for the moment, we think it's more about construction. However, the architect also covers this area but the name is not certain. This is why we want to change. Knowing that we are the Master in transport. Students will participate and publish. Despite everything, Materials Science and Structure does not really affect construction and transportation. This is why we want to change structure to Build environment. This term "Build Environment" is often used in Japan and Singapore. It covers construction, architecture, logistics, transportation.

Initially, we wanted to create another research unit, but human resources were insufficient.

Yann Charles, Chargé de Mission “Asie Pacifique” à la Direction des Relations Internationales de l’USPN:

Thank you but for me, this is joining process try to mix things which are not really related to materials science and transportation of architecture. This is not the same thing. With that name. So, I think the topic and the content of the recession seems to be much more relative to the civil engineering faculty then to the materials science curriculums. So, moving that name to this proposition will, I think, discourage people to do research in materials science and I strongly suggest to not change the name.

Dr. OR Cnanmoly, Director of Research and Innovation Center

Thank you. Actually, we keep the word “materials”. The scope is enlarged. If we remain very specific, in terms of human resources, they are not adequate to create this.

Prof. Yann Charles, Chargé de Mission “Asie Pacifique” à la Direction des Relations Internationales de l’USPN:

Yes, but what I mean is that you can't see it and that name doesn't make any sense, I think, and doesn't fit into the mix of materials science and non-materials science, I think, which is coherent. I agree with you that human resources are not enough but if you want to increase visibility or push any research activity to a specific area, you need to promote that name and those activities. Okay, the materials word is still there, but if I'm someone from the outside and I'm looking for someone who does materials research and does materials science research, I won't go into this whole recession thing because that name doesn't mean materials science to me.

Dr. OR Chanmoly, Director of Research and Innovation Center

Yes, actually, the word materials, you can do it in “materials science and materials engineering”. I think that, on our side, there is a lot of emphasis on materials engineering. That's why we don't put materials engineering or materials science, because it depends on both materials science and materials engineering. I think most research projects and human resources focus more on materials engineering than materials science.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Merci beaucoup. Je crois que ce sujet doit être discuté de nouveau cet après-midi. J'ai aussi une petite remarque. 1) Nous voyons qu'il existe un décalage en termes de temps. C'est-à-dire que nous avons reporté la rentrée scolaire. Elle devait avoir lieu en octobre mais à cause des SEA GAMES, du Covid, etc. elle a eu lieu en janvier. Je voudrais savoir comment vous pouvez rattraper ce temps perdu pour que les programmes se déroulent comme il faut. Si l'on traîne, cela rend difficile le départ de nos étudiants qui vont partir à l'étranger. 2) Avant, on tenait compte des mentions des bacheliers pour le concours d'entrée à l'ITC. Est-ce que ce critère reste tel quel pour le concours de nos jours?

Mr. SOY Ty, Deputy Director of ITC

Oui, merci Madame la Présidente. En fait, le retard ne concerne que les étudiants de 1^{ères} et 2^{èmes} années. Pour y remédier, on raccourcit la période des vacances d'été entre juillet et septembre. Pour le reste, les 3^{èmes}, 4^{èmes}, 5^{èmes} années, leur rentrée scolaire est au rythme habituel, soit au début du mois d'octobre. Et en ce qui concerne la mobilité sortante touche seulement les étudiants de 4^{ème} et 5^{ème} année. Cela ne pose donc pas de problème. Pour la deuxième question, le pourcentage des bacheliers ayant la mention A était de 14%, B 42%, C 28%, D 12%, E 3%.

M. Ludovic PROTIN, Directeur honoraire de l'ITC

J'ai une remarque concernant la présence des filles à l'ITC. Elle est toujours en croissance, soit 34% pour cette année. Est-ce que l'ITC met en place une politique pour sensibiliser les élèves au lycée? Est-ce qu'on peut avoir le pourcentage des étudiants venant de province? Ces données nous permettront voir l'évolution de l'éducation dans les provinces reculées.

Dr. BUN Kim Gnuon, Directeur adjoint de l'ITC

Thank you very much for the question.

We think that Engineering University usually have less female enrollment. So, this year, ITC 34% of female students. It is one of the good indicators for Engineering University around the world. Recently, in the pass two years, we have working directly with Upper Secondary School under the World Bank Budget, we called STEM Local Partnership Program. We supported 100 Hi-Schools. We provided basic technical training like Food Processing, Electricity installation, Smart Irrigation System Installation, Video Camera Installation, Solar Energy Installation. We provided the silks to high school teachers and high school students. In two years of project, we provided 1200 high school students, from 11 to 12 level. We keep continue working with upper secondary school and ADB Project. It aims to promote the female students who want to enroll in STEM university. And also, in ADB Project that I would like to highlight, we will establish a Science Museum in the next 3 years. Yes, we have been done some remarkable activities directly with upper secondary school. Thank you.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Oui, merci beaucoup. Oui, j'interviens en ce qui concerne les filles à l'université. Depuis l'ouverture de l'ITC, il y avait une seule fille dans le département de génie mécanique. Et petit à petit, les filles se rassemblaient dans le département de génie chimique et alimentaire. En 1997, il y en avait seulement 2%. C'est la raison pour laquelle on a mis en place cette politique de réduction des frais de scolarité pour les étudiantes. Vous voyez, le pourcentage s'est élevé de 2% à 34%. La politique du gouvernement du Cambodge valorise aussi le féminisme. Dans cette optique, le gouvernement a fait construire l'internat pour les filles, même dans le nouveau campus, il y en a aussi. Sachant que les étudiants pauvres venant de province et surtout des zones

éloignées peuvent habiter dans les pagodes mais les étudiantes ne peuvent pas y rester avec les bonzes. C'est pour cela que l'internat pour les filles est prioritaire.

SE Dr. PO Kimtho, directeur de l'ITC

Oui, je voulais juste vous dire que 50% des étudiants de l'ITC viennent de province et la plupart viennent de Kampong Cham, Kampot et Prey Veng.

Prof. Jun-ichi Takada, Chief Advisor of LBE Project and Representative of Tokyo Tech

I like to ask a question related to the female students and another question to the master program. The first question, I really appreciate you offering a discount in terms of tuition fees for female students. Aren't male students jealous? In Japan, we implemented this policy, but male students complained about it at major universities. If you have any experiences to share, I'm very happy to do so.

S. E. Mme PHOEURNNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Professor, I can share my own experience and my own culture. According to Cambodian culture, at least one must have one girl/woman in the family. Otherwise, this family is unlucky. She is the one who takes care of the house. In this regard, the government of Cambodia also values feminism. In each province, there must be at least one vice-governor. This is the policy of the country. For us, male students don't complain about it. It's the same for exams. If we have two equally qualified candidates for a position. Priority belongs to the female candidate. All this is officially announced. In my ministry, for the entrance exam, female students have 5 or 10 points added by myself. Discrimination does not exist in our country on this subject.

Prof. Jun-ichi Takada, Chief Advisor of LBE Project and Representative of Tokyo Tech

Okay, thank you very much. It is a very good information for me. So, the next question is related to a master program presented by Dr. Tepmony. I found that to study the master's degree, you need to have scholarships. And I see that the scholarships come from abroad. I would like to know if in the future, the government or some universities/institutions of Cambodia can give these scholarships to them in the near future.

Dr. SIM Tepmony, Director of Doctoral School

Thank you very much for the question, Professor. I try to answer as I can. Usually, the current state that the ministry offers to undergraduate level. The government does not have scholarships for them and sends them abroad for training at this level. But I think the government will take care of it in the future, but I cannot reassure you. Of course, the scholarship motivates the students a lot. If they stay in ITC, they could go abroad via double degree program with universities partners of ITC. In general, funding is provided by the partners of course.

Prof. Jun-ichi Takada, Chief Advisor of LBE Project and Representative of Tokyo Tech

Yes, to expand research activities you need more graduate students. I see that the number of master's and doctoral students is increasing, that's why I'm asking this question. Thank you so much.

Mme Assia TRIA, Directrice de l'IMT Mines Alès

J'ai pas trop vu dans le document. Est-ce que vous avez des partenariats avec les universités de médecine, de pharmacie dans lesquelles les filles sont très présentes pour faire le double diplôme Ingénieur-Pharmacien, Ingénieur-médecin. Nous, on a ça, au sein de Mines Telecom. On prend les élèves en 5^{ème} année de médecine qui veulent compléter par un diplôme d'ingénieur, pour

faire de l'imagerie ou de la recherche après. Par ce biais-là, on arrive à avoir pas mal de filles qui rejoignent les écoles d'ingénieurs.

S. E. Mme PHOEURNNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Pour l'instant, on a pas encore cette modalité. Mais il y a 3 ans, l'ITC a mis en place une formation conjointe avec l'Université de la Santé, dans le domaine de génie biomédical, pour le niveau technicien. Ces jeunes diplômés vont prendre en charge des équipements dans des hôpitaux.

M. Michel VELEYSSEN, représentant des partenaires belges

Merci Madame la Présidente. Si je peux me permettre, j'ai deux questions. Il y en a une qui concerne les perspectives de l'ITC. Je me réjouis de voir pas mal d'initiatives prises en considération touchant la double diplomation en partenariat, le seul diplôme de l'ITC. Je crois que c'est une bonne chose parce que cela correspond aux besoins des étudiants et de la société. Mais je me demande quelles sont les mesures qui sont prises pour assurer que les ressources nécessaires à la création de ces diplômes restent raisonnables. Je vais prendre un exemple. Vous allez créer un diplôme en intelligence artificielle et sécurité de l'information. Il y a bien entendu des recouvrements de l'informatique, des mathématiques appliquées, des statistiques qui sont des choses différentes mais en même temps, il existe des points communs. Dans ce cas-là, quelles sont les mesures qui sont prises pour s'assurer au niveau des moyens, par exemple, le nombre d'heures de cours, le nombre de professeurs pour l'engagement pour que ce soit le plus raisonnable possible, les transversaux possibles en termes des diplômes. En Europe, c'est pareil. Quelquefois, on a envie de créer plus, mais on a pas des moyens.

M. LAY Heng, vice-doyen de la faculté de génie électrique

Thank you, Prof. Michel. In fact, for the program AI Engineering and Cyber Security (AIECS). Firstly, we have the core resources, Maybe, you know Dr. Dona and Mr. PICH Reatry. Currently, we have the core lecturers and for the lab, we enough equipment. Regardant our plan for the next year, we are planning to recruit and call on students who have completed master's and doctoral studies to come and join us. In addition to full-time teachers, we need around 5 or 7 part-time lecturers. We don't recruit many teachers at the beginning, but if the program works well, we recruit more. Thank you.

S. E. Mme PHOEURNNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Professeur, je crois que vous avez posé une question très importante à laquelle je demanderai à tous les membres cambodgiens et étrangers méritent de réfléchir. Pour l'instant, nous avons des cours transversaux et aussi des cours spécifiques. C'est à vous tous de toi si la mise en place d'un nouveau programme est faisable ou non.

SE Dr. PO Kimtho, directeur de l'ITC

I would like just to add about this new program, we understand that these are multidisciplinary subjects. So, that why, we work together with different departments: Information and Communication Engineering, Mechanical Engineering, Electrical Engineering. We know that under AI and Cyber Security, we have a competency of robotic, machine learning and Software development. So, we try to use our resources very efficiently, and as mentioned Mr. LAY Heng, we try to do a long-term planning as well, in terms of resources development, of lab facilities

with the cooperation from the Consortium members including the intervention from government as well. It is a launching program matching through the government strategies 2023-2050.

M. Michel VELEYSSEN, représentant des partenaires belges

Merci pour les réponses. Si vous me permettez, j'avais une deuxième question liée aux programmes de formation pour accroître la capacité des personnes, que ce soit la capacité scientifique à travers les programmes de doctorat pour renforcer les personnels de l'ITC notamment, mais aussi des compétences transversales, compétence de gestion, de laboratoire, d'infrastructure. Accroître la compétence des personnes, ça a du sens si la personne veut rester longtemps à l'ITC. Qu'est-ce qu'on peut faire? Dans un domaine où il y a beaucoup de concurrences sur le marché d'emploi, comment l'ITC peut gérer et garder ces ressources humaines le plus longtemps possible?

S. E. Mme PHOEURNNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Par rapport à cela, selon mon vécu professionnel, en tant ancienne directrice de l'ITC, normalement, pour les enseignants qui partent à l'étranger, ils font un contrat d'engagement. Ce document marque le consentement de la personne concernée disant qu'il accepte de travailler pour l'ITC pendant 5 ans, à leurs retours au Cambodge, après les études à l'étranger. Ce qui est l'idéal, c'est que 80% des jeunes reviennent au Cambodge après leurs études. Une fois revenu au Cambodge, on considère que c'est une perle rare pour le Cambodge, ce n'est pas non seulement pour l'ITC. Je peux citer un exemple, notre collègue, SENG Sopheap qui est parti au ministère de la poste et des Télécommunications, SE Mme PEN Chhorda, ancienne étudiante de l'ITC, est maintenant sous-secrétaire d'État au ministère de l'énergie et des mines. Pour moi, l'essentiel est que ces gens reviennent, après c'est pour l'ITC. Récemment, environ 20% de nos ressources humaines sont parties pour d'autres ministères. J'en regrette mais ce sont leurs choix également. Les gens qui travaillent à l'ITC quittent rarement cet institut, la jeune équipe de direction, ce sont les anciens étudiants de l'ITC. Pour nous, si 80% de nos jeunes diplômés restent avec nous à l'ITC, c'est déjà une bonne chose. Sachant que ceux et celles qui travaillent avec nous, ont beaucoup d'opportunités de développer leurs connaissances et voyagent beaucoup. Cet ambiance convivial, amical comme ça n'existe pas ailleurs. Mais pendant la discussion, on fait des débats bien enrichissant, on ose parler, poser des questions... Notre réunion en témoigne, vous voyez.

May I turn to Prof. Watanabe, please.

Prof. KOICHIRO Watanabe, Representative from JICA Headquarter

Dr. Kim Gnuon presented the perspectives of ITC. It's well prepared and very interesting, I think. My question is what strategy do you have to promote internationalization with Japan and other countries?

Dr. BUN Kim Gnuon, Directeur adjoint de l'ITC

Thank you very much for dressing the question concerning our next move forward of ITC. To promote good collaborations with our partners, firstly, it is to keep all the good cooperations that currently exist, such as the members of the Consortium, AUN-Seed-Net Project. Second, expand other project development to promote internationalization. For example, in the georesources and geotechnical engineering department, we have made efforts to establish an annual international conference. With this conference, the event takes place at ITC where we discuss research and capacity building. Our partners send experts in this field in question. Thirdly, we are making our

infrastructure more suitable to accommodate such activities which have international character. The boarding school is part of internationalization too, our new campus too.

Prof. KOICHIRO Watanbe, Representative from JICA Headquarter

Thank you, Dr. Kim Gnuon. I have one additional comment from Jica side. You mentioned that Satreps Project is supported by Kanazawa University in Japan. In that case, this university proposed to ITC and other institutions in Cambodia this project. JICA believes that such a process is possible not only for Kanazawa University but also for ITC which is much more developed now if we compare to the past. So, the ITC can set up projects and discuss with partner universities in Japan to obtain budgets from the Japanese government.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Thank you, Professor. It is very important for us. I also would like to add some ideas. The current ITC is the intersection of Khmer, French-speaking and English-speaking universities. The ideal for us is that ITC students can have two foreign languages for their scientific studies. This is a special feature for them, if we compare with other universities in the country. The use of these two foreign languages attracts universities around the world in France, Belgium, Japan, Thailand, the United States, India, Malaysia, Australia... It is an important part of the internationalization of ITC. The ITC, thanks to the capacity of our teachers and researchers, can now organize conferences of an international character to discuss, for example, the irrigation systems in the Preah Vihear temple area, with colleagues from Japan and other countries. I am proud of this. New technology helps the conservation of cultural properties in the areas of Angkor, Preh Vihear, Sambor PreyKob. In this case, ITC's good reputation, in terms of human capacity and infrastructure, is recognized by our international colleagues. Saying that Jica considers this kind of research like Kanazawa University has done under the Satreps project, I am very grateful for this recommendation. I think that in the future, with Jica, ITC can have opportunities to do a lot of things to develop the country.

I would like to give the floor to our colleague from Belgium. Please.

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Mme DEGRE Aurore, Université de Liège

Je voulais vous poser une question concernant l'évolution des programmes par rapport à ce que vous avez annoncé et par approche par compétences. Je voudrais savoir quels étaient les éléments d'entrées que vous avez utilisés. Est-ce qu'il y a des enquêtes auprès des diplômés, auprès des employeurs? Comment vous avez mis tout cela en œuvre?

Ma deuxième question : vous avez beaucoup de différents programmes pour les ingénieurs. J'imagine que vous avez des éléments en commun entre les différents programmes et par approche par compétences, c'est intéressant de les mettre en avance. Est-ce que vous pouvez expliquer comment vous allez procéder?

Dr. BUN Long, Directeur adjoint

Recently, we have a reform and established a few programs at the associate degree of engineering. ITC is involved in in a bigger project which is a funded by Asian Development Bank. They made a very detailed survey with industries about the future skills. ITC is not the only trending Institute that joins project but which the Ministry of Labor and Education as well. So, I can say that we have done this survey and also along the process of curriculum

design, we also have a few consultations with the relevant stakeholders including the industries, because we want to collect their feedbacks on our curriculum design as well.

Mme DEGRE Aurore, Université de Liège

Si je peux me permettre, ma question était une suggestion pour aller vers une transversalité pour les différents programmes afin de gagner des moyens en termes des ressources, de la même manière au niveau de la recherche, énormément des activités. Vous avez présenté beaucoup de laboratoires. Là aussi, cela nécessite une gestion des laboratoires parce qu'il est possible d'avoir un recours aux ressources complémentaires qui pourraient se dégager.

I'm sorry and maybe in English my point was to suggest that more transversality between the different programs. This could help us to save resources because I guess that they are common competencies between the different programs that you want to develop within your curriculum and maybe you could share experiences coming from chemical department and from environmental department also and share pedagogical experiences, share maybe some of the courses to gain some time and well from this common approach between the different teaching staff. The same for the last management for instance I guess the common issue. Even, the labs are different, they share the management issue, data storage organization between the data from different programs. I don't know but the transversality possible between the different groups and I think that's something you could maybe reorganize a bit to strengthen the teams and to say some resources that was my suggestion.

SE Dr. PO Kimtho, directeur de l'ITC

Thank you very much for the question. It is a very good question and thanks to the ARES project. So, a lot lots of components that we had to improve. We understand that a lot of challenges in terms of lab management, resources sharing among the faculties and the course as well. So, within the ARES Project, we are trying to work on that how we connect the faculties, how we enhance the vertical program together. So, currently, I would like to readjust for example for the soft skill, for the marketing, for the communication. This is a very common cause. So, we conduct some kind of training of trainer (ToT). The trainer plays the road to provide this course for across all departments as well. But, of course, for some departments like Information and Communication, the Telecommunication and Networking, there are some courses overlapping. So, we try to work together also how we can share the course among the two faculties and for the new program on AI and Cyber Security, also we are trying to collaborate internally among other faculties also and for the lab management we are trying to develop a guideline how we can share the resource together because, as you mentioned, we have some labs under the faculty Chemical Engineering, they can also save for other faculties as well, for example for the faculty of Hydrology and Environmental Engineering. Currently, just do based on our practice and we do not really have a clear guideline but of course we collaborate the internally but for institutionalization the whole thing I think we need to have a clear guideline as well and also, we are trying to improve the visibility of our labs, our programs to the industries as well. So, we need to restructures our Management on the lab management, on the program management. So, as you see now, an increase in programs, labs, human resources. So, we need to work on that. We have to make more efforts on how to increase efficiency, productivity of lab service, of training programs. I would say, we must have a clear action plan on that. Thank you.

M. LAY Heng, vice-doyen de la faculté de génie électrique

Thank you for remark. I also want to share some practices from IT Department. As I mention we have quite a few programs operating at the same time. How can we make them work at the same time? Basically, for one program, we choose some core persons. For example, one program

needs 3 to 5 human resources. Who looks at the curriculum design, and evaluation of the program, control the program quality. And for the lab, as I have mentioned recently related to the Michel's question. We can say, IT Department supervises the lab, not manage. In fact, for the maintenance, we have two staffs. Note that the lab is not used only by IT Department, but by others. If others need basic lab services, we can offer that. This is what we are doing in our department at the moment. Thank you.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Thank you. Je crois que nous avons beaucoup avancé. Pour la liste de la participation aux débats de cet après-midi, vous pouvez vous inscrire, si votre nom n'y existe pas encore. Par exemple, la proposition de M. Yann Charles, concernant le changement du nom. À titre de rappel, notre programme commence demain à 8h00. Chaque groupe désigne un rapporteur pour la synthèse des discussions dans les départements respectifs.

Le 28 mars 2024 / March 28, 2024

Présentation des synthèses par département / Presentation of summaries by department

Plan de présentation des synthèses

- 1) Département du Tronc Commun (DTC)
- 2) Département de GCA
- 3) Faculté de Génie Civil (Civil, Architecture, Transport)
- 4) Département de GEE
- 5) Département de GGG
- 6) Département de GIC
- 7) Département de GIM-ECAM
- 8) Département de GRU
- 9) Département de GTR
- 10) Département de AMS
- 11) Formation du 3^{ème} cycle
- 12) Recherche et innovation

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

On a écouté 7 présentations. Je crois que vous avez discuté des programmes académiques dans vos départements respectifs avec vos partenaires internationaux.

En résumé, nous avons trois choses: Reviewer the programs for Engineers: 8; Establish Engineering program: 1, Reviewer the international Program 1, ECAM LaSalle. J'attends les commentaires de nos partenaires parce que vos commentaires nous aident à réajuster nos programmes pour ne pas gaspiller les ressources humaines parce qu'il est possible d'avoir des cours transversaux. En termes des ressources humaines, elles ne sont pas réparties de manière équilibrée. À ce propos, on peut accorder des bourses de master et doctorat aux départements pour lesquels il manque encore de ressources humaines.

La présentation de la formation de l'ECAM LaSalle est un peu douteuse pour moi. Sachant que pour le cursus d'ingénieurs à l'ITC, c'est toujours la durée de 5 ans. La première approche que vous avez montrée, elle était correcte, soit la formation dure toujours 5 ans. Et maintenant, il y a un changement, pour cette nouvelle proposition, les deuxièmes années de l'ITC peuvent partir à l'ECAM LaSalle. Ils vont passer deux ans en France. Cela pose de l'impact sur la valeur de notre diplôme d'ingénieur qui dure en général 5 ans? C'est important que notre

identité reste telle quelle. Ce n'est pas parce que ce programme de 5 ans attire moins d'étudiants, on le change pour en avoir plus. Ce n'est pas comme ça. Je ne sais pas si vous en avez parlé avec vos partenaires hier durant votre séance de discussion. J'aimerais avoir aussi l'avis du département de GIM.

M. DEBASTE Frédéric, Université Libre de Bruxelles

Oui, on avait parlé de ce programme. Pour moi, on a de la difficulté de changer le programme aussi tôt dans le curriculum. Pour moi, c'est faisable mais cela demande beaucoup d'efforts particuliers de rectification des programmes plus détaillés. Ça, c'était la recommandation qu'on faite hier pendant la discussion.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Merci beaucoup. Est-ce qu'il y a d'autres commentaires? Dans cas-là, a-t-on besoin un plus de temps pour le traiter comme il faudra? Si nous gardons ce nouveau parcours, on en a deux à l'ITC. L'un est de 4 ans et l'autre est de 5 ans. Et à la fin des études, on obtient le même diplôme d'ingénieur. Je crois que ce sujet a été abordé précédemment. Si l'on l'adopte, qui va faire le parcours de 5 ans? C'est problématique.

Dr. SRANG Sarot, responsable du programme ECAM-Cambodge

It is possible that my presentation is not clear. The duration of this new program is 5 years, not 4 years.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

You have a previous 5-year program, because you recruit students from the 3rd year. I believe we discussed this during the previous Consortium. But now you are coming up with a new program and at the end of this program, students spend only 4 years. This is why I say that it is not enough in terms of duration. The problem for me is that you are creating a new 4-year pathway in an institution where the duration for engineering students is 5 years. In this case, this causes problems with our current system. Prof. Frédéric DEBASTE had the same remark. I would also like a comment from another member of the Consortium.

Dr. SIM Tepmony, Directeur de l'école doctorale

Previously, ECAM LaSalle recruited students after the third years. They have finished their third year at ITC, they will be in their third year at ECAM LaSalle. This means that they spend an extra year compared to our students who study at ITC. This new pathway recruits students who have finished their second year at ITC. They can go to Ecam LaSalle for their third year. That said, the duration of their studies is 5 years like those who study at ITC. So, it is good I think.

Mr. SOY Ty, Directeur adjoint

Merci madame la présidente. En fait, la durée du cursus reste toujours 5 ans, comme on a discuté l'an dernier. Pour être plus clair, ce nouveau cursus concerne le programme international avec ECAM LaSalle. C'est-à-dire que quand les étudiants finissent leurs études de bases de deux ans à l'ITC, ils peuvent aller suivre le programme de troisième année à ECAM LaSalle. À l'issue de cette formation, ils obtiennent trois diplômes : de l'ITC, de l'ECAM LaSalle et de Kasesart University.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Je me demande si c'est une bonne chose d'avoir trois diplômes en même temps. Quand j'étais au ministère de l'éducation, le fait d'avoir deux ou trois diplômes en même temps, c'était pas une bonne chose. J'étais responsable de l'octroi des bourses données aux étudiants qui partaient à l'étranger. À ce moment-là, quand on tombait sur un étudiant qui avait deux diplômes en même année, on se demandait comment il faisait ses études. Malgré tout, je propose donc de revoir ce cas de manière plus approfondie.

SE Dr. OM Romny, Secrétaire d'État au ministère de l'éducation, de la jeunesse et des sports
Merci madame la présidente. En ce qui concerne le nombre de diplômes, je crois que l'ITC reste dans une telle modalité depuis longtemps, surtout avec le programme ERASMU+. À l'issue de sa formation, l'étudiant peut obtenir deux ou trois diplômes.

Pour ce qui est de la durée de formation de 5 ans, c'était lié à la qualité de l'éducation de base au niveau secondaire. Mais maintenant, avec la réforme du ministère de l'éducation, de la jeunesse et des sports, je crois que le STEM est renforcé du primaire au secondaire. Je pense que les élèves ont assez de prérequis pour étudier à l'université.

À travers le concours d'entrée à l'ITC, on s'aperçoit que le niveau des connaissances de base de maths, physique et chimie n'est pas le même. Pourtant, avec cette réforme de l'éducation, je crois que le niveau s'améliore.

Selon la politique du gouvernement, d'ici deux ans, 1000 écoles doivent être standardisées. Sur ce, le ministère de l'éducation est en train de faire beaucoup d'efforts pour atteindre cet objectif. Pour le tronc commun, on a deux ans à l'ITC. On peut se demander si l'on peut réduire cette durée à un an? C'est-à-vous de voir si c'est possible. En résumé, le passé et le présent, la situation a changé.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Oui, c'est pour ça je dis que c'est un peu trop tôt pour décider. Je sais que la réforme touche le primaire et le secondaire. Il faut voir aussi les détails. Par exemple, regarder le résultat de l'évaluation à l'échelle internationale dans différents pays. Pour faire une bonne décision, il nous faut suffisamment de données. Pour moi, je suis pas contre 4 ans ou 5 ans. Vous vous souvenez de la décision de garder les langues étrangères dans les programmes de l'ITC. On a passé beaucoup de temps (4 ou 5 réunions du Consortium) pour parvenir à un accord.

M. Michel VELEYSSEN, représentant des partenaires belges

Merci madame la présidente. En fait, les discussions ici m'inspirent deux réflexions. La première c'est donc j'entends qu'il y avait des gros efforts qui sont faits pour améliorer le niveau primaire en STEM et le secondaire. Je pense que c'est magnifique un tel effort. Je partage l'avis pour voir un peu les résultats d'abord avant de prendre de grandes décisions mais j'irai même si on constate maintenant ou dans quelques années que les efforts sont couronnés de succès et que le niveau monte. Je reste et je resterai, je pense, un grand défenseur du fait que les diplômes d'ingénieur doivent avoir une partie commune transversale extrêmement importante. Aujourd'hui, le métier d'ingénieur est un métier pluridisciplinaire. On a beau et je vais revenir là-dessus après. On fait des efforts pour avoir des diplômes spécialisés parce que le marché nécessite cela mais vous ne pouvez pas spécialiser dans un domaine et être certain que l'étudiant ou l'étudiante que vous formez va travailler dans ce domaine-là pendant toute sa carrière. Ça n'existe pas. Moi, je travaille en intelligence artificielle. Je sais ce que j'enseigne à mes étudiants sera complètement obsolète dans 10 ans. Donc, ce qui est important c'est de le renseigner à être bon à s'adapter à ce qu'il y a dans 5 ans ou dans 10 ans. Je prends un autre exemple et il n'est pas du tout, je dirais négatif mais j'entends une spécialisation vers les véhicules électriques qui peut dire ce que sera un véhicule électrique dans 10 ans, personne même l'industrie automobile ne le sait pas

aujourd'hui. Donc, voilà je pense que ce socle de base, cette capacité des ingénieurs à réagir aux situations et dire à l'évolution du monde technologique est extrêmement importante et donc même si le niveau en STEM s'améliore à l'entrée, je resterai un défenseur du fait qu'il faut au moins deux années très fortes de socle commun sans spécialisation pour former de bons ingénieurs et puis avoir une spécialisation après et donc moi je ne crois pas, mais c'est mon avis personnel, à qu'il soit pertinent de réduire ses diplômes de 5 ans à 4 ans, du fait qu'on a déjà du mal à enseigner tout ce qu'il faut enseigner à nos étudiants en 5 ans, on va pas augmenter à 6 ans, il faut pas exagérer mais réduire à 4 ans je n'y crois pas. Donc, ça c'était un commentaire. L'autre commentaire que j'avais à faire par rapport aux explosifs qui ont été faits, bon, j'avoue qu'en quelques minutes comme ça c'est compliqué pour moi et j'imagine pour beaucoup de mes collègues de s'y retrouver dans toutes les propositions de chacun des programmes avec tous les détails. J'avoue que je n'ai pas tout suivi dans tous les détails mais de façon globale en même temps, je suis extrêmement heureux de voir le dynamisme il y a dans chaque département pour créer ou pour adapter des diplômes des formations à des choses extrêmement précises à des besoins du marché à des réalités du monde d'aujourd'hui, ça c'est l'aspect positif et l'autre aspect je dois vous avouer que pour moi je suis un peu effrayé. Je suis un peu effrayé d'abord parce que je n'ai pas réussi à compter pendant les exposés mais je voudrais savoir si toutes les propositions sont acceptées combien de formations de l'ITC aura dans quelques années. Pour moi, ça me paraît beaucoup. Très honnêtement, je pense qu'on est en marche vers un nombre de diplômes ou un nombre de formations tels qu'un jour il n'y aura plus les moyens que ça soit des moyens financiers ou humains pour absorber toutes ses demandes. Je reviens sur ce que vous avez mentionné vous-même, Madame Sackona, déjà il été mentionné hier, c'est que si on va dans cette direction d'avoir des spécialisations des nouveaux diplômes, des séparations en deux de diplôme existant pourquoi pas mais alors je crois qu'il est indispensable qu'il y ait des synergies beaucoup plus fortes que ce qu'on entend entre les départements entre les diplômes, ça ne fonctionnera pas. En tout cas, ce que je pense que c'est notre expérience en Europe et on en discutait hier soir avec quelques collègues, ça ne fonctionne pas d'avoir autant de formations et d'avoir un objectif qui est que chaque département par exemple tu parles des départements, mais ça peut être des formations aussi. Voilà le périmètre un peu d'importance mais chaque département maîtrise toutes les compétences qu'il faut à chacune des formations, ça n'a pas de sens. Vous avez la chance d'avoir un institut qui couvre la plupart des domaines de l'ingénierie donc vous avez une pluridisciplinarité dans vos murs, il faut l'exploiter et je suis désolé d'être un peu négatif mais ce que j'entends des présentations ce matin ne l'exploite pas assez pour moi j'entends que chaque département veuille se spécialiser dans tel domaine et tel domaine donc un besoin de staffs ça il n'a pas suffisamment donc doit avoir des staffs spécialisés dans tous les cours qu'il va donner un jour on y arrivera pas. Donc, voilà, c'est mon message ici c'est et je suis désolé, je ne veux pas le présenter de façon négative parce qu'encore une fois c'est c'est beau ce qu'on entend de le dynamisme et la volonté de créer des formations qui sont extrêmement pertinentes je n'ai rien à dire contre la pertinence des formations mais je crois que soit il faut ne pas accepter ça parce qu'on se dit on en a pas les moyens et ça je le trouverai très dommage soit il faut l'accepter mais alors il faut aussi mettre un système en place qui fait qu'il y a beaucoup plus de transversalité qu'aujourd'hui. Je vous prends un exemple, je prends toujours le même parce que c'est le seul que je connais, ah désolé, voilà pour ma spécialité mais on ne peut pas raisonnablement attendre que dans chaque département il y ait des personnes compétentes en intelligence artificielle, ça n'ira pas, on peut se dire l'intelligence artificielle, on la met en informatique ou on la met en mathématiques appliquées, ça n'a pas d'importance pour moi. Ça c'est des choix politiques mais à partir du moment où on a les compétences dans l'ITC et bien c'est ses compétences-là qui doivent être exploitées pour donner les cours et pour aider que ça soit en mécanique ou en génie industriel ou dans d'autres domaines. Ce que je dis là à travers un

exemple. Encore une fois et pardonnez-moi si je fais un comment négatif mais c'est un comment pour aller de l'avant, pour construire des choses.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Oui, merci beaucoup. Tous les commentaires positifs ou négatifs sont les bienvenus. L'essentiel est que nous puissions mettre le train sur les bons rails. C'est ça, notre culture de travailler depuis des années et des années. Est-ce qu'il y a d'autres commentaires?

Prof. Yann Charles, Chargé de Mission "Asie Pacifique" à la Direction des Relations Internationales de l'USPN:

Oui, merci madame la présidente. Pour rebondir un peu sur ce que vous venez de dire, cette problématique de compétence dans tous les départements. Je voudrais vraiment soutenir cette transversalité et le partage de cours entre les départements afin d'optimiser le temps, des ressources et d'aller une capacité plus grande. Je pense que cela ne nécessitera pas de casser la culture des départements à l'ITC qui est très forte et historique.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Oui, merci beaucoup. J'essaie de faire une petite synthèse.

- 1) Le nouveau programme avec ECAM LaSalle mérite d'être étudié plus approfondi; en tenant compte de la réforme de l'éducation en termes de STEM du primaire au secondaire; L'équipe de l'ITC va revoir cette proposition.
- 2) La valorisation de la transversalité des cours entre les départements.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

On arrive à la fin de la présentation, il est donc temps de faire le point.

M. Ludovic PROTIN, directeur honoraire de l'ITC

Merci Madame la Présidente. Je voudrais à nouveau, féliciter l'équipe de direction pour la qualité de document qu'il nous a fourni cette année. J'ai eu l'occasion de discuter hier avec mes collègues de l'INSA de Lyon et ce matin, avec mon collègue belge. Je crois peu d'établissement produisent de tels éléments aussi complets tous les ans. Je crois que l'ITC doit être un modèle dans ce cas-là. Les documents aussi complets, c'est assez exceptionnel. Alors, je dois dire que je suis l'évolution de l'ITC depuis plus de 20 ans, un peu grâce à l'invitation de différents directeurs qui m'invitent chaque année à participer aux CAs et aux Consortiums. Si vous aviez comme moi, les documents de l'ITC depuis 20 ans et que je vous mets devant vous le document de 2004 et le document de 2024, vous pourriez voir en un coup d'œil l'évolution de l'ITC. Je dois dire également que les consortium auxquels j'ai participé étaient cruciaux et je crois qu'il faut continuer ce Consortium. Je voudrais parler également souvent pour moi c'est une période d'anniversaire. Les collègues de l'ITC sont toujours très modestes même que les professeurs de l'ITC. Ils ne le diront jamais mais je vais dire. La France a dirigé l'ITC pendant 10 ans de 1993 à 2003. En 2004, Madame Sackona devient directrice de l'ITC. C'était la seule à l'époque à avoir un docteur. Donc, on avait pas le choix mais elle a prouvé qu'elle était largement favorable. Si vous remarquez qu'on est en 2024. 2004 et 2024, pour moi cette année, c'est l'anniversaire, 20 ans de la direction cambodgienne. Nous avons les trois directeurs à côté de moi. Pour moi maintenant, je suis âgé, bien âgé vous le voyez peut-être pas, je vous dirai pas mon âge mais je suis vieux. Je ne sais pas si je peux encore participer à de nombreuses années au Consortium et au CA mais malgré tout je crois que comme on a la chance d'avoir

cette année et les trois directeurs qui viennent de développer l’ITC, je voudrais leur demander de se lever tous les trois et je vous je voudrais qu’on les applaudisse chaleureusement.

S. E. Mme PHOEURNG Sackona, Ministère de la Culture et des Beaux-Arts et Présidente du Conseil d’Administration de l’ITC

Merci monsieur le Directeur honoraire. C’est bien gentil de votre part. Je voulais dire exactement aussi la même chose. Je suis convaincue que l’ITC peut devenir ce qu’il est actuellement, c’est grâce à vous tous. Il y a de nouveaux membres et des collègues très très anciens qui sont là depuis longtemps. Je suis à l’ITC depuis l’époque de l’Union de la République Socialiste Soviétique (URSS). Vous voyez, l’état des lieux de nos infrastructures d’aujourd’hui est complètement différent par rapport à celui des années 80. Tout ça, c’est grâce à la France, à la Belgique, au Japon et à bien d’autres partenaires. Je me réjouis de voir nos anciens étudiants qui nous succèdent. En termes de compétences, elles dépassent les nôtres même. J’en suis très fière. À ce propos, ça me fait penser à un proverbe cambodgien qui dit : le bateau est parti, le port reste. Je tiens donc à remercier tous les membres qui étaient là et également ceux et celles qui sont là avec nous aujourd’hui pour leurs contributions et efforts au service du développement de l’ITC. Monsieur PROTIN avait raison de dire que c’est difficile de trouver un endroit comme ça au Cambodge. Les dirigeants et les membres font librement des débats pour trouver des intérêts communs.

En ce qui me concerne, il me reste encore 4 ans. Je reste donc encore avec vous. Enfin, nous avons travaillé ensemble une journée et demie dans le cadre de notre Consortium international de 2024. Encore une fois, un grand merci à vous toutes et tous et nous espérons que vous êtes toujours avec nous pour les prochains Consortiums.

Nous faisons le compte-rendu et nous vous l’envoyons pour confirmation. J’en profite aussi pour vous dire que le prochain Conseil d’Administration aura lieu le 27 juin 2024 et que notre prochain Consortium aura lieu la troisième semaine du mois de mars 2025.

Pour terminer, je tiens à remercier tous les membres du Consortium qui ont consacré votre précieux temps à une riche discussion du Consortium international ITC-2024 et je suis convaincue que vos contributions et vos expertises seront exploitées davantage pour les intérêts communs entre nos universités et institutions. -----

Le tableau suivant récapitule tous les points abordés et discutés durant la réunion du Consortium international ITC-2024.

No	Avis du Consortium 2024	AVIS
1	Valorisation de la transversalité des cours entre les départements	Favorable
2	Création de: Master of Architectural Engineering (GS)	Favorable
3	Création de : Artificial Intelligence Engineering and Cybersecurity (GIC-International Program)	Favorable
4	Création de: IT Network and Programming (GIC-Associate)	Favorable
5	Création de : Industrial Engineering (GIM-Associate)	Favorable
6	Création de : Geotechnical Engineering (GGG-Associate)	Favorable
7	Changement du nom: Materials Science and Structure” to “Materials and Built Environment” (RIC)	À revoir
8	New PathWay of ECAM LaSalle “Second years of International Program can go directly to 3rd year at ECAM LaSalle” (ITC-ECAM-Kasetsart University)	À revoir

Annex 2. Minutes of meeting of the Board of Trustees Meeting on 28 June 2023.



COMPTE-RENDU DE LA RÉUNION DU 31^{ÈME} CONSEIL D'ADMINISTRATION DE L'ITC, LE 28 JUIN 2023, À PHNOM PENH

Membres de droit

1. S. E. Mme PHOEURNG Sackona, présidente du conseil d'administration et ministre de la culture et des beaux-arts
2. S. E. M. PELLET Jacques, ambassadeur de France au Cambodge
3. S. E. M. UENO Atsushi, ambassadeur du Japon au Cambodge
4. S. E. M. OM Romny, secrétaire d'État au ministère de l'éducation, de la jeunesse et des sports
5. S. E. Mme PEN Chhorda, secrétaire d'État du ministère des mines et de l'énergie
6. S. E. M. CHOU Kimleng, secrétaire d'État du ministère de l'économie et des finances
7. S. E. M. PO Kimtho, directeur de l'ITC
8. Mme TEA Channy, représentante des personnels de l'ITC
9. M. SERMET Laurent, directeur de l'AUF Asie-Pacifique
10. M. LAY Méng Sun, directeur de la SKD et représentant du secteur privé
11. M. VERLEYSSEN Michel, représentant de l'ARES-ex CUD et des universités francophones de Belgique

Membres invités

12. M. PROTIN Ludovic, directeur honoraire de l'ITC
13. M. VINCENT Pierre, conseiller de Coopération et d'action culturelle de l'Ambassade de France et directeur de l'Institut Français du Cambodge
14. Mr. KAZUMASA Sanui, chief Representative of JICA Cambodia Office, AUN/SEED-Net
15. M. VALLEE Thomas, attaché de coopération scientifique et universitaire de l'Ambassade de France
16. M. KOICHIRO Watanabe, senior Advisor of JICA
17. M. JUN-ICHI Takada, vice-president of Tokyo Institute of Technology
18. Mme MARTIAL Adèle, country Representative of IRD and Representative of Consortium
19. M. YINDIZOGLU Murat, conseiller du MEJS
20. M. MAUSSION Pascal, vice-président des Relations Internationales INP-Toulouse
21. M. IM Kravong, responsable Antenne AUF, Phnom Penh
22. Mrs. MIYAKE Chiho, Industry Linkage / Project Coordinator of JICA Project for Strengthening Engineering Education and Research for Industrial Development in Cambodia (LBE Project)

Direction de l'ITC et ses coéquipiers

23. M. SOY Ty, directeur adjoint de l'ITC

24. Dr. OEURNNG Chantha, directeur adjoint
25. Dr. BUN Kim Ngun, directeur adjoint
26. Dr. NGUON Kollika, directeur adjoint
27. Dr. CHUNHIENG Thavarith, conseiller chargé de la coopération et de la recherche
28. M. NUTH Sothân, conseiller de l'ITC, chargé de la pédagogie et des études
29. M. DAGUES Bruno, conseiller de la direction de l'ITC
30. M. SIEANG Phen, directeur et de la coopération et des relations internationales (RI)
31. Dr. OR Chanmoly, directeur du centre de recherche et d'innovation (RIC)
32. Dr. SIM Tepmony, directeur du 3ème cycle (GS)
33. Dr. HAN Virak, doyen de la faculté de génie civil (GCI)
34. Dr. CHHUON Kong, doyen de la faculté d'hydrologie et des ressources en eau
35. Dr. CHRIN Phok, doyen de la faculté de génie électrique et énergétique (GEE)
36. Dr. LIN Mongkulserey, directeur adjoint du centre de recherche et d'innovation et Chef du département de Mathématiques Appliquées et Statistiques
37. Dr. IN Sokneang, doyenne de la faculté de génie chimique et alimentaire (GCA)
38. M. LAY Heng, vice-doyen de la faculté de génie électrique et chef de département de génie informatique et communication (GIC)
39. Dr. SRENG Sochenda, chef de département de Télécommunications et Réseaux (GTR)
40. Mme SREY Malis, chef de département du tronc commun (TC)
41. Dr. CHAN Sarin, chef de département de génie mécanique et industriel (GIM)
42. Dr. PHUN Veng Kheang, chef de département transports et infrastructures (DTI)
43. Dr. ENG Chandoeun, doyen de la faculté de génie de géo-ressources et de géotechnique (GGG)
44. Mme KHEM TranKrasel, coordinatrice de la section de français (SF)
45. M. SO Phea, coordinateur de la section d'anglais (SA)
46. M. SOK Kimheng, responsable de la bibliothèque STEM
47. Dr. SRANG Sarot, responsable du génie mécanique et des systèmes de contrôle au Département de génie industriel et mécanique et coordinateur du programme international
48. Dr. YIN Molika, responsable des relations avec les entreprises (UIL)
49. M. KHIEV Samnang, responsable du service informatique (IT)

Accueil des participants et ouverture de la réunion virtuelle

En introduction, **S. E. Dr. Sackona PHOEURNNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC**, souhaite la bienvenue à l'ensemble des membres du Conseil d'Administration et les remercie pour leur participation à ce 31^{ème} CA. Le Conseil d'Administration a eu 31 ans Ça veut dire que la France est présente à l'ITC depuis 31 ans et 26 ans pour la Belgique parce que sa coopération a débuté en 2017. I would like to extend my congratulations to Jica and to all my colleagues from Japan. I always remember in 2000, I became a member of the AUN-Seed-Net. This means that it has been 23 years since Japanese universities launched cooperation with ITC. In short, all our partners have been there with the ITC for over 20 years.

Sachant que le Consortium international d'appui se réunissent 1 fois par an, le Conseil des Études et de la Vie Universitaire 2 fois. Les réunions régulières de ces instances témoignent du bon fonctionnement de l'établissement. Au cours du CA, le bilan des activités puis les prévisions sont présentées par le Directeur de l'ITC. Le CA recueille les conseils de ses membres et prend les décisions. C'est le moment pour donner des avis, faire des remarques, des critiques et des encouragements sur le travail effectué par l'équipe de l'ITC.

Nous avons des membres du Consortium fidèles de France, de Belgique, du Japon et du réseau AUN/Seed-Net etc. Comme d'habitude, nous avons un représentant du Consortium qui participe à la réunion du Conseil d'administration. Cette année, madame Adèle GROS MARTIAL, qui est là parmi nous, le présente. Nous avons aussi le représentant du secteur privé. Je voudrais conclure de ce petit

discours d'introduction en laissant présenter certains événements importants. Il y a eu de nombreux événements qui montrent l'évolution et le rayonnement de l'ITC, par exemple, la 12^{ème} journée scientifique de l'ITC, dont le titre était « Engineering Technology and innovation Toward the Development of Digital Economy and Society » a attiré plus de 1500 participants pour promouvoir la recherche. L'ITC est en train de gagner le pari de son évolution et on est en formation au niveau international compétitif et ce n'est pas fini évidemment. Il nous faut garder le cap maintenu. Un grand merci à tous nos partenaires pour votre fidélité et grâce à vous l'ITC est devenu ce qu'il est actuellement. Je nous souhaite un bon succès à notre réunion d'aujourd'hui.

C'est intéressant de noter que le Ministère de l'Éducation, de la Jeunesse et des Sports reste toujours à côté de nous pour nous accompagner. Et aujourd'hui, nous avons S.E.M. OM Romny, secrétaire d'État au Ministère de l'Éducation, de la Jeunesse et des Sports et Monsieur le Conseiller YINDIZOGLU Murat.

Je crois que l'octroi des bourses à nos étudiants et professeurs, le financement de différents projets, l'accueil de nos personnels académiques pour la courte et longue durée, la présence de vos experts sur le campus de l'ITC, surtout de France, de Belgique et du Japon, ont aidé l'ITC à devenir ce qu'il est actuellement. Sans ces appuis une telle réussite de l'ITC à l'échelle internationale aurait été difficile, voire impossible. Veuillez donc accepter nos sincères remerciements.

A titre de rappel, le but principal de cette réunion vise à faire la synthèse globale de toutes les activités écoulées et d'en dresser de nouvelles pour la nouvelle année académique à venir, soit 2023-2024. Ces documents avec les commentaires et les propositions de tous nos membres et experts venant de différents horizons seront soumis à la Réunion du Conseil d'Administration pour demander son approbation dont nous sommes tous témoins aujourd'hui. Pour ce faire, S.E.M. le Professeur PO Kimtho, récemment nommé directeur de l'ITC, a mobilisé son équipe pour réaliser cette lourde tâche. En effet, à travers les présentations que nos collègues vont vous présenter, vous pouvez constater vous-mêmes le développement de l'ITC. Je ne veux donc pas en lister toutes.

On va maintenant aborder comme d'habitude notre ordre de jour de notre réunion.

- 1) Ouverture de la séance par la Présidente du Conseil d'Administration,
- 2) Adoption de l'ordre du jour,
- 3) Présentation du rapport du Directeur de l'année 2022-2023,
- 4) Document général et dossier pédagogique pour l'année 2023-2024,
- 5) Rapport financier : bilan en 2022-2023 et budget prévisionnel pour 2023-2024,
- 6) Nomination de l'équipe de direction pour 2023-2024,
- 7) Questions diverses.

Si vous avez des remarques ou commentaires, veuillez les manifester, sinon, l'ordre de jour est adopté.

Pour commencer, le tour de table est important. Vous pouvez vous présenter...

Merci pour la présentation et on peut maintenant accorder notre temps de parole à M. Pierre VINCENT, conseiller de Coopération et d'Action Culturelle de l'Ambassade de France.

M. Pierre VINCENT, conseiller de Coopération et d'Action Culturelle de l'Ambassade de France
Excellence Madame la Ministre de la Culture et des Beaux-Arts, Présidente du Conseil d'Administration de l'Institut de Technologie du Cambodge, Madame PHOEURNNG Sackona, Excellence Monsieur le Secrétaire d'État au Ministère de l'Éducation, de la Jeunesse et des Sports, Dr. OM Romny,
Excellence Monsieur le Directeur de l'Institut de Technologie du Cambodge, Dr. PO Kimtho,
Mesdames et Messieurs,

Je suis très honoré de participer ce matin à la 31^{ème} réunion du Conseil d'Administration. Je tiens à remercier tout particulièrement Madame la Ministre et Monsieur le Directeur pour l'accueil qui me réserve encore ce matin.

C'est avec joie que je participe pour la première fois aux travaux de cette instance qui permet de dresser le bilan des activités de l'année universitaire et de débat des stratégies et des perspectives à venir pour l'ITC.

J'ai eu la chance de participer à la 12^{ème} Journée Scientifique de l'ITC qui s'est tenue le 8 juin 2023. J'étais en mesure de voir le dynamisme et de la qualité des équipes scientifiques de l'ITC.

Comme vous le savez, Madame la Ministre, Monsieur le Directeur, la France est toujours tenue au côté de l'ITC. Cette année encore, nous venons de financer un projet porté par l'Université Sorbonne Paris Nord avec l'École Française d'Extrême-Orient et l'ITC. Ce projet permettra de développer des compétences dans les caractérisations et les contrôles des structures métalliques et de les dériver afin de développer une filière ingénieur en sciences des matériaux au Cambodge. Ce projet va aussi s'intituler avec le projet Erasmus+ MIC-KA171 qui est en co-déploiement à l'ITC.

Le développement de formation de qualité au niveau Master au sein de l'école doctorale est déjà bien engagé à l'ITC et j'espère que ce projet viendra consolider à sa manière cette évolution.

Permettez-moi aussi, Madame la Ministre et Monsieur le Directeur, de féliciter les 29 enseignants de l'ITC qui ont obtenu un titre de Professeur, le 15 juin dernier.

La présence d'enseignants-chercheurs de qualité est essentielle à toute institution d'enseignement supérieur. À ce propos, cette année encore, ce sont les 15 étudiants de l'ITC qui recevront une bourse pour faire un master ou un doctorat en France. Certaines de ces bourses sont cofinancées avec le ministère de l'éducation, de la jeunesse et des sports ainsi que l'IRD, qui en soient vivement remerciés.

Je voudrais enfin finir sur l'excellence de la coopération avec les institutions françaises, l'IRD, le CIRAD, ECAM LaSalle, Polytechnique, ENP, Insa Université. Cette excellence se traduit par de nombreux projets scientifiques en commun avec parfois le financement de l'ambassade via le FSPI, le Fonds de solidarité pour les projets innovants ou encore le PHC Hubert Curien lancé en 2022 au sein duquel nous avons financé deux projets entre des chercheurs cambodgiens et français.

Ma participation au Consortium international était l'occasion pour moi d'observer ce dynamisme et l'importance des liens que vous avez tissés par votre travail et par la mise en place des relations de grande confiance mais aussi d'amitié. J'en profite pour remercier le Directeur PO Kimtho, pour sa visite aussi en France qui s'est déroulée au mois d'avril, signe de cette amitié réciproque et indéfectible entre la France et le Cambodge. Je vous remercie de votre attention et je vous souhaite un excellent Conseil d'Administration. Merci.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Merci monsieur le Conseiller de Coopération et d'Action Culturelle de l'Ambassade de France. Comme vous le savez, la France est toujours notre partenaire fidèle depuis plus de 30 ans. Elle est là pour nous appuyer et rayonner une bonne réputation de l'ITC dans la région et à l'international. Toutes mes reconnaissances à la France et je passe la parole maintenant à notre collègue belge qui représente aussi un partenariat important.

Prof. Michel VERLEYSSEN, représentant des universités belges francophones

Oui, merci madame la ministre. De façon très courte, votre excellence et chers collègues et c'est évidemment un plaisir et un honneur pour moi de participer à ce 31^{ème} Conseil d'Administration de l'ITC. Je voudrais encore une fois vous demander de m'excuser de ne pas avoir pu participer en présence, de ne pas être venu au Cambodge pour ce Conseil d'Administration, parce que cette semaine, c'est la dernière semaine des examens et des contrôles des étudiants et donc c'était vraiment trop compliqué. Merci beaucoup de m'avoir permis de participer à travers une vidéo conférence. Comme vous le savez probablement et comme vous l'avez rappelé, Madame la présidente, au début de de cette réunion la Belgique est en support de l'ITC depuis de très nombreuses années maintenant. J'ai le plaisir de

coordonner le nouveau projet appelé « l'appui institutionnel » et qui est un projet de soutien sur plusieurs axes de de l'IPC y compris de son développement je dirais interne un projet qui qui a démarré il y a quelques mois maintenant qui va durer 5 ans et je voudrais insister également sur le fait que il y a de plus en plus d'opportunités d'autres projets d'autres financement entre l'ITC et la Belgique et voilà nous aurons dans quelques jours une nouvelle officielle sur le démarrage d'un nouveau projet de collaboration entre l'Université de Liège et ITC dans un domaine nouveau mais ça vient d'être décidé au niveau belge. Je prends ce projet à titre d'exemple parce que j'insiste vraiment sur le fait il y a une vraie volonté politique en Belgique de la part de l'ARES qui est le regroupement en fait des six universités francophones de Belgique il y a une vraie volonté politique de poursuivre pendant de longues années cette collaboration extrêmement fructueuse et réciproque avec l'ITC et je m'en réjouis et donc je j'espère que nous pourrions encore développer d'autres projets en parallèle avec celui d'après institutionnel dans les prochains mois et dans les prochaines années. Je vous remercie et je nous souhaite également une très bonne réunion de ce 31ème Conseil d'Administration. Merci.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Merci Monsieur le Professeur. I would now like to give the floor to Professor Watanabe who was a colleague of AUN/Seet-Need and now he works at Jica headquarters in Tokyo. So please, can you talk about our cooperation which lasts more than 20 years?

Prof. KOICHIRO Watanabe, Representative of Jica in Tokyo

Thank you for your time. I am very happy to be here with you. Yes, I have worked with ITC for over 20 years. I recognize that today's ITC has changed a lot. For now, we have the LBE project, led by Professor Takada. This is a project that affects several universities in Cambodia. Regarding cooperation with ITC, I am always at your side to help you make ITC develop even further.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Thank you, professor. I think we can summarize a little what happened at the ITC. In 2002, I was the first lecturer to get the PhD from France. Then it was Dr. OM Romny, a year after me. He get his PhD from Japan. But now we have many young people who have PhD from different countries, including Dr. PO Kimtho. He studied in Japan and France. The deans of faculties who are there also hold PhDs from abroad, especially from France. This is the result of our cooperation. So, I think the future of ITC belongs to them. A big thank you for this good cooperation which is bringing fruit to the ITC.

We can begin our program for the day. I can start by presenting the past activities while respecting the decision of the Board of Directors last year.

I can therefore let Mr. SOY Ty present these activities and the proposals of 2023 Consortium.

M. SOY Ty, Directeur adjoint de l'ITC

M. SOY Ty présente le suivi des décisions du CA 2022 et les avis du Consortium 2023.

No	Relevé de Décision du CA 2022	2022-2023
1	Demander le grade « Professeur Émérite » à la direction de l'ITC pour les grandes personnalités et les professeurs qui ont beaucoup travaillé pour le développement de l'ITC et ils vont partir à la retraite	En réalisation
2	La mise à jour du cursus de master génie de l'eau et de l'environnement (École doctorale)	Réalisé
3	La mise à jour du cursus de master génie agro-industriel	Réalisé
4	La mise à jour du cursus de master Génie de technologie et de gestion de l'énergie (École doctorale)	Réalisé
5	La mise à jour du cursus de master génie mécatronique, informatique et communication (École doctorale)	Réalisé

6	Demander de modifier le curriculum du programme de Télécommunications et Réseaux (Département GTR)	Réalisé
7	Ouverture du Département du Génie des Transports et des Infrastructures (GTI)	Réalisé
8	GIC update the curriculum of year 3, 4 and 5 to adapt to the change of the program in 2nd year for students who choose to study in GIC, GTR, Data Science, in the future (GIC)	Réalisé
9	GGG updates the curriculum of year 3 for two courses on "Oremicroscopy" and "Petrology and Mineralogy". These courses will be combined to increase the practical work, which can fulfill in the industry needs. Moreover, this course is the main core for the field mineral exploration and exploitation (GGG)	Réalisé
10	GGG updates the curriculum of year 4 for five courses on "Geophysics => added the TP class", "Rock Blasting Techniques => added TD class", "Mineral Exploration => added TD class", "Basic Geological Mapping => added TD class", "Mineral Characterization => removed this course due to the course of mineral exploration is covered this content already". The purpose of modified is to fulfill the requirement of current job market needed, especially in the field Mining, which is rapid growth in late 2021 (GGG)	Réalisé
11	GRU requested to modify the course "Construction of Rural Road" to "Road Engineering and Construction" for improving competent of student to meet the need of job market (GRU)	Réalisé
12	GRU will work on the Technician program in order to modify the program for a specific skill need on Water Supply and setup water supply laboratory with support from Shanghai Micro Purification Co., Ltd (GRU)	En réalisation
13	GRU will implement the Water and Environment Oriented Living lab by creating on more lab called "Coastal and Wetland Environmental Research Lab". The students and lecturer will do the real-life water demo sites and creating a multi-stakeholder virtual network (GRU)	En réalisation
14	Propose to establish the Cambodia Coastal Research Center. The detail structure, vision, mission, stakeholders, researcher and source of fund will be submitted in next consortium 2023 (GRU)	En réalisation
15	ITC is planning to launch 1year International Pre-degree Foundation Programs of Curtin in Oct 2022 at ITC and students could continue their undergraduate study for both Engineering (+4years) and Science (+3years) at any Curtin campus upon this foundation program completion. The pre-degree foundation program was established by technical assistant from both Curtin Perth, Australia and Curtin Malaysia under Higher Education Partnership Program of HEIP. The Establishment of Pre-degree Foundation Program in Eng. and Science will meet the Curtin's undergraduate entry requirement at any Curtin campus (International Program)	En réalisation (2023-2024)

Les AVIS du Consortium 2023

No	Avis du Consortium 2023	Favorable
1	Renforcer les compétences transversales (soft skills) en développant des relations avec les partenaires publics et privés et les Alumni etc.	X
2	Tout diplôme d'ingénieur « Engineering Degree » nécessite une durée de cinq ans.	X
3	Une augmentation de nouvelles options, de nouveaux travaux pratiques entraîne des dépenses mais l'ITC et ses partenaires peuvent les assurer.	X
4	Au niveau des ingénieurs, essayer de rendre transversaux certains cours : entrepreneurship ou marketing par exemple.	X
	L'orientation pour promouvoir une nouvelle option ou un nouveau département est indispensable. La mise en place du département des Mathématiques	X

5	appliquées et statistiques (Data Science) nécessite une campagne de sensibilisation pour que les étudiants comprennent bien leurs emplois attendus.	
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S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Yes thanks. I thought I would highlight a few important points. The first point is linked to the title of professor emeritus. This year, the Ministry of Education, Youth and Sports gave the title of professor to ITC professors but we are talking about the title of professor emeritus. Professor Watanabe said that this title “professor emeritus” is up to each institution to decide. I remember this during our last meeting. I think ITC can handle it because it is just the honorable title. By having this, the retired professor can give his course within the university. Another point is that we are keeping the duration of 5 years for training at the ITC. Our Consortium accepted it. If you have any questions, raise your hand. Otherwise, that means you adopt these proposals. I now give you the floor.

Prof. KOICHIRO Watanabe, Representative of Jica in Tokyo

Thank you Madam Sackona. I am happy that the Professorship is given to ITC professors. During our last Consortium meeting, I spoke about Professor Emeritus. I remind you that this title is only awarded to retired lecturers. In Japan, this title is aimed at great university leaders and professors. I hope the ITC can discuss with the Ministry of Education, Youth and Sports and I think the ITC can decide this on its own.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Yes Professor. 20 years ago, when I was at the Ministry of Education, we worked a lot on professorship. Now, well done, some teachers have it. But if the ITC, after the discussion with the ministry, can award this title "professor emeritus", it is a good thing. I no longer want to teach the course because I devote my time to research on culture. This title can be given to meritorious ITC professors. It is up to Dr. PO Kimtho to discuss with the ministry.

Prof. KOICHIRO Watanabe, Representative of Jica in Tokyo

Yes, I agree with you Ms Sackona. Dr. PO Kimtho can discuss with the ministry. Knowing that the situation is totally different if we compare with 20 years ago. I think it's time to promote this kind of title. Thank you.

S. E. Prof. PO Kimtho, Director of ITC

Yes, I would like to add more on this. I will take care on this and we will setup a committee working on that. Then we will consult with the ministry and I think that we can provide this kind of “Professor Emeritus” to some lecturers and leaders of ITC.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Thank you so much. Now, if you have no other remarks or comments, we can say the Consortium's proposals are adopted by our CA. We continue now. On passe maintenant aux événements marquants présentés par le Directeur de l'ITC, Prof. PO Kimtho.

S. E. Prof. PO Kimtho, Director of ITC

Pour ne pas prendre trop de place, nous ne citons que les grands titres :

- 1) Inauguration des deux bâtiments et remise des diplômes
- 2) Pose de la première pierre de l'internat de l'ITC sur le nouveau campus
- 3) Visite des députées françaises
- 4) Visite d'une délégation de haut niveau du Parlement japonais
- 5) Visite d'un conseiller spécial de la JICA du Japon
- 6) Une médaille « Chevalier des Palmes Académiques » remise à SE le Dr. OM Romny

- 7) Renouvellement du Protocole d'accord (MoU/ITC-IRD) et inauguration du Laboratoire Khmer d'Observation de la Terre
- 8) Projet ARES (Académie de Recherche et d'Enseignement Supérieur) de Belgique
- 9) HONDA Y-E-S AWARD PROGRAM 2022
- 10) Admissions à l'école polytechnique et à d'autres grandes écoles 2022
- 11) Protocoles d'accord (MoU) récents avec de grandes institutions
- 12) La 5ème réunion annuelle du Consortium ITC-Industries
- 13) Symposiums internationaux
- 14) Renforcement de la compétence transversale (Soft Skill)
- 15) Projet STEP UP
- 16) Visite de SEM Dr. PO Kimtho au Japon dans le cadre du projet SATREPS
- 17) Visite de SEM Dr. PO Kimtho en France
- 18) L'Institut de Technologie du Cambodge et l'Université des Sciences de la Santé ont rencontré l'ambassadeur de la République tchèque et ses délégués
- 19) Signature du protocole d'accord (MoU) avec le Ministère des Postes et des Télécommunications
- 20) Partage des résultats de la recherche et consultation sur l'amélioration du programme de master en génie urbain de l'eau et de l'assainissement
- 21) Visite du nouveau représentant de l'Agence Japonaise de Développement (JICA) au Cambodge
- 22) Visite de grands délégués de la Banque Asiatique de Développement
- 23) Pilotage Universitaire Rénové pour le Sud-Est Asiatique (PURSEA)
- 24) Journée scientifique de l'ITC
- 25) Titre de professeur « Professorship »

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Merci beaucoup monsieur le Directeur. Vous voyez, il y a beaucoup d'activités remarquables à l'ITC. Si vous n'avez pas de remarques, on passe au point 3, bilan des activités présentées par monsieur SOY Ty.

Pour ne pas alourdir le texte, veuillez consulter le rapport pour plus d'information.

M. YINDIZOGLU Murat, conseiller au ministère de l'éducation, de la jeunesse et des sports :

En regardant le nombre d'étudiants, on voit le double en dix ans mais si l'on regarde le nombre d'enseignant, c'est seulement 40% d'augmentation. Comment vous pouvez gérer cette situation?

M. SOY Ty, Directeur adjoint de l'ITC

Merci pour la question, monsieur. On a pensé aussi à cela. C'est pourquoi on a produit des cours en ligne pour les mettre à la disposition des étudiants.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Je voulais préciser aussi que cette question est posée chaque année. Je crois que l'ITC peut y remédier parce que le ratio entre étudiants-professeur reste bon. Vous voyez, actuellement, en termes d'infrastructures, je ne crois pas que ce soit un problème parce que nous avons de nouveaux bâtiments dédiés aux salles de classe, de laboratoires etc. Si l'on regarde le nombre de professeurs et le nombre d'étudiants, c'est 1/20 à peu près. Si l'on regarde dans d'autres établissements privés, c'est environ 1/100.

Les cours en ligne font partie intégrante des moyens permettant de mettre trop d'étudiants dans les salles de cours.

Est-ce qu'il y a d'autres questions?

Ok, pas de questions. On passe maintenant à la formation du 3^{ème} cycle.

Dr. SIM Tepmony, Directeur de l'école doctorale

Pour ne pas alourdir le texte, veuillez consulter le rapport pour plus d'information.

Pas de remarques pour l'instant.

M. LAY Heng, vice-doyen de la faculté de génie électrique et chef du département de génie informatique et communication

La présentation d'E-learning Center

M. SOK Kimheng, responsable de la bibliothèque

La présentation de la bibliothèque

M. SIEANG Phen, responsable des relations internationales

La présentation du perfectionnement et de la coopération

Dr. YIN Molika, responsable des relations avec les entreprises (UIL)

La présentation de la cellule d'interface

M. OR Chanmoly, directeur du Centre de Recherche et d'innovation (RIC)

La présentation de la cellule d'interface

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Merci beaucoup. Maintenant on a vu toutes les activités réalisées pour l'année académique 2022-2023. Le débat est ouvert maintenant. La parole est à vous, chers collègues !!!

Prof. Jun-ichi TAKADA, Chief Advisor of LBE Project

Thank you very much for the presentation. I recognize that you have made a lot of progress. I have a simple question regarding the literature that Dr. OR Chanmoly said, the publications made by the faculty's members and also in the library part you said a lot of initial new initiatives to improve the library and yes obviously to conduct the more advanced researches the universities all over the world South Africa from the challenges about the subscription fee of the online journals and of course the direction is this the open publication but for the time being at least to conduct the research, you still need to access the online publications which protected by the license fee and I like know how you manage it and do you have any strategy in terms of these in the future?

M. OR Chanmoly, directeur du Centre de Recherche et d'innovation (RIC)

Thank you very much, Professor, for your question. Actually, we concern about this one, at the direction board as well. For example, in the framework of HEIP Project, we are thinking about the subscription of journals as well. However, we can't use this budget for the subscription. Yes, in order to optimize the research with we still using the Open Access for the general publications that we are typically for each research you need the show the typical journal that can be accessed to get the new publication so the researcher can have some idea on the Open Access you know and for some journals that need to be subscribed or usually like, we has the network with our partner, for example, Alumni, a partner like professor in the foreign country, the foreign University that they have subscribe. so, we sometime we ask them to download to support us.

S. E. Prof. PO Kimtho, Director of ITC

Maby, I can add one more thing. When ITC become a Public Administration Institution, we will try to allocate this budget if we can have a enough evidence or explanation to get the support from the government.

S.E. Dr. Sackona PHOEURNNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

And Professor Takada, maybe, do you have some issues to solve this problem?

Prof. Jun-ichi TAKADA, Chief Advisor of LBE Project

We also have the challenge of that in Japan. We discussed about that because you know, the governments in other countries, they request that too. I hope that this kind of challenge will be solved in the future. We are now in transition time. I'm afraid to give you a good answer but it's a problem that affects all scientific communities around the world.

S. E. Dr. Sackona PHOEURNNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

You know, in developing countries like Cambodia and other countries in Asia or Africa, our researchers cannot access the data, the publications of major researchers on the planet. That's a big problem for us. Maybe one day Japan can find a solution.

Prof. Jun-ichi TAKADA, Chief Advisor of LBE Project

Yes but the license fees are very strict about the use of their subscription licenses and still we ourselves have the challenge to keep the access to such kind of literature and I obviously understand about the point. If we can't use the open access, we move to the old boxes. So, that all this kind of issue is resolved but as I mentioned it's still under the transition and obviously another challenge for Open Access is that then subscriptions.

Dr. OEURNNG Chantha, directeur adjoint

For the short term, I don't think it's a problem, as Dr. Moly said, we have open access and for the subscript, we have some connections to get it. Previously, ITC had the possibility of accessing it, with the support of UNESCO. She gave the link to developing countries. So, we check again if we can have again that link. They are many journals. The priority belongs to the developing countries. We must ask before investing money for it. I will check with other colleagues.

M. SOK Kimheng, responsable de la bibliothèque

Many years ago, at library has a communicate with other journal because normally the subscription in other country but for Cambodia or most of under developing country or developing country, the subsequently is free. So, actually we have a make an application for them to get the account. So that the researcher can access it for free. Currently, we get 3: for example, research for life but the problem is that the library did not maintain relations with the researchers. This is something we must do. As we have good relationships with some libraries in Cambodia, they give us a free link to access many scientific journals. So, the researchers of ITC can access to these journals in USA.

One more thing, we got sponsor from Belgium, 1000€. According to my opinion, if the universities in Cambodia can work together and put the money, we can buy a bigger subscription for the journals. It is also our plan.

Prof. Michel VERLEYSSEN, représentant des universités belges francophones

For me, the subscription, it's not too much a problem, at least for the moment. But the biggest problems ITC could be faced to in the next few years is the publication fee. I think that there is an absolutely need for ITC to publisher. The publication fees in order to publish something and that's really a challenge because the population fee in a high-level journal in in some domains can be a \$2,000, just for one article or for one paper. So, if you multiply that by the number of publications per year, in order to maintain and to increase the level of the visibility of research, it is big concern for ITC.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Thank you. What we heard was a temporary solution. If we want to publish a research result for the high level. We talk about environmental protection and global warming, but no one talks about this big problem that we are talking about. Countries in Europe can find a solution to this problem.

Mme MARTIAL Adèle, Country Representative of IRD and Representative of Consortium

Madam President, I think the G7 can do something in this case. I think publications for developing countries are discussed and another solution is that ITC can co-publish. For example, for the IRD, co-publication is done with the countries of Africa and South America. Because laboratories in France can pay for publications. I think this is also one of the possibilities for the ITC.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Thank you. On va passer à la présentation des documents généraux et dossiers pédagogiques présentés par Dr. BUN Kim Nguon.

Pour ne pas alourdir le texte, veuillez consulter le rapport pour plus d'information. Nous rendons visibles seulement les remarques et les commentaires après la présentation de cette partie.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Thank you. I think that you have a lot of comments on this part. So, please, the floor is yours now...

Si vous n'en avez pas, j'en ai quelques-unes.

Au niveau de campus, dans le nouveau campus, on a prévu une construction de l'internat pour les filles et les garçons peuvent habiter dans les pagodes. Est-ce que cet internat appartient exclusivement à l'ITC?

Prof. PO Kimtho, Director of ITC

Oui, Madame, c'est pour l'ITC seulement.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Deuxième question, pour le nombre de projets de recherches pour 2023-2024, il est de 80 projets dont 59 projets sont en cours encore. Est-ce que vous pouvez gérer cela correctement?

Une autre question, nous avons parlé ce matin du ratio enseignant-étudiants, concerne la réparation adéquate des enseignants en fonction du nombre d'étudiants. Il faut revoir tout cela, en termes de financement, de main-d'œuvres etc. Sachant que chaque année, on a besoin de créer plus de 300.000 emplois dans tout le pays. Il faut garantir la qualité de formation malgré tout.

Un autre point concernant l'augmentation de frais de scolarité qui s'élève à 800\$ par an. Pour moi, je ne vois pas d'objection du fait que nous avons besoin des consommables pour faire des travaux pratiques dans les laboratoires. Si nous comparons ces frais de scolarité avec d'autres universités publiques et privées dans lesquelles les consommables ne sont pas nécessaires, 800\$, ce n'est pas cher. Surtout, l'an prochain, l'ITC deviendra « Public Administrative Institution » (PAI).

Dans ce cas-là, nous avons besoin des conseils de Monsieur le Secrétaire d'État du Ministère de l'Économie et des Finances pour soutenir le développement durable de l'ITC. C'est un peu difficile parce que l'État a coupé une partie du budget à cause du Covid mais après le Covid, ce budget n'est pas revenu.

Ma dernière recommandation liée au recrutement des étudiants, il faut s'assurer que le nombre d'étudiants

souhaité pour 2023-2024 ne nuit pas à la qualité de formation de l'ITC, en tenant compte des infrastructures de l'ITC, laboratoires, salles de cours, etc.

Voilà, c'est tout pour moi. Je laisse la parole à vous tous !!!

M. Michel VERLEYSSEN, représentant des universités belges francophones

Oui, je voulais apporter quelque chose. J'avais la même remarque que vous, Madame Sackona, sur le nombre de projets de recherches. Pour moi, le nombre n'est pas tellement important, ce qui est important, c'est qu'une activité de recherche continue enfin soit élaboré dans la continuité le fait qu'une activité chez un chercheur ou dans une équipe continue l'année prochaine l'année d'après qu'elle soit financée par le même projet par un autre projet. En fait, ça n'a pas énormément d'importance et donc je n'accorde pas une très grande importance au nombre exact de projets, mais par contre, ce qui est important, c'est de pouvoir utiliser l'expertise qui est développée lors d'un projet pour le projet suivant dans la même équipe. Donc, la notion de continuité dans la recherche est vraiment très très importante et à travers le chiffre de 80 ou de 60, à la limite, le chiffre a un peu d'importance pour moi. Je ne perçois pas si ce sont des personnes des chercheurs des enseignants de l'ITC qui poursuivent la même activité en la faisant évoluer bien entendu parce que c'est ça la recherche ou bien qui passe complètement d'un sujet à l'autre en fonction des opportunités parfois de financement ou de collaboration et donc voilà c'est ça que je n'arrive pas à percevoir à travers les chiffres qui sont donnés mais j'insiste vraiment beaucoup sur le fait que une activité de recherche dans une institution dans une institution de recherche et d'enseignement, ça se construit vraiment à très long terme et donc il faut de la continuité dans les laboratoires, dans les équipes et chez les chercheurs bien entendu, en faisant évoluer année par année l'activité. Si vous me demandez combien de projets de recherche j'ai mené durant ma carrière j'ai envie de dire j'en ai mené un. C'est toujours le même qu'il y a 25 ans mais évidemment que j'ai fait évoluer très fortement de depuis toutes ces années mais j'ai voilà je pense que c'est la continuité qui est vraiment important. Merci Madame.

OKNHA LAY Meng Sun, Directeur de la SKD et représentant du secteur privé

J'ai une question. Est-ce que vous avez la méthode pour classifier la recherche? Gouvernemental, national, régional? Sinon, on ne peut pas les gérer?

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Pour l'instant, on a fait des publications internes de l'ITC.

S. E. Prof. PO Kimtho, Director of ITC

J'en profite pour apporter une clarification à sujet. Il y en a qui viennent du gouvernement et d'autres de la banque mondiale et de la banque asiatique de développement. Il y en 25 projets qui font partie de la banque mondiale. Certains projets durent 4 ans et d'autres 1 an. Ils sont de différents horizons. Dr. OR peut apporter

Dr. OR Chanmoly, directeur du Centre de Recherche et d'innovation (RIC)

In fact, in the report, we indicate that this research is being done with a local or international partner. I thank that more than 19%, we do the researches with our international partners.

M. YINDIZOGLU Murat, conseiller au ministère de l'éducation, de la jeunesse et des sports :

For me, the number of projects is not a problem but the big distinction for ITC is the nature of the projects. Some projects, such as the food project, bring in money, but others are only research projects. The second thing is that donors normally impose certain conditions on universities. This is difficult but I know that ITC can have other projects within the framework of HEIP, which means ITC researchers work with quality. We can say that what exists at ITC cannot be found anywhere else.

Dr. OEURNG Chantha, directeur adjoint

For ITC, normally, we have five research units for manage different fields, water, environment, food, electric, something like that. So, those projects classify into different areas and then even there are many projects. We have projects but for some the ITC is only the beneficiary, the ITC is not the project leader.

The tasks are not the same between beneficiary and project leader. The biggest project for us at the moment is only HEIP. In the future, if we can classify projects by amount, for example, less than 10,000 how many projects, from 10,000 to \$20,000, how many projects. In this case, we can see the total number.

Dr. OR Chanmoly, directeur du Centre de Recherche et d'innovation (RIC)

I would like to just to add something about ratio regarding research project and research number. A little bit higher or lower than one. However, a few years ago and now, it is not the same situation. Before, the number of full-time researchers was about 1/3 of total researchers but now about 10%. So, it is a big difference so right now he has a full time PhD candidate that we expect. In any case, we try to have a balance between the number of researchers and projects.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Thank you for all comments. Yes, we will note all remarks. I can't summarize them now but all comments will be processed to find a good solution. Of course, the projects will be classified by nature, by category, by level etc. to have good management with quality.

Before proceeding to the next part, I would like the CA to adopt the new tuition fees for the year 2023-2024. Okay, no objection, that means they are adopted. Thanks.

Now, I will go to the next one: the financial report presented by HE Dr. PO Kimtho.

Pour ne pas alourdir le texte, veuillez consulter le rapport pour plus d'information. Nous rendons visibles seulement les remarques et les commentaires après la présentation de cette partie.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Merci beaucoup. Je crois que cette partie est aussi importante pour le fonctionnement de l'établissement. Cela nécessite donc les commentaires de SEM le Secrétaire d'État au Ministère de l'économie et des finances. La parole est à vous, son Excellence.

S. E. M. CHOU Kimleng, Secrétaire d'État au Ministère de l'économie et des finances

Merci Madame la Présidente du CA de l'ITC. Merci à S.E.M. PO Kimtho pour sa présentation de la partie financière pour l'année académique 2023-2024.

Tout d'abord, Félicitations pour la bonne gestion du budget pour l'année 2022-2023. Mais si l'on regarde la page 6, c'est le budget dédié à l'investissement. Vous avez réalisé seulement 66,10%. C'est loin de tout dépenser à 100%. À ma connaissance, c'était dû à la Covid. Pour cette partie, les deux grands bailleurs de fonds sont la Banque Mondiale et la Banque Asiatique de Développement. À ce propos, j'aimerais savoir quelle est la grande difficulté pour vous, excepte la Covid.

Ensuite, toutes mes félicitations à tous les bailleurs de fonds qui représentent plus de 70% du budget total de l'ITC et le reste (à peu près 15%) provient du Ministère de l'Éducation, de la Jeunesse et des Sports (MEJS). Je suis en train de discuter avec SEM OM Romny pour redresser ce budget au MEJS. Si l'on obtient le même ou plus, c'est une bonne chose pour l'ITC.

En ce qui concerne le budget prévisionnel, si nous faisons une comparaison entre celui de 2022-2023 et celui de 2023-2024, le montant global n'est pas tellement différent, soit environ 13 millions de dollars.

Enfin, je suis ravi de voir que l'ITC a bien dépensé son budget de l'an dernier et je suis favorable au budget prévisionnel pour l'année académique 2023-2024.

Merci.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Merci son excellence. Je voudrais apporter une clarification à la question de son Excellence Monsieur le secrétaire d'État.

On a réalisé seulement 66% pour la partie INVESTISSEMENT pour l'année 2022-2023, c'est pour cela que l'on a pu dépenser 81% du budget global. Si l'on regarde de tout près la dernière ligne : investissement : matériel Labos, infrastructure, recherche, on voit qu'il y a du retard en termes de construction, de livraison des consommables, de procurement.

La deuxième remarque concerne les 15% du budget du MEJS pour 2022-2023 contre 70% du passé. C'est normal que les années passées n'aient pas de budgets de nos grands bailleurs de fonds comme la banque mondiale, la banque asiatique de développement. Le pourcentage était plus élevé. Mais depuis quelques années, avec le financement de ces bailleurs, on voit le pourcentage du MEJS baisse. Toutefois, c'est le même budget mais on inclut la somme d'argent versée par ces bailleurs, celui du MEJS devient plus petit.

Quant au budget pour 2023-2024, nous avons 2% de différence. Dans ce cas-là, c'est à revoir avec le ministère de l'éducation et le ministère de l'économie et des finances. Comme vous le savez, avec le règlement du ministère, chaque institution ne peut pas dépasser 5%. Pour l'ITC, si nous n'avons plus de supports financiers de ces bailleurs, comment l'ITC peut-il survivre. 13 millions de dollars, c'est beaucoup. L'ITC ne peut pas fonctionner avec 4 ou 5 millions de dollars par année. C'est trop peu. Je sais que ce budget est prévisionnel mais l'ITC va se battre pour le défendre.

M. Ludovic PROTIN, Directeur honoraire de l'ITC

Je vois que vous avez fait une augmentation des frais de scolarité, de 600USD à 800USD. Dans ce cas-là, vous n'avez pas peur d'avoir une baisse de candidats. Je pense que si vous le faites, c'est que vous avez vos raisons mais je voudrais juste les savoir.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

C'est une préparation pour tous parce que vous voyez que le marché d'aujourd'hui ça coûte de plus en plus cher. Nos jeunes professeurs de l'étranger, si on ne les paie pas correctement et ils vont aller dans d'autres établissements.

Si l'on regarde pour d'autres établissements qui n'ont pas besoin de laboratoires, de consommables pour les expérimentations, les frais de scolarité sont entre 800USD et 1000USD.

Mais malgré tout, l'ITC octroie des bourses aux étudiants venant des zones défavorisées.

De plus, l'ITC deviendra « Public Administrative Institution », l'an prochain. Dans ce cas-là, l'autonomie administrative et financière, c'est important. On sait que le Ministère de l'économie et des finances est là pour nous appuyer mais pour être plus sûr, c'est important d'avoir assez de notre propre budget.

M. Ludovic PROTIN, Directeur honoraire de l'ITC

Merci, c'est justifié.

S. E. M. CHOU Kimleng, Secrétaire d'État au Ministère de l'économie et des finances

Si l'on regarde de tout près, l'ITC a le salaire et les indemnités des enseignants qui couvrent 28% et le fonctionnement est de 20%, je crois que c'est abordable. Mais le budget prévisionnel, pour le fonctionnement, il y a une réduction de 10%, d'après vous, c'est faisable? D'après moi, une différence de 10%, c'est une grande variation. Je me demande donc si c'est soutenable.

S. E. Prof. PO Kimtho, Director of ITC

En fait, si l'on voit les dépenses de 2022-2023, pour l'investissement, ce n'était que 51,10%, soit 5,834,845USD mais le budget prévisionnel 2023-2024, c'est 65,40%, soit 9,330,274USD. Ce grand budget est destiné principalement à la construction des bâtiments dans le nouveau campus de l'ITC. C'est pour cela que le pourcentage s'est élevé. Si l'on regarde les budgets dédiés au fonctionnement, aux indemnités et aux investissements, ça n'a pas beaucoup changé. Ces financements de la Banque Mondiale et de la Banque Asiatique de Développement font changer ce pourcentage. Je peux vous assurer que le budget pour l'ITC n'a pas beaucoup changé.

S. E. Dr. Sackona PHOEURNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Nomination de l'équipe de direction de l'ITC : Merci. On arrive maintenant à la dernière étape de notre réunion : la nomination de l'équipe de direction de l'ITC. Une fois cette liste validée, on l'envoie au MEJS. Pour l'année prochaine, selon la liste, on a 36 personnes de notre équipe de direction. Vous avez sous vos yeux cette liste, si vous n'avez pas d'objection, cela veut dire que la liste de ces 36 personnes est adoptée par le CA.

Renouvellement de candidature du Consortium : Une autre chose, c'est important aussi, c'est que le renouvellement de candidature de Consortium pour le nouveau mandat 2023-2028. Pour l'instant, on a 20 sur 36 universités de l'étranger qui souhaitent s'adhérer de nouveau au Consortium international de l'ITC. Nous avons trois institutions dont l'adhésion se fait automatiquement sont l'Ambassade de France, Jica et l'Agence Universitaire de la Francophonie. Pour ces membres qui n'ont pas déposé leurs candidatures, l'ITC peut les attendre au plus tard le mois de janvier 2024.

Nouveau représentant de l'ARES : L'ARES va nommer son nouveau représentant à l'ITC. L'adaptation des candidatures des membres qui les ont déposées au CA de l'ITC.

Dates pour la réunion du prochain Consortium : Les dates pour le prochain Consortium sont les 27 et 28 mars 2024.

Fête de 60 ans de l'ITC : J'en profite pour vous dire aussi que l'an prochain sera la fête de 60 ans de l'ITC.

Remerciements à Monsieur Bruno DAGUES : Avant de terminer, je tiens à remercier grandement M. Bruno DAGUES, conseiller de l'ITC, qui a beaucoup travaillé pour aider les jeunes enseignants, les orienter, les encadrer et lancer des coopérations avec différents établissements en France, sans son soutien, un tel ITC aurait été difficile !!! Sachant qu'il est avec l'ITC depuis des années et des années. Il est toujours le bienvenu à l'ITC !!!!!

Pour mieux mémoriser, le tableau ci-dessous illustre toutes les décisions du Conseil d'Administration (CA) 2023.

Relevé de décisions du CA 2023

No	Décisions du Conseil d'Administration 2023
1	Reclasser les projets par nature, par niveau (ne pas les mettre tous ensemble)
2	La durée de « Bachelor of ITC » dure 5 ans
3	L'ITC va discuter avec le MEJS et donner le titre « Professeur Émérite » aux dirigeants et les professeurs de l'ITC qui sont à la retraite
4	Ingénieurs : ITC-Phnom Penh = 1300 étudiants (80 bourses); ITC-Tbong Khmum = 120 Techniciens : 1000 étudiants (15% bourses)

5	Droits de scolarité : Ingénieurs : (800USD/650USD pour les filles); Techniciens (350USD/250USD pour les filles)
6	Project Implementation : - Institution <ul style="list-style-type: none"> • Establishment of Risk Management Platform for Air Pollution in Cambodia –SATREPS – JICA (2022 – 2027); • Institutional Support (IS) – ARES (2022 – 2027) ; • Science and Technology Project in Upper Secondary Education (STEP UP) – ADB (2023 – 2029); • Research and Training Platform on Power System – EU/AFD (2023 – 2027); • Energy Transition Sector Development Program (ETSDP) – ADB (2023); • Skills for Future Economy (SFE) – ADB (2023 – 2029); • LBE-Phase 2 – JICA (2024 – 2029). - Research Project (total: 80 projects) <ul style="list-style-type: none"> • Continuous projects: 59 ; • Newly approved research projects: 21.

S. E. Dr. Sackona PHOEURNNG, Ministre de la Culture et des Beaux-Arts et Présidente du Conseil d'Administration de l'ITC

Encore une fois, on arrive maintenant à la nomination de l'équipe de direction. Ces sont les personnes importantes pour mener à bien toutes les activités pour 2023-2024.

Liste de la nomination de l'équipe de direction de l'ITC pour 2023-2024

No	Nom et prénom		Fonction
1	Prof.	Dr. PO Kimtho	Directeur de l'ITC
2	Dr.	Dr. OM Romny	Directeur honoraire de l'ITC
3	M.	Ludovic PROTIN	Directeur honaire de l'ITC
4	M.	SOY Ty	Directeur adjoint, chargé de la pédagogie et des études et d'Assurance de qualité interne
5	Dr.	OEURNNG Chantha	Directeur adjoint, chargé de la planification, de la recherche et de l'innovation, et de la cellule d'interface (UIL)
6	Dr.	BUN Kim Gnun	Directeur adjoint chargé de la plainification et projet-assisté par M. BUN Long et M. AM Sokchea (Projet WB et ADB)
7	Dr.	NGUON Kollika	Directeur adjoint cahrgé de l'administration et des finances
8	Dr.	CHUNHIENG Thavarith	Conseiller de la direction chargé de la coopération
9	M.	NUTH Sothân	Conseiller de la direction chargé de la pédagogie, des études, des sports et de la jeunesse
10	M.	PENH San	Conseiller de la direction chargé de l'adminsitration, des finances et du service interne
11	Prof.	Bruno DAGUES	Conseiller de la direction
12	Dr.	SIM Tepmony	Directeur du programme du 3 ^{ème} cycle, Assisté par Dr. HIN Raveth et Dr. EK Pichkmony
13	Dr.	OR Chanmoly	Directeur du Centre de Recherche et d'Innovation Assisté par : - Dr. YOS Phanny et Dr. TAN Reasmey, directeurs adjoints; - M. KRET Kakada, chef de l'unité de recherche « Technologie et Gestion de l'énergie »;

			- Dr. PHAT CHanvorleak, chef de l'unité de recherche « Technologie des Aliments et Nutrition »; - Dr. VALY Dona, chef de l'unité de recherche « Technologie de l'Information et responsable du programme ECAM LaSalle Cambodia; - Dr. DOUNG Piseth, chef de l'unité de recherche « Science et Structure des Matériaux »; - Dr. PENG Chanthol, chef de l'unité recherche « Eau et Environnement ».
14	Dr.	IN Sokneang	Doyenne de la faculté de génie chimique et alimentaire, Assistée par Dr. HOR Sivmey
15	Dr.	HAN Virak	Doyen de la faculté de génie civil, Assisté par Dr. LY Hav et M. CHEA Chanly, chargé de l'Architecture
16	Dr.	CHAN Sarin	Chef du département GIM, Assisté par M. UN Amata et Dr. CHHIT Saosometh
17	Dr.	CHRIN Phok	Chef du département GEE, assisté par Dr. AM Sokchea et Dr. CHOU Kosal
18	Dr.	SRENG Sokchenda	Chef du département Télécommunications et Réseaux, Assisté par Dr. THOUN Kosal
19	M.	LAY Heng	Chef du département GIC, du Centre E-Learning, Assisté par Mlle Seak Leng
20	Dr.	CHHUON Kong	Doyen de la faculté d'hydrologie, Assisté par Dr. ANN Vannak
21	Dr.	PHUN Veng Kheang	Chef du département Transports et Infrastructure, Assisté par Mlle YANG Panha
22	Mme	SREY Malis	Chef du département de Tronc Commun, assistée par - Dr. LIN Mongkulserey, responsable du programme de mathématiques; - M. LONG Sovann, responsable du programme de physique; - Mme KHEM TRan Krasel, coordinatrice de la section de français - M. SO Phea, coordinateur de la section d'anglais
23	Dr.	LIN Mongkulserey	Responsable du campus ITC à Tbong Khmum Chef du département des Mathématiques Appliquées et Statistiques, assisté par Dr. PHAUK Sokhey
24	Dr.	ENG Chandoeurn	Chef du département GGG, assisté par Mlle PECH Sopheap
25	Dr.	SRANG Sarot	Responsable du laboratoire DC et du programme ECAM Cambodge
26	M.	SIEANG Phen	Chef du bureau des Relations Internationales
27	Dr.	YIN Molika	Responsable de la cellule d'Interface (UIL)
28	M.	AN BUN Eng	Chef du Bureau des Études
29	Dr.	KHOEURN Kimleang	Chef du bureau d'Assurance de Qualité
30	M.	KHIEV Samnang	Chef du service informatique, assisté par M. SIENG Chamroeur
32	Mme	HANG Vinchothy	Chef du bureau des personnels
33	M.	MOEUNG Noi	Chef du bureau de PB
34	Mme	KOY Sophary	Chef du bureau de Comptabilité et des Finances
35	M.	EAM Kosal	Assistante du bureau de Comptabilité et des Finances
35	M.	NHEM Sophal	Chef du bureau des achats
36	M.	KEO CHHOM Sethy	Chef du bureau du service technique

Annex 3. Overview of Decisions of CA 2023 and Recommendations of Consortium 2024.

No	Décisions du Conseil d'Administration 2023	2023-2024
1	Reclasser les projets par nature, par niveau (ne pas les mettre tous ensemble)	En réalisation
2	La durée de « Bachelor of ITC » dure 5 ans	Réalisé
3	L'ITC va discuter avec le MEJS et donner le titre « Professeur Émérite » aux dirigeants et les professeurs de l'ITC qui sont à la retraite	En réalisation
4	Ingénieurs: ITC-Phnom Penh =1300 étudiants (80 bourses); ITC-Tbong Khmum = 120 Techniciens : 1000 étudiants (15% bourses)	Réalisé
5	Droits de scolarité : Ingénieurs : (800USD/650USD pour les filles); Techniciens (350USD/250USD pour les filles)	Réalisé
6	Nomination de l'équipe de direction de l'ITC	Réalisé
7	<p>Project Implementation :</p> <p>- Institution</p> <ul style="list-style-type: none"> • Establishment of Risk Management Platform for Air Pollution in Cambodia – SATREPS – JICA (2022 – 2027); • Institutional Support (IS) – ARES (2022 – 2027) ; • Science and Technology Project in Upper Secondary Education (STEP UP) – ADB (2023 – 2029); • Research and Training Platform on Power System – EU/AFD (2023 – 2027); • Energy Transition Sector Development Program (ETSDP) – ADB (2023); • Skills for Future Economy (SFE) – ADB (2023 – 2029); • LBE-Phase 2 – JICA (2024 – 2029). <p>- Research Project (total: 80 projects)</p> <ul style="list-style-type: none"> • Continuous projects: 59 ; • Newly approved research projects: 21. 	En réalisation

No	Avis du Consortium 2024	AVIS
1	Valorisation de la transversalité des cours entre les départements	Favorable
2	Création de: Master of Architectural Engineering (GS)	Favorable
3	Création de : Artificial Intelligence Engineering and Cybersecurity (GIC-International Program)	Favorable
4	Création de: IT Network and Programming (GIC-Associate)	Favorable
5	Création de : Industrial Engineering (GIM-Associate)	Favorable
6	Création de : Geotechnical Engineering (GGG-Associate)	Favorable
7	Changement du nom: Materials Science and Structure” to “Materials and Built Environment” (RIC)	À revoir
8	New PathWay of ECAM LaSalle “Second years of International Program can go directly to 3rd year at ECAM LaSalle” (ITC-ECAM-Kasetsart University)	À revoir

Annex 3a. Report of French Language Teaching (2023-2024).

Rapport de l'enseignement de français

Mars 2024

La Section de Français de l'Institut de Technologie du Cambodge assure des cours de français langue étrangère à tous les étudiants de la première année à la quatrième année du cursus ingénieur. Pour les groupes de 5^{ème} année (32h pour un semestre seulement) : cours de *Module d'Insertion Professionnelle (MIP)* (en français)

Classe	Niveau	Nombre d'heures/semaine		Total du nombre d'heures/an
		Semestre 1 (16 semaines)	Semestre 2 (16 semaines)	
I1	A1	6h	6h	192h
I2	A2	6h	4h	160h
I3	A1*	4h	2h	96h
	A2			
	B1			
I4	A2	2h	2h	64h
	B1			
	B2			
I5	MIP	2h	-	32h

*I3-A1 : Étudiants ingénieurs venant du cycle technicien

1. Ressources humaines

L'appel à recrutement des enseignants de français vacataires a été lancé le 16 août 2023. L'interview s'est faite du 28 au 29 août 2023.

No.	Nom et prénom	Sexe	Dépt	Date de naissance	Diplôme	Sujet de mémoire	Université et pays	Année de fin d'étude
1	KHEMTRAN Krasel	F	SF	13 Oct. 1971	Master 2	La motivation des étudiants dans l'apprentissage du français à l'ITC	Université de Moncton, Canada	1999
2	MONG Sokunvatey	F	SF	22.04.1965	Licence ès Lettres		Université de Phnom Penh (Cambodge)	1994
3	EL Sotheany	F	SF	01.05.1970	Licence FLE		Université de Phnom Penh (Cambodge) , Université de Rouen (France)	1993 / 2001
4	KHEM Nimith	F	SF	25 mai 1965	Master 2	La néologie dans les langues française et russe	Institut d'Etat pédagogique des langues étrangères de Kiev (Russie)	1990
5	NHEP Kim Hun	M	SF	18.11.1972	Licence ès Lettres		Université Royale de Phnom Penh (Cambodge)	1996
6	PRUM Rithy	M	SF	05.11.1971	Licence		Université de Phnom Penh (Cambodge) , Université de Rouen (France)	1994
7	NOU Samrach	M	SF	07.05.1986	Master		Université Caen-Basse Normandie, France	2016
8	PHUONG Sothea	F	SF	07.07.1987	Master 2	Les stratégies pour motiver les étudiants à parler en classe de FLE (Étude de cas des étudiants à l'Institut de Technologie du Cambodge)	Institut National de l'Education, Cambodge	2021
9	MAM Champei	F	SF	27.12.1979	Master 2	Démarche de projet et travail coopératif : Apport pour la formation à la pratique réflexive au sein de l'équipe enseignante, le cas des enseignants au Lycée HUN Sén Sérey Pheap	Université Caen Basse Normandie, France	2013

10	KUCH Chanpoly	M	SF	01.01.1973	Master en linguistique	Rapport de 30 pages : proverbes khmers et français	Université Royale de Phnom Penh	2009
11	YEANG Ranich	F	SF	22.05.1998	Licence		Université Royale de Phnom Penh	2018
12	SAR Hieng	F	SF	26.02.1948	Licence + DALF C1		Université Royale de Phnom Penh, Cambodge	1992 et 2006
13	PAN Chansonita	F	SF	07.08.1995	Licence		Université Royale de Phnom Penh , Cambodge	2017
14	BUN Veary	F	SF	19.05.1954	Licence		Université Royale de Phnom Penh , Cambodge	1988
15	MUONG Romany	F	SF	27.05.1959	DALF C1		Institut Français du Cambodge, Cambodge	2006
16	KEM Malyan	F	SF	08.11.1950	DALF C1 et Diplôme	d'Université CAPEFLE	Institut de Français du Cambodge et Université de Rouen : France 2000 et 2002	2000 et 2002
17	VORN Savathana	M	SF	19.05.1984	Master	Rapport du stage pratique : Gestion administrative à l'école secondaire	CUS, Cambodge (Cambodian University for Specialties)	2018
18	NET Ninit	M	SF	10.09.1993	Licence		Université Royale de Phnom Penh (Cambodge)	2018
19	PHAN Phadeth	M	SF	01.01.1995	Master 2	L'utilisation des images dans l'enseignement du vocabulaire en FLE au niveau débutant.	Institut National de l'Education, Cambodge	2022
20	PHUONG Chenda	M	SF	14.01.1984	Licence+1/ DELF B2	TICE pour la compréhension orale et écrite	Université Royale de Phnom Penh , Cambodge et Institut National de l'éducation	2017 et 2025
21	AN SINA	M	SF	16.01.1997	Licence	Rapport de stage: La production orale dans la classe	Université Royale de Phnom Penh (Cambodge)	2019
22	SOK DALIN	M	SF	4/16/1987	Licence+1		Institut National de l'Éducation, Cambodge	2016
23	MOEUN SOKVISAL	M	SF	01.07.1995	Master 2	L'utilisation de jeux comme facteur de motivation dans l'apprentissage du français.	Institut National de l'Éducation (INE)	2021
24	SAN VITOU	M	SF	30.11.1989	Licence		Université Royale de Phnom Penh , Cambodge	2011
25	TOL SINATH	M	SF	07.07.1996	Licence		Université des Moussons (Cambodge)	2019

26	VEY SORIYA	F	SF	24.09.2001	Licence		Université Royale de Phnom Penh	2022
27	SE SOCHEATA	F	SF	03.01.2001	Licence FLE	La classe inversée : « comment rendre efficace les devoirs de compréhension orale en ligne ? »	Université Royale de Phnom Penh	2021
28	NOUM VIRADAY	M	SF	28-08-1989	Master 2	Choix des supports pédagogiques et des méthodes pour l'enseignement de la compréhension orale chez les apprenants en classe de FLE	Institut National de l'Éducation, Cambodge	2023
29	IM PUTHEARITH	M	SF	12.09.1990	Master 2	Méthodologie de l'enseignement de la phonétique	Institut National de l'Éducation, Cambodge	
30	LIM HORCHUONG	F	SF	20.06.2000	Licence		Université Royale de Phnom Penh, (Cambodge)	2021
31	LY META	M	SF	05.11.2003	DELF B2		IFC (Institut de Français du Cambodge)	2022
32	YORN SAMNANG	M	SF	26.04.1991	Master 2	Les dispositifs pour motiver les élèves à améliorer leur communication orale en classe de français	Institut National de l'Éducation, Cambodge	2021

2. Méthode d'évaluation

- Au premier semestre :
 - o Contrôle (mi-semester) : 4 types d'évaluation : Vocabulaire, grammaire, compréhension écrite (CE), production écrite (PE)
 - o Examen final (fin du semestre) : 5 types d'évaluation : Vocabulaire, grammaire, compréhension orale (CO), compréhension écrite (CE) et production écrite (PE),
- Au deuxième semestre :
 - o Contrôle (mi-semester) : 4 types d'évaluation : Vocabulaire, grammaire, compréhension écrite (CE), production écrite (PE)
 - o Examen de niveau (fin du semestre) : A1/A2/B1/B2 sous 4 compétences d'évaluation : compréhension orale (CO), compréhension écrite (CE), production écrite (PE) et production orale (PO), bien adaptées au Cadre Européen Commun de Référence pour les Langues (CECRL).

3. Résultats de l'examen de niveau (Année 2022-2023) Campus Phnom Penh (2022-2023)

Cycle	Niveau	Résultat			
		Succès	Échec	Absent	Total
1 ^{ère} année (I1)	A1	1046	273	276	1595
2 ^{ème} année (I2)	A2	998	190	152	1340
3 ^{ème} année (I3)	A1*	15	0	1	16
	A2	142	79	84	305
	B1	429	173	335	937
4 ^{ème} année (I4)	A2	9	36	40	90
	B1	48	36	192	276
	B2	846	14	36	896

Troisième année : I3

Répartition en **3 groupes de niveau** selon les résultats de l'année précédente :

* Groupe de niveau A1 (I3-A1)

Il s'agit des étudiants venant du cycle Technicien. La plupart d'eux n'ont jamais appris le français.

Campus de Tbong Khmum (2022-2023)

Pour les étudiants à Tbong Khmum, dû à leur petit nombre, ils ne sont pas classés par le résultat final de l'année précédente.

Cycle	Niveau	Résultat			
		Succès	Échec	Absent	Total
1 ^{ère} année (I1)	A1	13	4	9	26
2 ^{ème} année (I2)	A2	6	15	1	22
3 ^{ème} année (I3)	B1	0	14	15	29
4 ^{ème} année (I4)	B2	3	12	3	18

**Pourcentage du succès par année d'études
et par niveau de français**
Liste des étudiants ingénieurs réussissant à l'examen de niveau de français 2022-2023
Campus Tbong Khmum

Année d'études	Niveau de français	Nombre total *	Obtention A1		Obtention A2		Obtention B1		Obtention B2	
			Nombre	%	Nombre	%	Nombre	%	Nombre	%
I1	A1	26	13	50%						
I2	A2	22			6	27%				
I3	B1	29					0	0%		
I4	B2	18							3	17%

**Liste des étudiants ingénieurs réussissant
à l'examen de niveau de français 2022-2023**
Campus Phnom Penh

Année d'études	Niveau de français	Nombre total *	Obtention A1		Obtention A2		Obtention B1		Obtention B2	
			Nombre	%	Nombre	%	Nombre	%	Nombre	%
I1	A1	1595	1046	66%						
I2	A2	1340			998	74%				
I3	A1	16	15	94%						
	A2	305			142	47%				
	B1	937					429	46%		
I4	A2	90			9	10%				
	B1	237					12	5%		
	B2	276							48	17%

4. Certification du niveau de français

L'ITC délivre deux types de certification :

- 1) **Attestation de connaissance en langue française** : il s'agit d'une simple attestation donnant le nombre d'heures de cours de français effectués pour les étudiants qui ne bénéficient pas de la réforme à partir de 2016. Mais les étudiants des autres années peuvent également la demander en cas de nécessité.
- 2) **Attestation de niveau de langue française** : une session d'examen de niveau de français a lieu en juin, vers la fin du second semestre pour les étudiants en :
 - 1^{ère} année : A1
 - 2^{ème} année : A2
 - 3^{ème} année : A1/A2/B1
 - 4^{ème} année : A2/B1/B2

Plan d'action

- L'enseignement de la langue française sera maintenu uniquement en I1, I2, I3 et I4.
- Selon la décision du CA de 2016, tous les étudiants doivent avoir au minimum le niveau A2 en langues à la fin de leur cursus d'ingénieur.
- L'examen de niveau du français sera organisé en fin du semestre 2 pour chaque cycle.
- Pour une amélioration de l'enseignement de langues, il faut :
 - Adopter des critères des niveaux des enseignants pour l'enseignement des niveaux A1, A2, etc.
 - Exiger des justificatifs de niveau de langues des enseignants.
 - Faire appel à des francophones natifs (pour autant que les critères des recrutements soient respectés).
 - Accompagner pendant l'année académique les I3 et I4 actuels n'ayant pas atteint le niveau A2.
 - Soutenir les étudiants issus de la filière DUT pour leur permettre de rattraper le niveau.

Annex 3b. Report of English Language Teaching (2023-2024).

1. Introduction

ITC is one among the tertiary institutions in Cambodia, which trains students to become high quality engineers in different fields of technology for the need to develop the country. The English Language has been established and taught to students, from year2 to year5, since 1995. The rationales of the English language teaching at the Institute of Technology of Cambodia (ITC) are that having English proficiency would help students (1) in their study's life (2) increase chances to get jobs and (3) to pursue further studies in the country as well as abroad.

2. Human Resources of English Section

2 Professeurs Titulaires: 2 Masters

- Mr. SO Phea (Master, The University Waikato, New Zealand, 1998)
- Mr. CHENG Kimsan (Master, The University of Sydney, Australia, 1999)

20 Professeurs Vacataires : 1 Phd ; 12 Masters ; and 7 Bachelors

- Mrs. CHEA Sophea (Bachelor, IFL, 2007)
- Ms. HONG Ratanak Omara (Bachelor, IFL, 2017)
- Mr. YEAT Vanna (Master, IFL, 2018)
- Ms. HEANG Leakena (Bachelor, IFL, 2017)
- Ms. TIM Nina Eliza (Bachelor, IFL, 2017)
- Mr. SIEN Bross (Master, IFL, 2019)
- Ms. LY Soda (Master, IFL, 2022)
- Ms. MEAS Phallin (Bachelor, IFL, 2017)
- Mr. SENG Mean (Master, Meiji Uni Japan, 2022)
- Ms. KIM Seyla (Master, BELTEI, 2022)
- Mr. HORM Kosal (Master, IFL, 2018)
- Mr. SOU Sovannara (Master, RUPP, 2018)
- Mr. UON Kakada (Master, RUPP, 2019)
- Mr. SON Rasi (Master, BELTEI, 2022)
- Mr. SAO Vannak (Master, RUPP, 2021)
- Mr. PENCHHOM Chareth (Phd, RUPP, 2022)
- Mr. AY Sok (Master, IFL, 2015)
- Ms. CHHE Sreyvatnak (Master, Australia, 2022)
- Mr. KEO Pichmony (Bachelor, IFL, 2017)
- Ms. NGET Meyny (Bachelor, NUM, 2021)

Degree	2023-2024
PhD	1
Master	14
Bachelor	7
Total	22

3. English Teacher

Strong points

- Create teacher recruitment announcement
- Advertise the teachers' recruitment in public
- Develop interview questions
- Develop marking criteria
- Make the shortlist candidates
- Conduct the interview
- Two sessions of teacher-training were conducted pre-semester1

Weak points

- Not many applicants to apply their CVs
- Most applicants have experience in teaching General English, not English for Engineering or Technology

4. English Course

Strong points

- Conduct diagnostic test
- Conduct level exam
- Classify group (class) in the right level
- Students get certificate

Weak points

- Not all students pass the level exam
- Fail students do not attend class
- Learning hours are limited (not enough, only 2 hours a week)

5. Course Material

Strong points

The English program is specially designed for engineering students who have studied some English previously. The English Section is developing its extracurricular program including a course book for year five students and production of its syllabus and course outline for each class. The core curriculum has been established based on the new series of Technology textbooks.

- "Technology1" Course Book by Eric H. Glendinning 2008, for year2 level A2.
- "Technology2" Course Book by Eric H. Glendinning & Alison Pohl 2008, for year3 level B1.
- "English for Environmental Science" by Terry Phillips 2009, for year4 level B2 Semester 1.
- "Essay and Academic Writing" Compiled by Teachers of English Section 2015, for year4 level B2 Semester 2.
- "English for Career and Work" Compiled by Teachers of English Section Third Updated 2020, for year5 Semester 1.

The course books mentioned above focus on English of general engineering contexts, science, technology which motivated students to learn.

Weak points

- The course books are designed for native English speakers
- Past Experience showed that each Course Book was not completed properly each semester

7. Aims and the objectives of the course are to:

- Acquire good reading strategy (for Literature Review)

- Develop communicative competence in the field of Engineering
- Develop the ability to express themselves confidently (presentation skills; interviewing skills)
- Learn how to organize technical terms for further use or studies

By the end of the course both strains year5 and 3 engineering and technician students will be able to:

- Present their report effectively to their lecturers (to defend the graduate projects)
- Communicate effectively with experts in the field of engineering in their work place.
- Use technical terms (terminology) appropriately in order to write reports on their workplace, practicum.
- Learn how to organize technical terms for further study or research.

8. Class Attendance

Strong points

- Strong and medium students attend class well
- Year 5 students have to attend English Classes Only in Semester 1

Weak points

- Many students fail to register for English Class
- Holidays and students field trips often interrupt their sessions

9. Teacher-Training

Strong points

- Training session is conducted occasionally in weekly staff meeting
- ITC sponsored two teachers to attend annual CamTESOL Conference in February 2024, Opportunity for Teacher Training/Capacity Building/Keeping up with new trend of teaching & learning.
- One teacher of SA will be attending ELT Forum in Laos, supported by US Embassy to Cambodia.

Weak points

- Training sessions run without foreign experts or advisors
- Short Courses of Teacher-Training both in and outside the country is out question in recent years

10. REPORT ON I2 STUDENTS

I2 (A2)

Number Students	Number Classes	
913(442 girls)	28	
		TOTAL 1355

11. REPORT ON I3 STUDENTS

I3 (A2)

Number Students	Number Classes	
55(29 girls)	2	
		TOTAL 84

I3 (B1)

Number Students	Number Classes	
604(418 girls)	22	
		TOTAL 1022

I3 (B2)

Number Students	Number Classes	
N/A	N/A	
		TOTAL N/A

12. REPORT ON I4 STUDENTS

I4 (A2)

Number Students	Number Classes	
23(4 girls)	1	
		TOTAL 27

I4 (B1)

Number Students	Number Classes	
190(87 girls)	5	
		TOTAL 277

I4 (B2)

Number Students	Number Classes	
293(185 girls)	10	
		TOTAL 478

13. REPORT ON I5 STUDENTS – “English For Career and Work”

I5

Number Students	Number Classes	
572(252 girls)	16	
		TOTAL 824

14. REPORT ON STUDENTS’ OVER ALL, by March 15, 2024

Level	Number of students in each level
A2	111
B1	1299
B2	478
I5	824
Total	2712

15. Summary on Results of Students' Level - 2022-23

Classes	Level	Total	Passed	Failed
I2	A2	1341	1125	216
	B1	0	0	0
	B2	0	0	0
I3	A2	92	47	45
	B1	655	371	284
	B2	527	328	199
I4	A2	52	33	19
	B1	144	54	90
	B2	343	100	243

16. Conclusion and Remarks

To summarize, Learning English here at ITC is an elective subject (year 2 – 4) and year 5 is compulsory. However, it is a vital learning process that benefits them. It facilitates their studies. It is a general communication tip for those who pursue their career as engineers, not to mention a certain number of graduates who wish to continue further study in the country and overseas.

ITC has traditionally been encouraging female students to register studying courses of engineering. In this particular academic year of 2023-24, among 2712 students (year 2 – year 5), 52 percent are girls who study in different fields of engineering – most is in GCA department (68%), and least is in GTR department (12%) out of total number of students in these two respectively departments.

The report last year on student employability showed that 76% of engineers graduated were employed in different sectors (private; public; NGOs and owned business). 17% were continuing their studies mostly overseas. 7% were seeking employment or awaiting result of interview or could not be reached.

This is the third year of implementing the global vision of ITC's 2020-30 to train high 17000-plus engineers by 2030. To help facilitate this great ambition, English Section will have to commit to doing the work – teaching English to our students with the promising results.

Annex 4. Minutes of CEVU Meeting.

Problèmes soulevés pendant la réunion de CEVU et solutions (2023-2024)

	Résolu pendant la réunion	Responsable sur problèmes restants
I- Enseignement et recherche		
1- Enseignement scientifique et de langue		
T1-GCI : <ul style="list-style-type: none"> - AutoCAD and Revit license has expired, request for student license for these software. - SubjectSketch color: Request to change class room(I-205), this subject require and LCD for color mixing. 	√	
I5-GIM-Indu : Subject Design of Experiment, Research Methodology: Room A-411, Desks and chairs for study are not suitable, especially for work that requires a computer.	√	
I4-GIM : <ul style="list-style-type: none"> - Request multiple study visits per year (more than once). - Request the school to allow students to contribute to travel and accommodation if necessary and to gain more opportunity to have study visits. - Request school a budget for a small project ranging from \$400 to \$1000. 	√	
I1&I2-DTC : <ul style="list-style-type: none"> - I1 and I2 express their concerns about the difficulty of learning the physics subject. - Request to math lecturer to explain the exercise students solved on the whiteboard because other students may not fully understand the solution process. 		
Lecturer : In the Language course, the attendance of I5 students showed improvement compared to the past sessions. However, the presence of I3 and I4 students remained limited.		
2- Internet et e-learning		
Etudiants:		
<ul style="list-style-type: none"> - Request WiFi specific to AMS students. 		

- Mobile Internet and ITC WiFi: Some areas are inaccessible and mobile service is not good => Ask the school to ask MPTC to help make good phone service on campus and building.		Service informatique
- No WiFi available in Rooms J608, J607, J609 and 6th floor room, during TP class require using internet for practices.		
- Request the school to install WiFi in the classroom and computer room, Building J at 5th and 6th floor.		
- WiFi is slow at building I, J, E, K and F. Wifi ITC-Cam is not stable.		
- WiFi in Building I, 3rd floor, 4th and 5th floor does not work.		
- Request for possibility to increase the number of mobile phone services in the classroom and office due to the unstable Internet.		
II- Matériel et hygiène		
Etudiants, Enseignants		
- Request for install a fix LCD screens in Building I because a LCD project to white board is very blur, student can not see well.		Service Technique et Service Technique
- F-403, E-201 LCD difficult to see (not clear).		
- Building E, LCD and Speaker are not well functioning.		
- LCDs in rooms F209, F306 are not very clear, requesting the school to install new projectors in these rooms.		
- SI and SII halls: broken fan, LCD, Microphone, malfunction, request cable replacement. - Request to install LCDs in all big halls.		
- Building J, 5 th and 6 th floor, whiteboard are small, request to replace the larger whiteboard in classroom and computer room.		
- It is hot in room F-S1, F-S2, E-201, E-204, F-401		Service Technique
- Elevator at buliding I&J should close at 1st to 3rd floor, and open for only higher floor.		
- Building J, 6th floor, water and electricity problems in the restrooms. - Lack of hand soap in the restrooms.		
- Request to improve food quality and hygiene.		
III- Parking		
Etudiants :		

<ul style="list-style-type: none"> - Request for roof on motorbike parking. - Parking space is too narrow causing scratch and sometimes broke some parts of motorbike. - There are cases of helmet missing. 		
<ul style="list-style-type: none"> - Parking staff are rude and request extra charge if students are leave 7:30pm. - Parking staffs should wear a uniform. 	√	
III- Others		
<ul style="list-style-type: none"> - Request for certificate of appreciation to the class monitor. - Request school to provides advance notice for all school events due to overcrowding issues. 	√	
<ul style="list-style-type: none"> - Sports facilities such as boule, basketball, volleyball have become parking lots and canteens. Request for place for sport. 	√	
<ul style="list-style-type: none"> - Request security to facilitate traffic at entrance during school hours for all students to get in and out of school. 	√	

Annex 5. List of Lecturer and Supervisors of GS for Master Programs.

1. List of Lecturers and Supervisors of M-MSE

No	Name of Lecturer	Sex	Qualification			Specialization
			Latest degree	From	Year	
1	CHHANG Sophy	M	Doctorate	France	2018	Civil Engineering
2	DOUNG Piseth	M	Doctorate	Japan	2020	Civil Engineering
3	ENG Chandoeun	M	Doctorate	Japan	2018	Geophysics
4	HAN Virak	M	Doctorate	Japan	2006	Construction Materials
5	HIN Raveth	M	Doctorate	France	2017	Mechanics of materials
6	KAN Kuchvichea	M	Doctorate	Belgium	2020	Geomachanics
7	KY Sambath	M	Doctorate	France	2017	Civil Engineering
8	LIM Sovanvichet	M	Doctorate	France	2013	Civil Engineering
9	POUV Keang Se	M	Doctorate	France	2011	Fluides mechanics
10	PROK Narith	M	Doctorate	Japan	2016	Civil Engineering
11	RATH Sovann Sathya	F	Doctorate	Japan	2016	Civil Engineering
12	SENG Sochan	M	Doctorate	Japan	2012	Civil Engineering
13	SEANG Chansopheak	M	Doctorate	France	2013	Mechanical Engineering
14	SIV Easeng	M	Doctorate	France	2019	Material Sciences
15	SRY Vannei	M	Doctorate	Japan	2018	Mechanical Properties of Materials
16	YOS Phanny	M	Doctorate	Japan	2014	Material Engineering

2. List of Lecturers and Supervisors of M-ETM

No	Name of Lecturer	Sex	Qualification			Specialization
			Latest degree	From	Year	
1	OR Chamoly	M	Doctorate	Japan	2014	Petroleum Production Engineering
2	ENG Chandoeun	M	Doctorate	Japan	2018	
3	VAI Vannak	M	Doctorate	France	2017	Electrical Engineering
4	ENG Samphors	F	Master	Indonesia	2018	Electrical Engineering
5	VONGCHANH Kinnaeth	F	Doctorate	Indonesia	2010	Engineering in Mechanical Engineering
6	CHAN Sarin	M	Doctorate	Indonesia	2011	Refrigeration and Air Conditioning
7	KHON Kimsorn	M	Doctorate	France	2022	Electrical Engineering
8	ETH Oudaya	M	Master	France	2016	Electrical Engineering
9	CHHLONH Chhith	M	Master	Indonesia	2019	Electrical Engineering

10	SORN Darong	M	Master/PhD student			Energy Technology and Management
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3. List of Lecturers and Supervisors of M-WEE

No	Name of Lecturer	Sex	Qualification			Specialization
			Latest degree	From	Year	
1	TAN Reasmeay	F	Doctorate	Japan	2011	Bio-engineering
2	KET Pinnara	F	Doctorate	Belgium	2019	Agricultural Science and Biological Engineering
3	OEURNG Chantha	M	Doctorate	France	2010	Hydrology and Water Resources
4	SOY Ty	M	Master	Belgium	2004	Soil Mechanics
5	ANN Vannak	M	Doctorate	Spain	2015	Water Science and Technology
6	VENG Huor	M	Master	Belgium	2001	Fluid mechanics
7	LUN Sambo	M	Master	Japan	2010	Environmental Engineering
8	OUCH Rithy	M	Doctorate	Thailand	2016	Geo Environment
9	HAK Danet	F	Doctorate	Japan	2016	Mechanical and Environmental Informatics, Environmental Engineering
10	HENG Sokchhay	M	Doctorate	Japan	2014	Water Resources
11	DOUNG Ratha	M	Doctorate	Philippines	2015	Environmental Engineering
12	TY Boreborey	F	Doctorate	Philippines	2016	Groundwater treatment process, Environmental Engineering
13	SONG Layheang	M	Doctorate	France	2021	Water Resources
14	SOK Ty	M	Doctorate	France	2021	Functional Ecology and Environment
15	CHHUON Kong	M	Doctorate	Philippines	2016	Environmental Engineering
16	PEN Sytharith	M	Doctorate	Japan	2018	Environmental Engineering
17	IN Sokneang	F	Doctorate	France	2012	Science and processes of Food and bio-products, Agriculture Biology Environment Health
18	SIM Tepmony	M	Doctorate	France	2016	Applied Mathematics, Signal and Image Processing
19	VONGCHANH Kinnaleth	F	Doctorate	Indonesia	2010	Engineering in Mechanical Engineering
20	THENG Vouchlay	F	Doctorate	Japan	2022	Civil and Environmental Engineering
21	SANG Davin	F	Doctorate	France	2022	Environmental Engineering
22	HEU Rina	F	Doctorate	Japan	2020	Civil and Environmental Engineering
23	BUN Saret	M	Doctorate	Japan	2019	Environmental Engineering

4. List of Lecturers and Supervisors of M-AIE

No	Name of Lecturer	Sex	Qualification			Specialization
			Latest degree	From	Year	
1	EK Pichmony	F	Doctorate	USA	2021	Food Science
2	TY Boreborey	F	Doctorate	Philippines	2016	Groundwater treatment process, Environmental Engineering
3	HOR Sivmey	F	Doctorate	France	2020	Food Science

4	SROY Sengly	F	Doctorate	France	2021	Food Science
5	PHAT Chanvorleak	F	Doctorate	South Korea	2016	Food Chemistry
6	MITH Hasika	M	Doctorate	Belgium	2014	Food Science
7	IN Sokneang	F	Doctorate	France	2012	Science and processes of Food and bio-products, Agriculture Biology Environment Health
8	YEOUN Sereyvath	M	Doctorate	South Korea	2014	Environmental Science
9	SOUNG Malyna	F	Doctorate	France	2017	Mécanismes des Interactions Parasitères Pathogènes et Symbiotiques
10	MORM Elen	F	Doctorate	Belgium	2021	Food Technology
11	KHOEURN Kimleang	F	Doctorate	Japan	2019	Sustainable Resources Engineering
12	PHAUK Sökkhey	M	Doctorate	Japan	2021	Interdisciplinary Intelligent Systems
13	PENG Chanthol	F	Doctorate	Japan	2019	Life Science and Technology
14	HOUN Peany	F	Doctorate	Japan	2019	Chemical Engineering

5. List of Lecturers and Supervisors of M-ECS

No	Name of Lecturer	Sex	Qualification			Specialization
			Latest degree	From	Year	
1	VALY Dona	M	Doctorate	Belgium	2020	Science de l'ingénieur et technologie
2	KONG Phutphalla	M	Doctorate	Belgium	2021	Computer Vision and Engineering
3	TITH Dara	M	Doctorate	Japan	2020	Information Technology
4	PHAUK Sökkhey	M	Doctorate	Japan	2021	Interdisciplinary Intelligent Systems
5	MUTH Boravy	M	Doctorate	South Korea	2021	Nuclear Engineering
6	HENG Rathpisey	M	Master	Indonesia	2020	Electrical Engineering and Information Technology
7	TANN Chantara	F	Master	Cambodia	2010	Mathematics
8	CHAN Sophal	M	Master	Thailand	2020	Information Technology
9	PEN Chentra	M	Master	Cambodia	2011	Applied Mathematics
10	PHOK Ponna	M	Master	Cambodia	2010	Sciences in mathematics
11	TAL Tong Sreng	M	Master	Cambodia	2018	Information and Communication Technology
12	SOK Kimheng	M	Master	France	2008	Network System and Architecture
13	YOU Vanndy	M	Master	India	2016	Computer Science

6. List of Lecturers and Supervisors of M-MIC

No	Name of Lecturer	Sex	Qualification			Specialization
			Latest degree	From	Year	
1	IN Sokneang	F	Doctorate	France	2012	Science and processes of Food and bio-products, Agriculture Biology Environment Health
2	BUN Kimngun	M	Doctorate	Malaysia	2013	Materials Engineering
3	CHRIN Phok	M	Doctorate	France	2016	Electrical Energy
4	SRENG Sokchenda	M	Doctorate	France	2012	Telecommunications and Network
5	SIM Tepmony	M	Doctorate	France	2016	Applied Mathematics, Signal and Image Processing
6	AM Sokchea	M	Doctorate	France	2016	Electronics
7	TEP Sovichea	M	Master	France	2018	Telecommunication
8	VALY Dona	M	Doctorate	Belgium	2020	Science de l'ingénieur et technologie
9	THOURN Kosorl	M	Doctorate	Japan	2009	Electrical Engineering and Electrical Systems
10	CHHORN Sopheaktra	M	Master	Thailand	2018	Electronics - Bio-medical
11	KIM Bunthern	M	Doctorate	France	2019	Electrical Engineering
12	PEC Rothna	M	Doctorate	South Korea	2017	Electrical and Electronics Engineering, Communication and Signal Processing
13	CHIN Chandaraly	M	Master	Thailand	2016	Electrical Engineering – Telecommunication
14	SIV Easeng	M	Master	France	2011	Mécanique et Physique des Matériaux
15	NGUON Kollika	M	Doctorate	Japan	2012	Water Hammer, Fluid-Structure Interaction
16	LIM Sovanvichet	M	Doctorate	France	2012	Structural Engineering
17	SRY Vannei	M	Master	Indonesia	2011	Mechanical Engineering
18	CHHITH Saosometh	M	Master	South Korea	2010	Mechanical Engineering
19	SRANG Sarot	M	Doctorate	Japan	2014	Dynamical System Modeling, Estimation and Adaptive Control
20	SOUNG Malyna	F	Doctorate	France	2017	Mécanismes des Interactions Parasitaires Pathogènes et Symbiotiques
21	HIN Raveth	M	Doctorate	France	2017	Mechanics

7. List of Lecturers and Supervisors of M-TIE

No	Name of Lecturer	Sex	Qualification			Specialization
			Latest degree	From	Year	
1	BAN Sam	M	Master	Malaysia	2017	Mechanical Engineering
2	CHEA Savuth	M	Doctorate	France	2007	Highway Engineering and Design

3	HASH Chanly	M	Master	Japan	2008	Architecture, Urban and Regional Planning
4	HENG Sokbil	M	Doctorate	Japan	2011	Geotechnical Engineering
5	KAING Saoserey	M	Doctorate	France	2008	Bridge Engineering
6	LIM Iv	M	Doctorate	Japan	2007	Transport and Land Use Planning
7	LONG Borith	M	Doctorate	Japan	2014	Urban Transport Engineering and Planning
8	PHUN Veng Kheang	M	Doctorate	Japan	2013	Transport Engineering, Planning, Environment, and Policy
9	POUV Keang Se	M	Doctorate	France	2011	Fluides mechanics
10	RITH Monorom	M	Doctorate	Philippines	2019	Transport, Energy, and Policy
11	SAUM Narith	M	Doctorate	Thailand	2022	Transportation Engineering
12	SIM Tepmony	M	Doctorate	France	2016	Applied Mathematics, Signal and Image Processing
13	SRANG Sarot	M	Doctorate	Japan	2014	Dynamical System Modeling, Estimation and Adaptive Control
14	YEN Yat	M	Doctorate	China	2018	Urban Mobility and Sustainability

8. List of Lecturers and Supervisors of M-DAS

No	Name of Lecturer	Sex	Qualification			Specialization
			Latest degree	From	Year	
1	LIN Mongkolsery	M	Doctorate	Thailand	2014	Applied Mathematics
2	SIM Tepmony	M	Doctorate	France	2016	Applied Mathematics, Signal and Image Processing
3	PHAUK Sökkhey	M	Doctorate	Japan	2021	Interdisciplinary Intelligent Systems
4	MUTH Boravy	M	Doctorate	South Korea	2021	Nuclear Engineering
5	VALY Dona	M	Doctorate	Belgium	2020	Science de l'ingénieur et technologie
6	SRANG Sarot	M	Doctorate	Japan	2014	Dynamical System Modeling, Estimation and Adaptive Control
7	PEC Rothna	M	Doctorate	South Korea	2017	Electrical and Electronics Engineering, Communication and Signal Processing
8	HENG Rathpisey	M	Master	Indonesia	2020	Electrical Engineering and Information Technology
9	SOK Kimheng	M	Master	France	2008	Network System and Architecture
10	CHAN Sophal	M	Master	Thailand	2020	Information Technology
11	NHIM Malai	F	Master	Belgium		Biostatistics
12	TANN Chantara	F	Master	Cambodia	2010	Mathematics
13	PEN Chentra	M	Master	Cambodia	2011	Applied Mathematics
14	OL Say	M	Master	Philippines	2015	Cryptography
15	TOUCH Sopheak	M	Master	France	2015	Industrial Engineering
16	YOU Vanndy	M	Master	India	2016	Computer Science
17	TAL Tong Sreng	M	Master	Cambodia	2018	Information and Communication Technology

Annex 6. List of Master Thesis.

(List arranged by degree, field/specialization, and chronological order)

1. M-MSE

- KEO Pisey (2011). *Vérification de stabilité selon l'en 1993. Mise au point d'un logiciel d'application et d'abaques de dimensionnement*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- LIM Songly (2011). *Vérification de stabilité des poteaux hybride. Evaluation de l'applicabilité de l'eurocode 4 et de l'eurocode 2*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- REE Nim (2011). *Etude numérique du comportement des structures des chaussées pavées sous charges de trafic*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- HENG Socheat (2011). *Simulation expérimentale d'écoulement multiphasique dans les milieux poreux*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- Y Maneth (2011). *Simulation numérique de la modification du sol compressible environnant sous l'effet de la mise en place de colonnes balastées*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- KAN Kuchvichea (2012). *Simulation numérique du comportement hydro-mécanique des colonnes ballastées et du sol environnant*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- CHHENG Sochanavong (2012). *Réutilisation des sédiments de dragage dans la fabrication des écociments*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- SAYASANE Phettavanh (2012). *Intensification des échanges thermiques par l'utilisation de nanofluides à base de nanotube de carbone ntc/eau*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- HIN Sovannara (2012). *Modélisation de l'évolution de l'endommagement dans une poutre constituée de matériaux quasi-fragiles tel que béton*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- CHAO Ang Puth Both (2012). *Simulation numérique des écoulements et du transport granulaire sur les sols urbains-modèle de réseau de microcanaux*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- CHHORN Chamroeun (2012). *Valorisation de sédiments : l'influence d'un traitement thermique*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- PROK Narith (2012). *Influence de la pluie dans le transport de sédiment en ruissellement*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- EA Lysothearin (2012). *Recherche de la plus haute résistance du béton en utilisant des matériaux locaux (en province de Kompong Speu)*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- SOK Sim (2012). *Recherche de la plus haute résistance du béton en utilisant des matériaux locaux (en province de Siem Reap)*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- LIM Samreth (2013). *Contribution à la détection, à la localisation et au suivi, par méthode d'évaluation dynamique, de l'endommagement des câbles du génie civil*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- HENG Piseth (2013). *Développement d'un modèle (simple et multi-ddl) d'un poteau soumis à une charge du type impact (véhicule, projectile)*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- DIM Sreyleak (2013). *Etude numérique du comportement de poutres de couplage*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- HUOT Makara (2013). *Caractérisation et modélisation du comportement mécanique d'un alliage binaire titane-molybdène*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- KAN Socheat (2013). *Simulation numérique du comportement mécanique des structures de chaussées pavées*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

- LAN Rathanak (2013). *Etude des échanges thermiques dans les échangeurs thermiques et microcanaux par l'utilisation de nanofluides à base de nanotube de carbone*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- BAK Davan (2013). *Comportement d'un rupteur thermique à la ruine -détermination d'un critère de ruine combiné*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- CHHANG Sophy (2014). *Développement d'un modèle (simple et multi-ddl) d'un poteau soumis à une charge du type impact (véhicule, projectile)*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- KY Sambath (2014). *Etude des échanges thermiques dans les échangeurs thermiques et microcanaux par l'utilisation de nanofluides à base de nanotube de carbone*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- CHEA Kim (2014). *Contribution à la détection, à la localisation et au suivi, par méthode d'évaluation dynamique, de l'endommagement des câbles du génie civil*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- HIN Raveth (2014). *Identification the indentation behavior of chemically tempered glasses*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- SIM Viriyavudh (2014). *Simulation numérique du comportement mécanique des structures de chaussées pavées*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- EAR Bunpo (2014). *Etude numérique du comportement de poutres de couplage*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- TO Theany (2015). *Comportement d'un rupteur thermique à la ruine -détermination d'un critère de ruine combiné*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- TENG Kongou (2015). *Simulation numérique du comportement mécanique des structures de chaussées pavées*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- SOK Tetsya (2015). *Etude des échanges thermiques dans les échangeurs thermiques et microcanaux par l'utilisation de nanofluides à base de nanotubes de carbone*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- HO Lyeng (2015). *Etude numérique du comportement de poutres de couplage*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- LEANG Engkok (2015). *Contribution à la détection, à la localisation et au suivi, par méthode d'évaluation dynamique, de l'endommagement des câbles du génie civil*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- HEANG Longseng (2015). *Développement d'un modèle (simple et multi-ddl) d'un poteau soumis à une charge du type impact (véhicule, projectile, ..)*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- LENG Khundadino (2015). *Caractérisation et modélisation du comportement mécanique d'un alliage binaire titane-molybdène*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- CHHUN Kean Thai (2016). *Modifications de comportements mécaniques et physiques de sols gonflants par un ajout de chaux*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- DUCH Monirak (2016). *Etude géotechnique des fondations profondes des éoliennes terrestres*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- HUY Samphorstra (2016). *Etude des caractéristiques géométriques et géotechniques des berges de rivière pour analyser sa stabilité, application au Cambodge (Mékong, Bassac...)*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]
- SAO Sopanha (2016). *Etude comparative entre les essais triaxiaux et les essais en cisaillement direct sur les sols Phnom Penh non remaniés et remoulés*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

NUTH Vattanak (2016). *Recherche de la plus haute résistance du béton en utilisant des matériaux locaux (en province de Kampong Cham)*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

SARAY Puthera (2017). *Etude comparative entre les comportements d'un graveleux latérique et d'un sable argileux en technique routière au Cambodge*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

SENG Nora (2017). *Analyse numérique de l'interaction sol-pieu*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

MUY Meng Lay (2017). *Repairing of cracked concrete structural elements using fibrwrap® : experimental study*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

MOM Sokvisal (2017). *Dimensionnement de structures de chaussées bitumineuses avec utilisation d'agrégats d'enrobés régénérés*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

MENG Try (2017). *Poteaux hybrides*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

SONN Sokhom (2017). *Etude de comportement de la liaison d'acier-béton sur l'ancrage de slabe bz : expérimental via modèle élément fini*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

MUY Yeak Leang (2017). *Durabilité des bétons d'ouvrages: carbonatation et perméabilité*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

CHHORN Bun Theng (2017). *Optimisation de prix de plancher pour le bâtiment*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

LAY Sinnara (2017). *Réparation d'élément béton armé avec fibrwrap*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

SOK Sithpisey (2017). *Renforcement de la résistance des éléments structuraux en béton avec le système fibrwrap*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

SAROU Lynita (2018). *Modeling soil-pile interaction using Macro-element approach*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

HORM Rithymarady (2018). *Strength of silicate glass for aerospace application by biaxial flexure method, ring-on-ring configuration*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

HOURN Phanvichet (2018). *An energy momentum integration scheme for the nonlinear dynamics of 3D Timoshenko beam formulation*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

REM Sokkheang (2018). *Modélisation du comportement à basse température des enrobés bitumineux recyclés*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

CHENG Kim Chhoung (2018). *Development of connection of glass beam: a numerical study*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

KAO Sophea (2018). *Bearing capacity of pile foundation in frictional soil*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

CHHAY Lyhour (2018). *Behavior of concrete pavement in Cambodia under temperature effect*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

HENG Sounean (2018). *Développement d'un essai accéléré pour la Réaction Sulfatique Interne*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

CHHANG Vandeth (2018). *Traitement des graveleux latéritiques au ciment en technique routière au Cambodge*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

CHOR Phearin (2018). *Renforcement de la résistance des éléments en béton armé en utilisant de Fibrwrap: Études expérimentales*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

Y Sovann (2018). *Comportement thermodynamique des enrobés bitumineux régénérés*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

CHEA Leangheng (2019). *Effect on Capacity of RC Beam and Column Strengthened with Fibrwrap® System by Cyclic Exposure to Water and Salt Water*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

PHOEUK Menghay (2019). *Numerical study of the mechanical behavior of the innovative CLT-Concrete composite floor*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

CHHOENG Oudom (2019). *Finite element model for linear analysis of pipe elbow element subjected to in-plane/out-of-plane loading and internal pressure*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

NUT Sovanneth (2019). *Experimental study of lime additive and temperature effects on the mechanical characteristics of hma*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

CHAP Huysea (2019). *Mechanical Properties of RC Beam and Column Strengthened by Fibrwrap® System after being submerged into Different Exposure Solutions*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

CHORN Makara (2019). *Contribution à l'étude des scellements de galerie dans les ouvrages de stockage des déchets radioactifs à vie longue*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

NGET Pheara (2019). *Stress measurements of granular flow on the inclined plane using sensitive sensor*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

LEANG Chhainan (2019). *Experimental contribution to the characterization of concretes reinforced with high temperature organic fibers*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

LIM Chhoung (2019). *The influence of temperature on the fracture toughness of glasses with different transition temperatures*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

LOV Peng An (2019). *Parametric study of mechanical properties of mixture of commercial polymers-sikadurs*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

CHHOM Kanhara (2019). *Cyclic test and characterization of mechanical properties of Laser welded joints: Application to dual phase steels*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

PANG Chhay Narak (2019). *Improvement of mechanical behaviors of the Reclaimed Asphalt Pavements*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

HEU Reaksmeyvatana (2019). *Optimization by comparative study of PT and steel-mixed floor prices for building*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

NGUON Leangreng (2019). *Modification of Behavior of Soft Clay soil by using sand columns*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

CHREA Makkonakun (2019). *Etude Expérimentale De L'amélioration Des Sols Meubles Par Des Colonnes De Sable*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

KEN Koemhong (2020). *Experimental Study of Compaction Effect on Expensive Soil*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

LONG Hok Soeng (2020). *Cost Effective Foundation for Low-Rise Building*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

LEAV Menghuy (2020). *Numerical Study of Permeability Influenced by Tortuosity in Porous Media*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

KHEN Chanthorn (2020). *Development of Self-Healing Repairing Mortars*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

OUCH Vanthet (2020). *Experimental study on the behavior of mixed cross-laminated timber (CLT)-concrete slab*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

OENG Thaileng (2020). *Seismic and Soil Structure Interaction (SSSI)*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

SUY Samnang (2020). *Study of the Mechanical Behaviour of Bamboo "BAMBUSA BURMANICA"*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

MEAS Chanbrosoeu (2020). *Thermo-Mechanical Modelling for Massive Structures*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

HOEUN Sela (2020). *Study of contact conductance between aggregate and matrix in cementitious materials*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

LINH Sunhok (2020). *Estimate the efficiency of bottle plastic pieces reinforced subgrade soil by experimental method*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

HOK Rathanaraingsey (2020). *Thermal behavior of double skin facades*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

SOURN Navy (2020). *Effect of Different Solution Submersion Exposure on Concrete Beam Strengthening with Fibrwrap® System and on Fiber Composite Laminate*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

RE Rong (2020). *The Effect of Column Offsets in Reinforced Concrete Structure*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

SOK Sopheakdey (2020). *Effect of Cyclic Exposure of Water and Salt Water to Concrete Beam Strengthening with Fibrwrap® System and to Fiber Composite Laminate*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

MUT Mesa (2020). *Numerical Study of Rail Stresses Induced by Wheel-Rail Contact using ABAQUS*, [Master Thesis, Civil Engineering, Institute of Technology of Cambodia]

OEUNG Kimheng (2021). *Assessment study of energy demand in multi-story steel moment frames*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

HENG Kimhong (2021). *Optimization of the ion exchange processing parameters for strengthening of a soda-lime silicate glass*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

HEM Bellydeth (2021). *Experimental study of the effectiveness of Tyfo® fibr anchors under tensile load*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

YUN Rith Pagna (2021). *Study on mechanical and microstructural properties of smaw butt-welded joints using various welding electrodes for structural steel fabrication*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

MONG Phanna (2021). *Study on mechanical properties characterization of tempered glass*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

MEAS Chandara (2021). *Design and build a lightweight chassis of a mini electric vehicle*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

SEANG Sotheany (2022). *Feasibility study of using recycled waste plastic in bituminous concrete*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

HEM Khunpanha (2022). *3D Finite Element Model of Experimental Test on Thermal Breaks System SLABE BZ in LS-DYNA*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

LIN Chanthorn (2022). *Basic Wind Speed Analysis and Development for the Design of Building in Cambodia*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

KOULEAM Soputhih (2022). *Experimental and Numerical Study on Performance of Tyfo® Fibr Anchors Under Axial Tension*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

LY Chungyeon (2022). *Evaluation of Quality Assurance of Concrete Pile Integrity*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

MAI Sokny (2022). *Durability of concrete beam strengthened with fibwrap® system and fiber composite laminate*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

ING Chhivkhim (2022). *Effect of Lime Content on the Swelling Behaviors of Soils for Road Structure*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

KHIM Radya (2022). *Performance-Based Plastic Design and Evaluation of Tall Knee-Braced Frames with Simple Connections*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

TUNG David (2022). *The Analysis of Concrete's Bearing Capacity of a Defect Bored Pile Under the Vertical Axial Loaded by Analytical and Numerical Method*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

NUTH Visal (2022). *Effect of wetting drying cycle on mechanical behavior of lime-treated soil*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

CHAN Rath (2022). *Experimental Study of Effectiveness of Tyfo® Fibr Anchors Inserted into Concrete Cylinder Confined by Glass Fiber Reinforced Polymer*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

OUK Darawatey (2022). *Study of Cross-Section Type for High Strength-to-Weight Ratio Glass Beam Using Finite Element Method*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

AN Mengla (2023). *Experimental and Numerical Study of Tyfo® FibrAnchors Embedded in Low Compressive Strength Concrete Cylinder*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

AN Siden (2023). *Advance Slop Stability Analysis under Rapid Drawdown Condition using Finite Element Method*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

CHAN Rathreak Smey (2023). *Seismic Refraction Tomography and Multichannel Analysis of Surface Wave Survey for Geotechnical Evaluation of Soil Compare with Bore-hole Data at Phnom Penh*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

CHANN Socheata (2023). *Experimental study on the improvement of bolted connection of glass structure by using ion-exchange*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

CHHOUR Siliang (2023). *The Study of Consolidation Settlement of Low Permeability Soil due to Deep Excavation*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

SAM Botpidor (2023). *The Effect of Consolidation of a Clay Layer Soil Sandwich to Dense Sand Layers on Pile Skin Friction*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

SOVANN Dimanche (2023). *Assessment of the Behavior of Post-Installed Bundled Reinforcement in Concrete under Combined Loadings using Finite Element Method*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

THAI Rittyvirak (2023). *The investigation of external coefficient wind pressure on low-rise building in Cambodia*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

TY Lymeng (2023). *Experimental and Numerical Study of Tyfo® FibrAnchors Inserting to Concrete Cylinder Confined by Glass Fiber Reinforcing Polymer*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

VONG Siden (2023). *Development of wind pressure calculation approach for the structural design of tall building in Cambodia*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

VEN Chan Piseth (2023). *Comparative Study for Different Types of Shear Walls in Reinforced Concrete Buildings against Wind Load using ETABS*, [Master Thesis, Materials and Structural Engineering, Institute of Technology of Cambodia]

2. M-ETM

- THY Selaroth (2015). *Dynamic economic dispatch using model predictive control algorithm*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- PHOU Ty (2015). *Path planning for four omni-directional wheel robot*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- CHAN Sopheap (2015). *Development of multipoint vehicle tracking system*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- SON Chanvathana (2015). *Implementation of GSM network using openbts and gnu radio with universal software radio peripheral*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- ROS Vannak (2015). *Computer controlled electronic watt-hour meter via radio frequency*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- NONG Sovanneth (2015). *Impacts of grid connected PV on distribution network (low voltage)*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- YOU Hong (2015). *Cost optimization of a hybrid power system for rural communities in Cambodia*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- ING Sothy (2015). *Comparison of using artificial neural network and decision tree to do short term load forecasting*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- CHEA Vutha (2015). *Optimal placement of autorecloser and sectionaliser on radial distribution system 22kv*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- LAY Romnea (2015). *Bio-security controller for chicken farm (takeo province)*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- HUOT Samnang (2015). *Monitoring system for excavator base on sms technology*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- LENG Por (2015). *Development of metal detector to seek landmine unexploded ordinances (uxos)*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- CHHANG Vutha (2015). *Conversion of pork lard to biofuel*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- SOM Chanthla (2015). *The conversion of jatropha to bio-fuel*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- HENG Sok Meng (2016). *Customized kits for automobile and OBD using k-line protocol communication*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- UL Dara (2016). *Home connekh integration over smart home*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- CHHUO Kreng (2016). *Car security using Bluetooth tag and GPS*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- PHUNG Tolany (2016). *Modeling of inter-turn faulty 3 phases transformer*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- SAM Tetra (2016). *Improvement of solar power efficiency by cooling solar panel with water spray*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- CHRENG Sarin (2016). *Conversion of used cooking oil to biofuel*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]
- ROATH Kulika (2016). *Inter-turn short circuit fault detection of 3 phases transformer*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]

SENGCHHORN Rady (2016). *Conversion of fish oil to biofuel*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]

MOUN Phat (2016). *Conversion of oil used from KFC restaurant*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]

SAR Tikhett (2016). *Smart energy management system*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]

CHHORN Sengchheang (2017). *Implementation of wireless connectivity of upper secondary school in remote area*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]

HEANG Latin (2020). *Experimental Investigation on Sawdust and Tree Leaves Briquette Using Fish Residue Oil and Waste Deep Fried Oils as Binder*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]

CHOENG Porchaing (2020). *Experimental Investigation on Rice husk and Bagasse Briquette Using Fish Residue Oil and Waste Deep Fried oil as Binder*, [Master Thesis, Electrical and Energy Engineering, Institute of Technology of Cambodia]

HENG Ratha (2022). *Study on Organic Matter and Depositional Environment of Black Shale at Bokor Formation, Kampot Province, Cambodia*, [Master Thesis, Energy Technology and Management Engineering, Institute of Technology of Cambodia]

EAM Dara (2023). *Planning of LVAC Distribution System with Centralized PV and Decentralized PV Integration for Rural Villages*, [Master Thesis, Energy Technology and Management Engineering, Institute of Technology of Cambodia]

KOR Pheak (2023). *Investigation on the Impact of Heat Stress on Construction Labour Productivity during the Cool Season in Cambodia*, [Master Thesis, Energy Technology and Management Engineering, Institute of Technology of Cambodia]

OEUR Vechheka (2023). *Reservoir Characterization and Depositional Environment of Sandstone at Bokor Formation in Kampot Province, Kampong Som Basin, Onshore Cambodia*, [Master Thesis, Energy Technology and Management Engineering, Institute of Technology of Cambodia]

THIENG Kimtheng (2023). *Study of Battery Energy Storage Integration on PV Hosting Capacity in LVAC Distribution Systems: A Case Study in Cambodia*, [Master Thesis, Energy Technology and Management Engineering, Institute of Technology of Cambodia]

PEY Sophal (2023). *Simulation of Direct and Indirect evaporative cooling System*, [Master Thesis, Energy Technology and Management Engineering, Institute of Technology of Cambodia]

MORN Mengly (2023). *Preliminary Study on the Investigation of Heat Stress Symptoms Occurring in Primary School Students in Cambodia*, [Master Thesis, Energy Technology and Management Engineering, Institute of Technology of Cambodia]

CHENG Sam Ourn (2023). *Improvement and Exergy Analysis of Biomass Briquette System*, [Master Thesis, Energy Technology and Management Engineering, Institute of Technology of Cambodia]

KEN Pisal (2023). *Investigation on Properties of Biomass Briquette using Fish Oil and Waste Oil as Binder*, [Master Thesis, Energy Technology and Management Engineering, Institute of Technology of Cambodia]

PHOEURNG Tork (2023). *Feasibility Study on the use Solar Powered conditioning in Residential Building*, [Master Thesis, Energy Technology and Management Engineering, Institute of Technology of Cambodia]

KAY Sopheak (2023). *Planning of Optimal Feeder Routing and Phase Balancing for an Unbalanced Distribution System: a Case Study of Cambodia*, [Master Thesis, Energy Technology and Management Engineering, Institute of Technology of Cambodia]

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3. M-WEE

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- SEN Sochetra (2023). *Determination of extraction conditions for essential oil, oleoresin, and phenolic compounds from red pepper*, [Master Thesis, Agro-Industrial Engineering, Institute of Technology of Cambodia]
- BUNTHAN Monyneath (2023). *Soybean oil extraction by hydraulic pressing technique and refining by degumming*, [Master Thesis, Agro-Industrial Engineering, Institute of Technology of Cambodia]
- SOKHOM Panhavatey (2023). *Longitudinal study of bacteria pathogens in vegetables from farm to the market in Battambang province*, [Master Thesis, Agro-Industrial Engineering, Institute of Technology of Cambodia]
- MICH Monika (2023). *Optimization of Solvent Extraction Conditions of Soybean Oil using Response Surface Methodology*, [Master Thesis, Agro-Industrial Engineering, Institute of Technology of Cambodia]
- NET Marinich (2023). *Development of Yogurt from Soymilk and Utilization of Its By-product in Cookie Production*, [Master Thesis, Agro-Industrial Engineering, Institute of Technology of Cambodia]
- SET Leangey (2023). *Nutritional and Safety Profile of Ready-to-Eat Fermented Fish and Meat Products in Cambodia*, [Master Thesis, Agro-Industrial Engineering, Institute of Technology of Cambodia]
- YONG Pisal (2023). *Assessment of Physicochemical Properties and Microbiological Quality of Khmer Rice Vermicelli (Num Banhchok) Collected in Phnom Penh City*, [Master Thesis, Agro-Industrial Engineering, Institute of Technology of Cambodia]

KHUT Sorn Pisey (2023). *Monitoring of Antibiotic-resistant Aeromonas spp. and Escherichia coli in Mono and Poly-aquaculture System of Pangasius in Cambodia*, [Master Thesis, Agro-Industrial Engineering, Institute of Technology of Cambodia]

SOME Sovannara (2023). *Assessment of Proximate Chemical Compositions of Cambodian Rice Varieties*, [Master Thesis, Agro-Industrial Engineering, Institute of Technology of Cambodia]

SRENG Laymey (2023). *Characterization of Cambodian Natural Rubber/Clay Composites for Shock Absorption Floor Mat*, [Master Thesis, Agro-Industrial Engineering, Institute of Technology of Cambodia]

5. M-ECS

TITH Dara (2015). *Predicting user access goal based on user's*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

CHUOR Porchourng (2015). *Khmer optical character recognition using*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

LAY Vathna (2015). *Mobile document capture indexation and information retrieval*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

TENG Dola (2015). *Khmer and Latin optical character*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

HAN Sama (2015). *Agent-oriented mobile application*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

SEAK Leng (2016). *User centric travel recommendation system: case study tourist locations in Phnom Penh, Cambodia*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

PHAN Neth (2016). *Long short-term memory based for Khmer optical character recognition*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

THUON Nimol (2017). *Khmer semantic search engine*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

KUY Movsun (2017). *Data protection in IOT system: under context of lora network technology*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

DUCH Dynil (2017). *Romanization of Khmer language: automatic Latin-to-Khmer based text conversion*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

HENG Piseth (2017). *Performance analysis and implementation of the data protection algorithms between portable devices and temperature sensors in the area of internet of things*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

TAL Tong Sreng (2018). *Automatic Latin-to-Khmer-based text conversion*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

HEN Sodet (2018). *Synthetic data for Khmer ancient document analysis*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

HUY Viriya (2018). *Security and Privacy for the IOT Network by Block Chain*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

KHON Khemrin (2018). *Keyword Extraction Method on Khmer Digitalized Documents*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

HUY Ketya (2018). *Security and Privacy for the IOT Network by hyperledger*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

CHHUM Heng (2018). *Centralise Policy Administration Point for Smart Home system*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

HOURK Savet (2018). *Design and Implementation of metahub for Smart Home System*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

LENG Chanratanak (2018). *Ios Mobile Development: e-Komnob Platform: content management*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

NHIK Kim Sang (2020). *Cooperatives' Agricultural Products Mobile Application (CAP): Users & Transaction Management*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

CHOU Seakny (2020). *Cooperatives' Agricultural Products Mobile Application (CAP): Product Management & Seller Management*, [Master Thesis, Information and Communication Engineering, Institute of Technology of Cambodia]

BORN Seanghort (2021). *Khmer language model for handwritten text recognition on historical documents*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

LAY Leangsros (2021). *Designing blockchain application for information exchange of blood banks*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

NOP Phearum (2021). *Digital platform for Cambodian agricultural produce based on social and human values*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

CHOM Sreylam (2021). *Mobile development for GIC department (GIC mobile app)*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

LY Sivheng (2021). *Blockchain application for transparency, traceability and accessibility of the donated blood information for voluntary blood donors*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

POENG Kok Thay (2022). *Designing Access Control for Security Enhancement of Kubernetes Management in Case of Medical Information Exchange*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

CHHEANG Vanny Ratanak (2022). *Decentralized Blockchain Based-PKI for Patient Identification in the Blockchain Network*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

CHAMROEUN Sereyboth (2023). *Design and Implementation of Smart Contract Security in Digital Assets Centralized Exchange*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

HENG Ngoun Hak (2023). *Case Study of Organization-Task-Based Access Control (OTBAC)*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

KORN Vannaroth (2023). *Enhancing the Accuracy and Reliability of Docker Image Vulnerability Scanning Technology*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

NOM Vannkinh (2023). *Word Spotting on Khmer Palm Leaf Manuscript Documents*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

PORK Chanchen (2023). *Text-image Reconstruction and Reparation for Khmer Historical*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

SEK Sothy (2023). *Masked Language Model for Khmer Palm Leaf Manuscripts*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

CHHOEM Sothy (2023). *Guardian-Centric Self-Sovereign Identity For Healthcare Credential Management*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

HUON Sophy (2023). *Khmer Text Semantic Similarity: Developing a Deep Learning Model for Sentence Vectorization and Comparison*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

KHUN Dararith (2023). *Reputation Model for Trust-Based Policy in Self-Sovereign Identity Systems for Healthcare*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

LIV Bunthorn (2023). *Implementation of Mobile Digital Wallet for Self-Sovereign Identity in Healthcare*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

THAN Sochetra (2023). *Crop Disease Dataset and Recognition using Convolutional Neural Networks*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

NY Seangleng (2023). *Smart Door with Face Detection using Arduino Board*, [Master Thesis, Computer Science, Institute of Technology of Cambodia]

6. M-MIC

NGETH Hongneng (2017). *Experimental study on butt joints using shielded metal arc welding*, [Master Thesis, Industrial and Mechanical Engineering, Institute of Technology of Cambodia]

EM Sophat (2017). *Experimental study on butt joints using mig welding*, [Master Thesis, Industrial and Mechanical Engineering, Institute of Technology of Cambodia]

CHEA Vabotra (2018). *Effect of heat source temperature on organic Rankine cycle (ORC)*, [Master Thesis, Industrial and Mechanical Engineering, Institute of Technology of Cambodia]

THEANG Sothy (2018). *Dynamic modeling and simulation for a parallel-mechanism-mounted UAV*, [Master Thesis, Industrial and Mechanical Engineering, Institute of Technology of Cambodia]

PHAL Vannak (2018). *Mass charge effect on organic Rankine cycle*, [Master Thesis, Industrial and Mechanical Engineering, Institute of Technology of Cambodia]

PICH Yanghav (2018). *Development of Plastic Shredder for Recycling Plastic*, [Master Thesis, Industrial and Mechanical Engineering, Institute of Technology of Cambodia]

CHHAM Reaksmey Khemra (2019). *Study on Performance and Emission of Gasoline Engine by Using Ethanol-Blended Super Gasoline*, [Master Thesis, Industrial and Mechanical Engineering, Institute of Technology of Cambodia]

YEAN Sopheak (2019). *Control Performance for Parallel-Mechanism-Mounted UAV*, [Master Thesis, Industrial and Mechanical Engineering, Institute of Technology of Cambodia]

TENG Van Oeurn (2019). *Study on Performance and Emission of Gasoline Engine by Using Ethanol-Blended REGULAR Gasoline*, [Master Thesis, Industrial and Mechanical Engineering, Institute of Technology of Cambodia]

MIN Cheng Horn (2019). *Study on Performance and Emission of Gasoline Engine Using Liquefied Petroleum Gas (LPG)*, [Master Thesis, Industrial and Mechanical Engineering, Institute of Technology of Cambodia]

SETHY Boreth (2020). *Pose Estimation of WMR using Multi-Sensor Data Fusion*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

KEO Chivorn (2020). *Flight Controller and Structural Design for Fixed-Wing UAV*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

LY Leangchheng (2020). *Modeling, Control and Simulation on 3DOF Robot Manipulator*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

TEM Lyhor (2020). *CNC-Mill Construction and Automatic Control to Shape the Specimen by CAD/CAM*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

MORK Tongly (2020). *Simultaneous Localization and Using Intel Realsense Camera*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

LIM Bunvireak (2020). *Development of Smart Irrigation Controller for Gravity Irrigation System in the Rural Area*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

TIM Hoksong (2021). *Preliminary design and performance prediction of mini hybrid rocket motor for a sounding rocket*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

THOK Piseth (2021). *Study of sensorless control of permanent magnet synchronous motor in solar E-Tuktuk application*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

YONRITH Phayuth (2021). *Path planning and control of wheeled mobile robot with occupancy grid map*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

CHAO Vanyi (2021). *Development of landing site tracker for UAV*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

OUM Sotheara (2022). *Integration of RRT* Path Planning with Trajectory Tracking for Wheeled Mobile Robot*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

SIEK Sok An (2022). *Solar Hybrid Switch Controller and Monitoring System*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

MOEURN Dear (2023). *Empty Space Detection and Local Path Planning for Mobile Robot*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

SENG Rattana (2023). *Development of Control Framework Based on ROS Platform for a 3-Axis Gimbal*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

SREY Sok Serey (2023). *Attitude Control of 1U CubeSat Engineering Model by Using Reaction Wheel*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

SOKHAL Aylik (2023). *Intégration Robot Mobile d'investigation en milieux nucléaires*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

GNHIEK Povnemol (2023). *Experimental Study on a Low-cost PMDC Motor Control with Variable Load*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

SAMRIT Chanvireak (2023). *Development of a Plug-and-play Wheel Mobile Robot*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

YI Vichetra (2023). *Attitude Estimation by using Unscented Kalman Filter with Constraint State*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

CHOU Manith (2023). *Improvement of NILM Classification Through Multi-Scale V-I Trajectory Load Signature Using Triangle Area Representation*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

CHUN Dara (2023). *Design of Multi-Layer Planar Wave Absorber using Time-Domain Techniques*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

NUON Piseth (2023). *Development a Low-Cost Air Leak Testing System Based on Raspberry Pi and OpenPLC*, [Master Thesis, Mechatronics, Information and Communication Engineering, Institute of Technology of Cambodia]

7. M-TIE

YANG Panha (2021). *Impact of COVID-19 on paratransit services operating with ride-hailing apps : the Phnom Penh case*, [Master Thesis, Transport Engineering, Institute of Technology of Cambodia]

CHHENG Ratha (2021). *A study on improvement of traffic flow along Russian boulevard: from 5 Makara skybridge to Kdan Pir intersection*, [Master Thesis, Transport Engineering, Institute of Technology of Cambodia]

CHHIEV Vanda (2021). *Impact of COVID-19 on food delivery service in Phnom Penh city*, [Master Thesis, Transport Engineering, Institute of Technology of Cambodia]

SOTH Chrinthony (2022). *Evaluation of Structural Pavement by Using Light Weight Deflectometer in Cambodia*, [Master Thesis, Transport Engineering, Institute of Technology of Cambodia]

MORM Udor (2022). *Factors Affecting Decision to Change from Bajaj Drivers to Other Jobs, Phnom Penh Case*, [Master Thesis, Transport Engineering, Institute of Technology of Cambodia]

PLACK Sokhit (2023). *Pedestrian mode of transport in Phnom Penh City*, [Master Thesis, Transport Engineering, Institute of Technology of Cambodia]

YIT Bunnasakdh (2023). *Prediction of California Bearing Ratio with Soil Properties of Road Subgrade Material in Cambodia*, [Master Thesis, Transport Engineering, Institute of Technology of Cambodia]

LY Kimhuy (2023). *The Effects of Accessibility to Public Facilities on Housing Price in Phnom Penh, Cambodia*, [Master Thesis, Transport Engineering, Institute of Technology of Cambodia]

CHHENG Visal (2023). *A Study on Traffic Flow Improvement in Phnom Penh Using One-Way Traffic Systems*, [Master Thesis, Transport Engineering, Institute of Technology of Cambodia]

8. M-DAS

ENG Khun (2023). *The Forecasting of Cereals Price Trade Flows in Cambodia for Facilitating the Improvement of Agricultural Products Pricing Strategy in 2030*, [Master Thesis, Data Science, Institute of Technology of Cambodia]

LENG Seng Hak (2023). *An Empirical Investigation of Gold Price Forecasting Using ARIMA Model Compare with LSTM Model*, [Master Thesis, Data Science, Institute of Technology of Cambodia]

Annex 7. List of Master Publications.

1. Lists of Publications M-MSE

1. Chandara Meas, Dara To, & Easeng Siv (2021). Design and build a lightweight chassis of a mini electric vehicle. Proceeding in the 10th Scientific Day of ITC, 148-154
2. MONG Phanna, HIN Raveth, SRY Vannei, & HENG Kimhong (2021). Glass strength characterization: a review study. Proceeding in the 10th Scientific Day of ITC, 143-147
3. Kimhong Heng, Raveth Hin, & Chansopheak Seang (2021). Glass Strengthening by Ion Exchange Process: An Optimization Study. Proceeding in the 10th Scientific Day of ITC, 161-165
4. Kimheng Oeung, Virak Han, & Piseth Doung (2021). Energy Demand Assessment in Single Degree of Freedom Systems Using Perform 3D. Proceeding in the 10th Scientific Day of ITC, 132-137
5. Kimheng Oeung, Piseth Doung, Sutat Leelataviwat & Virak Han (2022). Analytical Assessment of Earthquake Energy Demand in Single Degree of Freedom Systems, *Techno-Science Research Journal*, vol. 10(1), 1-7
6. Sotheany Seang, Kuchvichea Kan & Masaaki Okamoto (2022). Feasibility Study of Recycled Waste Plastic Application in Bituminous Concrete. *Techno-Science Research Journal*, vol. 10(2), 32-39
7. CHAN Rath Reasmey, ENG Chandoun & YOS Phanny (2023). Seismic Refraction Tomography and Multichannel Analysis of Surface Wave Survey for Geotechnical Evaluation of Soil Compared with Bore-Hole Data. *Techno-Science Research Journal*

2. Lists of Publications M-ETM

1. Phoeurng Tork, Chan Sarin, & Kinnalesh Vongchanh (2021). Feasibility Study on the Use of Roof-top Solar PV as main Energy Supply for AC units in Residential Building. Proceeding in the 10th Scientific Day of ITC, 25-27
2. Ratha Heng, Sopheap Pech, Sreymean Sio, Chandoeun Eng & Chanmoly Or (2022). Study on Organic Identification of Black Shale in Bokor Formation, Kampot Province, Cambodia. Science Publishing Group (New York, NY 10020 U.S.A.), 2376-7669, 2376-7677
3. Pheakdey Choun, Viza Heang, Sarin Chan & Kinnalesh Vongchanh (2023). Investigation of the Effectiveness of the Modeling on the Glazed Window by Energy Simulation using EnergyPlus, Case study: Phnom Penh City, Cambodia. *Journal of Emerging Technologies and Innovative Research (JETIR)*. JETIR525556, JETIR (ISSN:2349-5162)
4. CHENG Sam Oeurn, VONGCHANH Kinnalesh & CHAN Sarin (2023). Experimental Study and Energy Analysis of Biomass Briquettes Produced from Dried Tree Leaves, Sawdust, Sugar Bagasse, and Rice Husk Using Fish Oil as a Binder. *Journal of Emerging Technologies and Innovative Research (JETIR)*. JETIR526485, JETIR (ISSN:2349-5162)
5. KEN Pisal, VONGCHANH Kinnalesh & CHAN Sarin (2023). Thermal Properties of Biomass Briquettes Made from Waste Materials. *Journal of Emerging Technologies and Innovative Research (JETIR)*. JETIR526191, JETIR (ISSN:2349-5162)
6. Mengly Morn, Kinnalesh Vongchanh & Sarin Chan (2023). Descriptive Results of the Preliminary Design Approach of the Survey on Heat Stress among Primary School Students in Cambodia. *Journal of Emerging Technologies and Innovative Research (JETIR)*. JETIR526446, JETIR (ISSN:2349-5162)

7. PEY Sophal, CHAN Sarin & VONGCHANH Kinnaeth (2023). Simulation of the Indirect Evaporative Cooling System using the 2-D Model Cross-flow for Cambodia's Climate Conditions. *Journal of Emerging Technologies and Innovative Research (JETIR)*. JETIR526105, JETIR (ISSN:2349-5162)
8. KAY Sopheak, VAI Vannak & ENG Samphors (2023). Optimal Feeder Routing and Phase Balancing for an Unbalanced Distribution System: A Case Study in Cambodia. *International Journal of Applied Power Engineering (IJAPE)*, 20676
9. Dara Eam, Vannak Vai, Chhith Chhlonh & Samphors Eng (2023). Planning of LVAC Distribution System with Centralized PV and Decentralized PV Integration for a Rural Village. *Energies (MDPI)*. Energies (ISSN 1996-1073), energies-2482411
10. KOR Pheak, VONGCHANH Kinnaeth & CHAN Sarin (2023). Measurement Survey on Construction Labour Productivity under Heat Stress during the Cool Season in Cambodia. *Journal of Emerging Technologies and Innovative Research (JETIR)*. JETIR526188, JETIR (ISSN:2349-5162)
11. THEING Kimtheng, VAI Vannak, ETH Oudaya & ENG Samphors (2023). A Study of Decentralized Battery Energy Storage Integration into an Optimal Grid-Connected PV System with Zero Power Injection Considerations. *Techno-Science Research Journal*
12. Vechheka Oeur, Chanmoly Or, Chandoeun Eng, Sopheap Pech, Lytheng Thorng, Sreymean Sio, Ratha Heng (2023). Characterization of Sandstone Reservoir at Bokor Formation, Kampong Province, Kampong Som Basin, Onshore Cambodia. *International Journal of Geosciences (IJG)*, 14, 792-811
13. Sokleap Heng, Vannak Vai & Samphors Eng (2023). Service Restoration in the Distribution System with Voltage Control Devices using Improved Sequential Opening Branches (ISOB). *Techno-SRJ_11_26*
14. Yoklin Neov, Oudaya Eth & Kimsrornn Khon (2023). Comparative Analysis of Different Clustering Techniques in Hybrid AC/DC Microgrid. *Techno-SRJ_11_22*
15. Buntheoun sophanarith & KIM Bunthern (2024). Optimal Placement of Electric Vehicle Charging Stations Using Mixed-Integer Linear Programming: A Case Study in Cambodia. *Techno-SRJ_11_21*

3. Lists of Publications M-WEE

1. Vichhey Nall, Pinnara Ket, Boreborey Ty, Chanthan Hel, & Lyda Hok (2021). Evaluation of Physico-Chemical Properties of Vermicompost Using Different Food Sources and Mushroom Substrate. *Proceeding in the 10th Scientific Day of ITC*, 293-295
2. Vichika Lay, Sytharith Pen, & Ratha Doung (2021). Assessment of hydrology characteristic under land use change at Prek Thom catchment, Cambodia. *Proceeding in the 10th Scientific Day of ITC*, 190-194
3. Visal Rotha, Ratino Sith, & Sambo Lun (2021). Assessment of Hydraulic Performance of Water Supply System in Takhmao City, Using Modeling Approach. *Proceeding in the 10th Scientific Day of ITC*, 272-277
4. Visal Veng, Pinnara Ket, Rachana Thy, & Sovandara Saret (2021). Application of Storm and Sanitary Analysis model on hydraulic modeling for Storm Urban Drainage system in Siem Reap city, Cambodia. *Proceeding in the 10th Scientific Day of ITC*, 209-213
5. Vuthy Chork, Sreyleang Ya, Bunhuot Ruos, & Khy Eam Eang (2021). Well Water Quality Monitoring in the Northern Floodplain and the Upstream of the Tonle Sap lake. *Proceeding in the 10th Scientific Day of ITC*, 351-355

6. Yeng Sovann, & Chhuon Kong (2021). The review of urban drainage systems for urban flood analysis in Krong Battambang, Battambang province, Cambodia. Proceeding in the 10th Scientific Day of ITC, 230-236
7. Thaybona Or, Davin Sang, & Monychot Tepy Chanto (2021). Natural Organic Matter Removal in Drinking Water Treatment by Combination of Adsorption and Coagulation Processes: A Comprehensive Review. Proceeding in the 10th Scientific Day of ITC, 262-266
8. Theary Kuoch, & Kimleang Khoeurn (2021). Distribution and Ecological Risk of Heavy Metals from Mining Areas: A Case Study in Chong Phlah Village, Chong Phlah Commune, Kaev Seima District, Mondulkiri Province, Northeast of Cambodia. Proceeding in the 10th Scientific Day of ITC, 313-317
9. Romduol Khoeun, Kimsan Chann, Kimleang Chum, Ilan Ich, & Ty Sok (2021). Investigation of Riverine Sediment from the Tropical Transboundary Catchment in Srepok River Basin of the Lower Mekong Basin. Proceeding in the 10th Scientific Day of ITC, 323-327
10. Sakdanuphol Chan, & Ratino Sith (2021). Assessment of Hydrological Processes of the Tonle Sap Lake basin using SWAT model. Proceeding in the 10th Scientific Day of ITC, 199-203
11. Saret sovandara, Ket Pinnara, Thy Rachana, & Veng Visal (2021). Hydraulic Design of Urban Storm Drainage System Using Autodesk Storm and Sanitary Analysis (ASSA), Compared with Storm Water Management Model (SWMM). Proceeding in the 10th Scientific Day of ITC, 175-179
12. Socheata Mao, Luka Ly, Tetoutdam Kong, Sivchheng Phal, & Reasmey Tan (2021). Optimization of Solid-Phase Micro-Extraction for Volatile Compounds in Soy Sauce. Proceeding in the 10th Scientific Day of ITC, 78-82
13. Somalay KOH, Ritha NGETH, & Boreborey TY (2021). Evaluation on Wastewater Treatment System Using Sewage Treatment Operation and Analysis Over Time (STOAT). Proceeding in the 10th Scientific Day of ITC, 258-261
14. Sombath Keo, Melvin Frick, Nalin Hak, & Khy Eam Eang (2021). Analysis of Pesticide Residues Distribution in the Hydrological Compartments of an Irrigated System in Koh Thum District, Kandal Province. Proceeding in the 10th Scientific Day of ITC, 318-322
15. Sona Y, Sytharith PEN, & Sambo LUN (2021). 2D-Fluvial Hydraulic Characteristic Assessment at Chaktomuk Junction, Phnom Penh City. Proceeding in the 10th Scientific Day of ITC, 214-218
16. Sophearon Rann, & Chanvorleak Phat (2021). Status of Pesticide Contamination in Drinking Water Sources in Southeast Asia: A Review. Proceeding in the 10th Scientific Day of ITC, 308-312
17. Sopheavattey Moniroth, & Chanthol Peng (2021). Antimicrobial Resistance in Aquaculture, Health, and Environmental Risks: A Review. Proceeding in the 10th Scientific Day of ITC, 301-307
18. Sophorn Phoeuk, & Ratha Duong (2021). Urban Flood Modeling in Preah Sihanouk City using Storm Water Management Model (SWMM). Proceeding in the 10th Scientific Day of ITC, 180-184
19. Sreykeo Puok, & Kong Chhuon (2021). Steady flow analysis of a sluice gate structure in Prek System using HEC-RAS 1D modelling. Proceeding in the 10th Scientific Day of ITC, 282-287
20. Sreyleang Ya, Bunhuot Ruos, Vuthy Chork, & Khy Eam Eang (2021). Chemical Assessment of Groundwater Quality in the Floodplain Area along Tonle Sap Lake. Proceeding in the 10th Scientific Day of ITC, 342-345
21. Rany You, Sreyrorth Hok, Sreyvich Sieng, & Boreborey Ty (2021). The Preliminary of Arsenic Removal from Groundwater by utilizing Electro-Chemical Arsenic Remediation (ECAR). Proceeding in the 10th Scientific Day of ITC, 253-257

22. Phaya Seng, & Rathborey Chan (2021). Recent Research and Development of Anaerobic Baffled Reactor and Filter for Wastewater Treatment: A Review. Proceeding in the 10th Scientific Day of ITC, 242-246
23. Kimsan Chhan, Romduol Khoeun, Ilan Ich, Kimleang Chum, & Ty Sok (2021). Assessment of Nutrient and Ecological Function Indicators in Sesan River Basin by SWAT Modeling. Proceeding in the 10th Scientific Day of ITC, 328-332
24. Kosorl Phy, & Ratha Doung (2021). The Application of PCSWMM to Assess the Potential Impacts of Urbanization on Storm water Flood at Dangkor district, Phnom Penh, Cambodia. Proceeding in the 10th Scientific Day of ITC, 224-229
25. Eng Khun, Rathborey Chan, Rathborey Chan, & Chart Chiemchaisri (2021). Optimization of Hydraulic Retention Time (HRT) in High-Rate Aeration Tank for Maximum Nitrate Production from Aquaculture Wastewater. Proceeding in the 10th Scientific Day of ITC, 267-271
26. Chhenglang Heng, & Vannak Ann (2021). Effects of Land Use and Land Cover Changes on Total Suspended Sediment in Tonle Sap Lake. Proceeding in the 10th Scientific Day of ITC, 338-341
27. Chhordaneath Hen, Ilan Ich, Kimleang Chum, & Chantha Oeurng (2021). Hydrological Drought Responding to Meteorological Drought in Stung Prek Thnot River Basin. Proceeding in the 10th Scientific Day of ITC, 204-208
28. Chakriya Choun, & Saret Bun (2021). Review of Recent Development of Electrocoagulation-Flotation Process for Color, Turbidity, and Oil Removal from Slaughterhouse Wastewater. Proceeding in the 10th Scientific Day of ITC, 237-241
29. Borin Heang, Rathborey Chan, & Saret Bun (2021). Technical Review and Challenge of Various Decentralized Anaerobic Treatments for Domestic Wastewater. Proceeding in the 10th Scientific Day of ITC, 247-252
30. CHHUN Meng, Lun Sambo, Ratino Sith, & Davin Sang (2021). Formulating the Design Criteria for the Piped Water Supply System in Urban Area of Cambodia. Proceeding in the 10th Scientific Day of ITC, 278-281
31. Kimsan Chann, Ty Sok, Romduol Khoeun, Vuthy Mèn, Supattra Visessri, Chantha Oeurng, Ratha Sor & Sarah E. Null (2023). Surface Runoff Alteration Leads to Frequent and Prolonged Drought in the most Dammed Rivers of the 3S River Basin. Sustainability MDPI, 2071-1050
32. HEN Chhordaneath, SOK Ty & OEURNG Chantha (2022). Hydrological Drought Responding to Meteorological Drought in Prek Thnot River Basin. IOP Publishing Morressier
33. Sombath KEO, Khy Eam EANG, Chanvorleak PHAT, Sereyvath YOEUN, Leakkhina MEAK, Kong CHHUON & Sylvain MASSUEL (2022). Detection of Pesticide Residues in The Canal Irrigation System of The Upper Mekong Delta, Cambodia. Indonesian Journal of Limnology, vol. 03 No. 01, 10-17, 2774-2571
34. Amret Chham & Ratha Doung (2022). Assessment of the Impact of Climate Change on Hydrological Components in Stung Sen Catchment of the Tonle Sap Lake Basin, Cambodia. Techno-Science Research Journal, vol. 10(2), 1-7
35. Vuthy Chork, Sreyleang Ya, Bunhuot Ruos, & Khy Eam Eang (2021). Well Water Quality Monitoring in the Northern Floodplain and the Upstream of the Tonle Sap lake. Proceeding in the 10th Scientific Day of ITC, 351-355

36. Vuthy Chork, Kong Chhuon, Khy Eam Eang, Sambo Lun, Ratha Doung & Sylvain Massuel (2023). Techno-Science Research Journal 11 (1) 60-65
37. Kimsan Chann, Ty Sok, Romduol Khoeun, Vuthy Mèn, Supattra Visessri, Chantha Oeurng, Ratha Sor & Sarah E. Null (2023). Surface Runoff Alteration Leads to Frequent and Prolonged Drought in the most Dammed Rivers of the 3S River Basin. Sustainability MDPI, 2071-1050
38. Nika Chhom, Sovanthin Chhit, Thyda Chhum, Sophal Try, Layheang Song & Rattana Chhin (2023). Selection of Observed Gridded Rainfall Data for different Analysis Purposes in Cambodia. Techno-Science Research Journal 11 (2) 30-37
39. Mengheak Phol & KET Pinnara (2024). Effect of Different Water-saving Irrigation Methods for rice cultivation, Case study in Cambodia. Techno-SRJ_11_30
40. Channtola Sot & KET Pinnara (2024). Effect of Different Irrigation Methods on Water Use Efficiency in Rice Soil Column Test. Techno-SRJ_11_29

4. Lists of Publications M-AIE

1. Lisang Thourn, Chanvorleak Phat, & Malyna Suong (2021). Assessment of Extraction Techniques of Natural Compounds of Plant Origin for Nematicidal Properties: A Review. Proceeding in the 10th Scientific Day of ITC, 69-74
2. Lisang Thourn, Chanvorleak Phat, Malyna Suong, Sreyvich Sieng, Soukim Heng & Sereyvath Yoeun (2022). Identification of Pesticide Contamination in Water Sources Surrounding Agrochemical-Free Rice Farming in Battambang Province. Techno-Science Research Journal, vol. 10(2), 66-73
3. Phalla Chhay, Peany Houng & Sovannmony Lay (2022). Effect of Pretreatment on Extractions of Essential Oil from Kaffir Lime (*Citrus Hysteric DC.*) Leaves. Techno-Science Research Journal, vol. 10(2), 40-45
4. Sengnut Song, Peany Houng, Sovannmony Lay & Sokneang In (2022). Optimization of Extraction Conditions for Phenolic Compounds Extracted from Cassumunar Ginger (*Zingiber montanum*). Techno-Science Research Journal, vol. 10(2), 24-31
5. Sreypha Met, Peany Houng, Pichmony Ek, Pheakdey Yun & Sovannmony Lay (2022). Drying Kinetic and the Changes of Physicochemical Properties and Bioactive Contents of Dried Tomatoes during Hot Air Drying. Techno-Science Research Journal, vol. 10(1), 84-91
6. Marinich Net, Sela Kong, Manit Say, Sokly Chea & Reasmey Tan (2023). Physical Properties, Proximate Analysis, and Sensory Characteristics of Gluten-free Cookies Made from Rice Flour and Okara. Techno-Science Research Journal 11 (1) 9-16
7. Pisal Yong, Sovannara Soem, Vattana Mom, Sokuntheary Theng & Hasika Mith (2023). Characterization of Physicochemical Properties and Microbiological Quality of Khmer Rice Vermicelli (Num Banhchok) Collected in Phnom Penh Capital, Cambodia. Techno-Science Research Journal 11 (1) 66-73
8. MICH Monika, TAN Reasmey & KONG Sela (2023). Optimization of Solvent Extraction Conditions of Cambodian Soybean Oil Using Response Surface Methodology. Journal of Food Technology Research, JFTR/220/22

9. Leangey Set, Sengly Sroy, Liseany Chor, Hasika Mith, Sereyvath Yoeun, Seyha Doeurn, Channmuny Thanh & Chanthol Peng (2023). Chemical and Microbiological Analysis of Traditional Fermented Fish and Meat Products Collected from Battambang, Cambodia. *Techno-Science Research Journal* 11 (1) 53-59
10. Sornpisey Khut, Oudam Heng, Chanthol Peng & Domenico Caruso (2023). Preliminary Study on Physicochemical Quality and Antibiotic-Resistant *E. coli* and *Aeromonas* spp. in Aquaculture of *Pangasius* in Kampong Thom Province. *Techno-Science Research Journal* 11 (1) 46-52
- Monyneath Bunthan, Manit Say, Sela Kong, Yukleav Nat, Chin Ping Tan & Reasmey Tan (2023). Oil Extraction through Hydraulic Pressing from Cambodian Soybean Seeds and Analysis of its Physicochemical Quality. *Journal of Food Technology Research, JFTR/248/23*
11. SOKHOM Panhavatey, PENG Chanthol & Jessie L Vipham (2023). Effect of Organic Acid and Commercial Washing Solutions for Bacteria Removal from Lettuce Collected from Market in Phnom Penh. *Techno-Science Research Journal*
12. SOEM Sovannara, MITH Hasika & MOM Vattana (2023). Assessment of Proximate Chemical Composition of Cambodian Rice Varieties. *Techno-Science Research Journal*
13. Laymey Sreng, Sirisokha Seang, Azura A. Rashid & Phanny Yos (2023). Characterization Study of Cambodian Natural Rubber and Clay Composites for Shock Absorption Floor Mat. *Techno-Science Research Journal* 11 (2) 22-29
14. CHHUNRY Sreyleaphy, HOUNG Peany & TY Boraborey (2023). Effect of microwave pretreatment method on essential oil extraction on key lime peel (*Citrus × aurantiifolia*). *Techno-Science Research Journal*
15. LY Keakaknika, HOUNG Peany & TAING Guillaume (2023). Application of High-Pressure and High-Temperature Reactor for Extraction of Essential Oil from Kaffir Lime Peel. *Techno-Science Research Journal*
16. SEN Sochetra, HOUNG Peany & TAING Guillaume (2023). Optimization of Extraction Condition for Oleoresin from Red Pepper Residues. *Techno-Science Research Journal*
17. LY Hassany & Hasika MITH (2024). Investigation of the Influence of Extrusion Parameters on Cambodia Extruded Rice Vermicelli. *Techno-SRJ_11_32*
18. PHEAP Davin & IN Sokneang (2024). Evaluate the Potential Changes in Physico-Chemical and Microbiological Quality of Spicy Sour Seasoning During Storage. *Techno-SRJ_11_33*
19. SOVANN Rathana & Hasika MITH (2024). Physico-chemical Characteristics of Rice-based Cereal Processed by Twin-screw Extrusion and Microwave Cooking. *Techno-SRJ_11_31*

5. Lists of Publications M-ECS

1. Phearum Nop, Dona Vally, & Samedi Heng (2021). Digital Platform for Cambodian Agricultural Produce Based on Social and Human Values. *Proceeding in the 10th Scientific Day of ITC*, 116-120
2. LY Sivheng, TITH Dara, & LAY Heng (2021). Blockchain Application for Transparency, Traceability and Accessibility of The Donated Blood Information for Voluntary Blood Donors. *Proceeding in the 10th Scientific Day of ITC*, 121-125

3. Leangsros Lay, Dara Tith, & Heng Lay (2021). Designing Blockchain Application for Information Exchange of Blood Banks. Proceeding in the 10th Scientific Day of ITC, 107-111
4. BORN Seanghort, VALY Dona, & KONG Phutphalla (2021). Khmer Language Model for Handwritten Text Recognition on Historical Documents. Proceeding in the 10th Scientific Day of ITC, 112-115
5. Vanny Ratanak Chheang, Dona Valy & Dara Tith (2022). Distributed Authentication Infrastructure Using Public Key Infrastructure and Blockchain Platform. Techno Science-Research Journal, vol. 10, 10-27
6. Kokthay Poeng, Dara Tith & Phutphalla Kong (2022). Security Enhancement of Kubernetes Management in the Blockchain Platform for Building the Medical System for Information Exchange in Cambodia. Techno-Science Research Journal, vol. 10(2), 53-59
7. NOM Vannkinh, VALY Dona & PHAUK Sokkhey (2023). Word Spotting on Khmer Palm Leaf Manuscript Documents. Techno-Science Research Journal
8. PORK Chanchen, VALY Dona & PHAUK Sokkhey (2023). Effect of Organic Acid and Commercial Washing Solutions for Bacteria Removal from Lettuce Collected from Market in Phnom Penh. Techno-Science Research Journal
9. CHAMROEUN Sereyboth, VALY Dona & KUY Movsun (2023). Design and Implementation of Smart Contract Security in Digital Assets Centralized Exchange. Global Scientific Journal Publications (GSJ), 220072
10. Vannaroth Korn, Kimheng Sok, Dona Valy (2023). Enhancing the accuracy and reliability of Docker image vulnerability scanning technology. Techno-Science Research Journal
11. Sochetra Than, Dona Valy & Phutphalla Kong (2023). Crop Disease Dataset and Recognition using Convolutional Neural Networks. Techno-Science Research Journal 11 (1) 17-23
12. Seangleng Ny, Dona Valy & Phutphalla Kong (2023). Lock and Unlock Door with Face Detection using OpenCV, Python, and Arduino Board. Techno-Science Research Journal 11 (1) 30-36

6. Lists of Publications M-MIC

1. Vanyi Chao, Sarot Srang, Morokot Sakal, & Chivorn Keo (2021). Landing Site Detection for Unmanned Aerial Vehicle based on YOLOv4-tiny Transfer Learning Model. Proceeding in the 10th Scientific Day of ITC, 92-97
2. Piseth Thok, Bunthern Kim, & Sokchea Am (2021). PMSM Sensorless Control for EVs Applications. Proceeding in the 10th Scientific Day of ITC, 83-87
3. Phayuth Yonrith, Sarot Srang, Morokot Sakal, & Boreth Sethy (2021). Indoor Localization for a Differential Drive Wheeled Mobile Robot using Sensor Fusion by Extended Kalman Filter. Proceeding in the 10th Scientific Day of ITC, 87-91
4. Hoksong Tim, Sarot Srang, & Morokot Sakal (2021). Numerical Design Approach of Gaseous Oxygen Injector for ABS/GOX Hybrid Rocket Motor. Proceeding in the 10th Scientific Day of ITC, 102-106
5. Sok An Siek, Sarot Srang, Hokly Sor & Dalin Soun (2021). Design and Prototyping of Solar Hybrid Switch Controller and Monitoring System. Techno Science-Research Journal, vol. 9(2), 44-52
6. Sotheara Oum, Sarot Srang & Phayuth Yonrith (2022). Integration of RRT* Path Planning with Trajectory Tracking for Wheeled Mobile Robot. Techno Science-Research Journal, vol. 10(2), 60-65
7. Chanvireak Samrit, Sarot Srang & Phayuth Yonrith (2023). Study on Mechanical Structure Design for Plug-and-play Wheel Mobile Robot. Techno-Science Research Journal 11 (2) 1-8

8. CHUN Dara, THOURN Kosorl & SRENG Sokchenda (2023). Design of Multi-layer Planar Electromagnetic Wave Absorber Using 1D-FDTD Integrated with ASA and Gradient Optimization Method. *Techno-Science Research Journal*
9. NUON Piseth, THOURN Kosorl & PEC Rothna (2023). Development a Low-Cost Air Leak Testing System Based on Raspberry Pi and OpenPLC. *Techno-Science Research Journal*
10. Manith Chou & Kosorl Thourn (2023). Non-intrusive Load Monitoring Classification Based on Multi-Scale Electrical Appliance Load Signature. *Techno-Science Research Journal* 11 (2) 57-67
11. Vichetra Yi, Sarot Srang & Chivorn Keo (2023). Attitude Estimation by using Unscented Kalman Filter with Constraint State. *Techno-Science Research Journal* 11 (2) 15-21
12. Povnemol Gnhiok, Sarot Srang & Phayuth Yonrith (2023). PI Controller for Velocity Controller Design based on Lumped Parameter Estimation: Simulation and Experiment. *Techno-Science Research Journal* 11 (2) 9-14
13. Dear Moeurn & Sarot Srang (2023). Empty Space Detection and Local Path Planning for Mobile Robot. *Techno-Science Research Journal*
14. Rattana Seng & Sarot Srang (2023). Development of Control Framework Based on ROS Platform for a 3-Axis Gimbal. *Techno-Science Research Journal* 11 (2) 76-81
15. SREY Sokseray & Sarot Srang (2023). Comparison of Control Performance for a Low-cost DC Motor with Single-loop and Cascade Control Architectures. *Techno-Science Research Journal*
16. Thavath Sai & PEC Rothna (2024). Development of IoT-based General Purpose Greenhouse Controller for Smart Agriculture and a Case Study on Mushroom Growth Control System. *Techno-Science Research Journal*

7. List of Publications M-TIE

1. CHHIEV Vanda et al. A Study on Online Food Delivery Service Before And During Covid-19 Pandemic In Phnom Penh. *International Journal of Social Science Research*, [S.l.], v. 3, n. 4, p. 1-16, dec. 2021. ISSN 2710-6276
2. Ratha Chheng, Pharinet Pheng, Veng Kheang Phun, & Vanda Chhiev (2021). A Study on Improvement of Traffic Flow Along Russian Boulevard: Street 215 Case Study. *Proceeding in the 10th Scientific Day of ITC*, 42-47
3. Panha Yang, Veng Kheang Phun, & Hironori Kato (2021). Impact of Covid-19 on Paratransit Operate with Ride-Hailing Apps in Asian Developing Cities: The Phnom Penh Case. *Proceeding in the 10th Scientific Day of ITC*, 52-58
4. Udor Morm, Veng Kheang Phun, & Yat Yen (2021). Factors affecting the decision to change from Bajaj driver to other jobs, Phnom Penh Case. *Proceeding in the 10th Scientific Day of ITC*, 38-41
5. Chrinthony Soth, Veng Kheang Phun, & Sok Tetsya (2021). Evaluation of Structural Pavement by Using the Light Weight Deflectometer in Cambodia. *Proceeding in the 10th Scientific Day of ITC*, 166-169
6. Chrinthony Soth, Veng Kheang Phun, Sok Testya & Yit Bunna (2022). Evaluation of Structural Pavement (Foundation) by Using Light Weight Deflectometer in Cambodia. *Techno-Science Research Journal*, vol. 10(1), 16-25
7. Udor Morm, Veng Kheang Phun & Yat Yen (2022). FACTORS AFFECTING THE DECISION TO CHANGE FROM BAJAJ DRIVER TO OTHER JOBS, PHNOM PENH CASE. *International Journal of Engineering Advanced Research*, vol. 4 No. 3, 2710-7167

8. Visal CHHENG, Pharinet PHENG & Veng Kheang PHUN (2023). Improving Urban Traffic Flow at Congested Signalized Intersections in Phnom Penh: Case Study 1 of Neakvaon Intersection. *Techno-Science Research Journal*
9. Kimhuy LY, Vanda Chhiev, Yat Yen & Veng Kheang Phun (2023). The Effects of Accessibility to Public Facilities on Housing Prices in Phnom Penh. *International Journal of Social Science Research (IJSSR)*. eISSN: 2710-6276 | Vol. 5 No. 1
10. Bunnasakdh Yit, Panyabot Kaothon, Tetsya Sok & Sokbil Heng (2023). Prediction of California Bearing Ratio with Soil Properties of Road Subgrade Materials in Cambodia. *Techno-Science Research Journal* 11 (2) 47-56
11. PLACK Sokhit, PHUN Veng Kheang & YANG Panha (2023). Walkability and importance assessment of pedestrian facilities in PhnomPenh City. *Techno-Science Research Journal*
12. Sothearo SAM, Veng Kheang PHUN & Panha YANG (2023). Should water taxi service in Phnom Penh be abandoned or sustained? *Techno-SRJ_11_19*
13. Keo SOM OEURN, Panha YANG & Veng Kheang PHUN (2024). Minimum Standard of Traffic Safety Devices at Primary School Zone Black Spot in Phnom Penh. *Techno-SRJ_11_24*

8. List of Publications M-DAS

1. Seng Hak Leng, Sökkhey Phauk & Sothea Has (2023). An Empirical Investigation of Gold Price Forecasting Using ARIMA Compare with LSTM Model. *Techno-Science Research Journal* 11 (2) 38-46
2. Khun Eng, Sökkhey Phauk, Sothea Has & Sokheng Din (2023). The Study of Cereals Price Prediction in Terms of Trade Flows for Anticipate Price Fluctuations in Cambodia by Using ARIMA Model. *Techno-Science Research Journal* 11 (2) 68-75

Annex 8. List of Lecturers and Supervisors PhD

1. List of Lecturers and Supervisors of D-WAE

No	Name	Sex	Title	Qualification			Specialization
				Degree	From	Year	
1	OEURNG Chantha	M	Prof.	Doctorate	France	2010	Hydrology and Water Resources
2	KET Pinnara	F	Asst. Prof. Dr.	Doctorate	Belgium	2019	Agricultural Science and Biological Engineering
3	PENG Chanthol	F	Asst. Prof. Dr.	Doctorate	Japan	2019	Life Science and Technology
4	BUN Saret	M	Asst. Prof. Dr.	Doctorate	Japan	2019	Environmental Engineering
5	ANN Vannak	M	Dr.	Doctorate	Spain	2015	Water Science and Technology
6	CHHUON Kong	M	Asst. Prof. Dr.	Doctorate	Philippines	2016	Environmental Engineering
7	TAN Reasmey	F	Asst. Prof. Dr.	Doctorate	Japan	2011	Bio-engineering
8	ENG Chandoeun	M	Asst. Prof. Dr.	Doctorate	Japan	2018	Geology
9	DOUNG Ratha	M	Asst. Prof. Dr.	Doctorate	Philippines	2015	Environmental Engineering
10	CHAN Rathborey	F	Dr.	Doctorate	Japan	2021	Environmental Engineering
11	HAK Danet	F	Dr.	Doctorate	Japan	2016	Mechanical and Environmental Informatics, Environmental Engineering
12	HENG Sokchhay	M	Dr.	Doctorate	Japan	2014	Water Resources
13	PICH Bunchoeun	M	Dr.	Doctorate	Japan	2011	Geo-Environmental Engineering
14	SENG Bunrith	M	Dr.	Doctorate	Japan	2011	Integrated River Basin Management
15	PHUN Veng Kheang	M	Asst. Prof. Dr.	Doctorate	Japan	2013	Transport Engineering, Planning, Environment, and Policy

2. List of Lecturers and Supervisors of D-ETM

No	Name	Sex	Title	Qualification			Specialization
				Degree	From	Year	
1	OR Chanmoly	M	Assoc. Prof.	Doctorate	Japan	2014	Petroleum Production Engineering
2	BUN Long	M	Dr.	Doctorate	France	2011	Electrical Engineering
3	CHAN Sarin	M	Asst. Prof. Dr.	Doctorate	Indonesia	2011	Refrigeration and Air Conditioning
4	VAI Vannak	M	Asst. Prof. Dr.	Doctorate	France	2017	Electrical Engineering

5	CHRIN Phok	M	Asst. Prof. Dr.	Doctorate	France	2016	Electrical Energy
6	AM Sokchea	M	Asst. Prof. Dr.	Doctorate	France	2016	Electronics
7	KRET Kakada	M	Dr.	Doctorate	Japan	2019	Exploration Geophysics
8	VONGCHANH Kinnaeth	F	Dr.	Doctorate	Indonesia	2010	Engineering in Mechanical Engineering

3. List of Lecturers and Supervisors of D-FTN

No	Name	Sex	Title	Qualification			Specialization
				Degree	From	Year	
1	EK Pichmony	F	Dr.	Doctorate	USA	2021	Food Science
2	MITH Hasika	M	Asst. Prof. Dr.	Doctorate	Belgium	2014	Food Science
3	TAN Reasmeay	F	Asst. Prof. Dr.	Doctorate	Japan	2011	Bio-engineering
4	IN Sokneang	F	Asst. Prof. Dr.	Doctorate	France	2012	Science and processes of Food and bio-products, Agriculture Biology Environment Health
5	PHAT Chanvorleak	F	Asst. Prof. Dr.	Doctorate	South Korea	2016	Food Chemistry
6	SOUNG Malyna	F	Asst. Prof. Dr.	Doctorate	France	2017	Mécanismes des Interactions Parasitaires Pathogènes et Symbiotiques

4. List of Lecturers and Supervisors of D-MIT

No	Name	Sex	Title	Qualification			Specialization
				Degree	From	Year	
1	PO Kimtho	M	Prof.	Doctorate	Japan	2009	Communication Engineering
2	SIM Tepmony	M	Asst. Prof. Dr.	Doctorate	France	2016	Applied Mathematics, Signal and Image Processing
3	SRANG Sarot	M	Asst. Prof. Dr.	Doctorate	Japan	2014	Dynamical System Modeling, Estimation and Adaptive Control
4	SRENG Sokchenda	M	Asst. Prof. Dr.	Doctorate	France	2012	Telecommunications and Network
5	VALY Dona	M	Asst. Prof. Dr.	Doctorate	Belgium	2020	Science de l'ingénieur et technologie
6	CHRIN Phok	M	Asst. Prof. Dr.	Doctorate	France	2016	Electrical Energy
7	PHAUK Sokkhey	M	Asst. Prof. Dr.	Doctorate	Japan	2021	Interdisciplinary Intelligent Systems
8	LIN Mongkolsery	M	Asst. Prof. Dr.	Doctorate	Thailand	2014	Applied Mathematics

5. List of Lecturers and Supervisors of D-MSS

No	Name	Sex	Title	Qualification			Specialization
				Degree	From	Year	
1	BUN Kimngun	M	Assoc. Prof.	Doctorate	Malaysia	2013	Materials Engineering
2	NGUON Kollika	M	Asst. Prof. Dr.	Doctorate	Japan	2012	Water Hammer, Fluid-Structure Interaction
3	HAN Virak	M	Asst. Prof. Dr.	Doctorate	Japan	2006	Construction Materials
4	HIN Raveth	M	Asst. Prof. Dr.	Doctorate	France	2017	Mechanics
5	LIM Sovanvichet	M	Dr.	Doctorate	France	2012	Structural Engineering
6	PHUN Veng Kheang	M	Asst. Prof. Dr.	Doctorate	Japan	2013	Transport Engineering, Planning, Environment, and Policy
7	YOS Phanny	M	Asst. Prof. Dr.	Doctorate	Japan	2014	Materials Engineering
8	SEANG Chansopheak	M	Asst. Prof. Dr.	Doctorate	France	2013	Civil and Mechanical Engineering
9	DOUNG Piseth	M	Dr.	Doctorate	Japan	2020	Civil Engineering
10	ENG Chandoeun	M	Asst. Prof. Dr.	Doctorate	Japan	2018	Geology
11	PROK Narith	M	Dr.	Doctorate	Japan	2016	Civil Engineering
12	RATH Sovann Sathya	F	Asst. Prof. Dr.	Doctorate	Japan	2016	Civil Engineering

Annex 9. List of PhD Thesis.

(List arranged by degree, field/specialization, and chronological order)

1. List of PhD Theses D-WAE

1. SOK Ty (2021). *Dynamic transport of the sediment and nutrient in the Mekong River Basin and the role of the Tonle Sap Lake: Assessment coupling data and modelling approaches*, [Doctoral Thesis, Water and Environment, Institute of Technology of Cambodia]
2. SONG Layheang (2021). *Land use, surface runoff, soil erosion: multi-scale impact assessment of teak tree plantation management in a tropical humid mountainous agro-ecosystem*, [Doctoral Thesis, Water and Environment, Institute of Technology of Cambodia]
3. MUON Ratha (2022). *Termite bioturbation in Cambodia – From characterization to application*, [Doctoral Thesis, Water and Environment, Institute of Technology of Cambodia]
4. SANG Davin (2023). *Influence of the coagulation-flocculation-sedimentation on the adsorption of micropollutants onto activated carbon*, [Doctoral Thesis, Water and Environment, Institute of Technology of Cambodia]

2. List of PhD Theses D-ETM

1. KHON Kimsornn (2022). *Planning of Rural LV AC/DC Microgrids with PV and Storage*, [Doctoral Thesis, Energy Technology and Management, Institute of Technology of Cambodia]
2. PECH Sopheap (2023). *Source Rock Evaluation and Depositional Environment of Sedimentary rocks Characterization in Kampong-Som and Tonle Sap Sedimentary Basin, Onshore Cambodia*, [Doctoral Thesis, Energy Technology and Management, Institute of Technology of Cambodia]

3. List of PhD Theses D-FTN

1. SROY Sengly (2021). *Importance of Freshwater fish from Tonle Sap Lake for food and nutrition in Cambodia*, [Doctoral Thesis, Food Technology and Nutrition, Institute of Technology of Cambodia]
2. PHUONG Hengsim (2022). *Extrusion Coupled with Enzymatic Hydrolysis for the Extraction of Hydrosoluble Compounds of the Red Algae *Gracilaria Gracilis**, [Doctoral Thesis, Food Technology and Nutrition, Institute of Technology of Cambodia]
3. YIN Molika (2022). *Study of Turmeric (*Curcuma Longa L.*) Processes in Cambodia - Impact on Sensorial and Functional Quality*, [Doctoral Thesis, Food Technology and Nutrition, Institute of Technology of Cambodia]
4. NGET Sovannmony (2023). *Safety of meat products in Cambodia: modelling thermal inactivation for steaming and microwave processes*, [Doctoral Thesis, Food Technology and Nutrition, Institute of Technology of Cambodia]

4. List of PhD Theses D-MIT

1. KONG Phutphalla (2022). *Visual Attention: Top-down and Bottom-up Information Relative Importance*, [Doctoral Thesis, Mechatronics and Information Technology, Institute of Technology of Cambodia]
2. KEAN Jeudy (2023). *Analyse et validation expérimentale de la plus basse fréquence utilisable dans une chambre réverbérante à parois métamatériaux pour des tests de Compatibilité ElectroMagnétique (CEM)*, [Doctoral Thesis, Mechatronics and Information Technology, Institute of Technology of Cambodia]

Cambodia]

3. BAN Sam (2023). *Assessing the Potential of the Physical Internet for City Logistics Activities in Developing Countries*, [Doctoral Thesis, Mechatronics and Information Technology, Institute of Technology of Cambodia]
4. SRUN Channareth (2023). *Control Structure Design for Double-Stage Single Phase Grid-Connected Photovoltaic System*, [Doctoral Thesis, Mechatronics and Information Technology, Institute of Technology of Cambodia]

5. List of PhD Theses D-MSS

1. BUN Polyka (2022). *Development and Optimization of Ceramic Roof Tiles Incorporating with Industrial Waste*, [Doctoral Thesis, Materials Science and Structures, Institute of Technology of Cambodia]
2. HENG Sounean (2022). *The Study of the Cracking Sensitivity of Geopolymers*, [Doctoral Thesis, Materials Science and Structures, Institute of Technology of Cambodia]
3. MOM Sokvisal (2022). *Multi-scale modeling of thermal properties of cement-based materials*, [Doctoral Thesis, Materials Science and Structures, Institute of Technology of Cambodia]
4. OENG Thaileng (2023). *Analysis of Composite Beam by Taking into Account Inter-layer Slip and Uplift*, [Doctoral Thesis, Materials Science and Structures, Institute of Technology of Cambodia]
5. OUCH Vanthet (2023). *Behavior of a CLT-concrete composite floor with dovetail notched connectors*, [Doctoral Thesis, Materials Science and Structures, Institute of Technology of Cambodia]

Annex 10. List of Publications by PhD students.

(List arranged by degree, field/specialization, and chronological order)

1. List of Publications of D-WAE

1. Sok, T., Oeurng, C., Ich, I., Sauvage, S., & Sánchez, P. J. (2020). Assessment of Hydrology and Sediment Yield in the Mekong River Basin Using SWAT Model. *Water*, 12, 3503. 10.3390/w12123503.
2. Sok, T., Oeurng, C., Kaing, V., Sauvage, S., & Kondolf, M. G. & Sánchez Pérez José (2021). Assessment of Suspended Sediment Load Variability in the Tonle Sap and Lower Mekong Rivers, Cambodia.
3. L. Song et al., "Understory Limits Surface Runoff and Soil Loss in Teak Tree Plantations of Northern Lao PDR," *Water*, vol. 12, no. 9, 2020, doi: 10.3390/w12092327.
4. Muon, R., Lai, C., Bureau-Point, E., Chassagne, F., Wieringa, F., Berger, J., ... & Jouquet, P. (2022, May). Termite mounds in Cambodian paddy fields. Are they always kept for improving soil quality? In *EGU General*
5. Muon, R., Lai, C., Hervé, V., Zaiss, R., Chassagne, F., Bureau-Point, E., ... & Jouquet, P. Abundance, perceptions and utilizations of termite mounds in Cambodia. *Soil Use and Management*.
6. Sang, D., Cimetiere, N., Giraudet, S., Tan, R., Wolbert, D., & Le Cloirec, P. (2022). Online SPE-UPLC-MS/MS for herbicides and pharmaceuticals compounds' determination in water environment: A case study in France and Cambodia. *Environmental Advances*, 8, 100212.
7. Sang, D., Cimetiere, N., Giraudet, S., Tan, R., Wolbert, D., & Le Cloirec, P. (2022). Adsorption-desorption of organic micropollutants by powdered activated carbon and coagulant in drinking water treatment. *Journal of Water Process Engineering*, 49, 103190.
8. Sang, D., Chiemchaisri, C., & Chiemchaisri, W. (2022). Purification of polluted surface water by sponge moving bed membrane bioreactor with short hydraulic retention time operation. *Water and Environment Journal*, 36(4), 633-643.

2. List of Publications of D-ETM

1. Khon, K., Alvarez-Herault, M.-C., Vai, V., Fichtner S., Bun, L. et al. Optimal design of low voltage AC/DC microgrid. (SGE2020, Nov 2020, Nantes, France. Ffhal-030324217f
2. Khon K, Chhlonh C, Vai V, Alvarez-Herault M-C, Raison B, Bun L. Comprehensive Low Voltage Microgrid Planning Methodology for Rural Electrification. *Sustainability*. 2023; 15(3):2841. <https://doi.org/10.3390/su15032841>.
3. K. Khon, V. Vai, M.-C. Alvarez-Herault, L. Bun and B. Raison, "Planning of Low Voltage AC/DC Microgrid for Un-electrified Areas," *CIRE2021 - The 26th International Conference and Exhibition on Electricity Distribution*, Online Conference, 2021, pp. 2674-2678, doi: 10.1049/icp.2021.1518.
4. Pech, S., Eng, C., Or, C., Rahim, A. B., Heng, R., Buth, C., Sio, S. (2023). Depositional Environment of Sediments in Tonle Sap Sedimentary Basin, Western Part of Cambodia: Insights from Field and Geochemical Studies.

3. List of Publications of D-FTN

1. Sroy, S., Arnaud, E., Servent, A., In, S., & Avallone, S. (2021). Nutritional benefits and heavy metal contents of freshwater fish species from Tonle Sap Lake with SAIN and LIM nutritional score. *Journal of Food Composition and Analysis*, 96, 103731.

2. Sroy, S., Servent, A., Sriwichai, W., In, S., & Avallone, S. (2021). Use of an experimental design to optimise the saponification reaction and the quantification of vitamins A1 and A2 in whole fish. *International Journal for Vitamin and Nutrition Research*.
3. Phuong, H., Massé, A., Dumay, J., Vandanjon, L., Mith, H., Legrand, J., & Arhaliass, A. (2022). Enhanced Liberation of Soluble Sugar, Protein, and R-Phycoerythrin Under Enzyme-Assisted Extraction on Dried and Fresh *Gracilaria gracilis* Biomass. *Frontiers in Chemical Engineering*, 4, 21
4. Yin, M., Bohuon, P., Avallone, S., In, S., & Weil, M. (2022). Postharvest treatments of turmeric (*Curcuma longa* L.) in Cambodia-Impact on quality. *Fruits*, 77 (6) : pp. 1-13
5. Yin, M., Weil, M., Avallone, S., Lebrun, M., Conejero, G., In, S., & Bohuon, P. (2022). Impact of cooking and drying operations on color, curcuminoids, and aroma of *Curcuma longa* L. *Journal of Food Processing and Preservation*, 46(5), e16643.
6. Yin, M., Weil, M., Avallone, S., Maraval, I., Forestier-Chiron, N., Servent, A., IN, S. & Bohuon, P. (2023). Impact of cooking, drying and grinding operations on chemical content, functional and sensorial qualities of *Curcuma longa* L. *Journal of Food Measurement and Characterization*, 17(1), 998-1008.
7. Nget, S.; Mith, H.; Boué, G.; Curet, S.; Boillereaux, L. (2023) The Development of a Digital Twin to Improve the Quality and Safety Issues of Cambodian Pâté: The Application of 915 MHz Microwave Cooking. *Foods*, 12, 1187. <https://doi.org/10.3390/foods12061187>

4. List of Publications of D-MIT

1. Kong, P.; Mancas, M.; Gosselin, B.; Po, K. DeepRare: Generic Unsupervised Visual Attention Models. *Electronics* 2022, 11, 1696.
<https://doi.org/10.3390/electronics11111696>. Available: <https://arxiv.org/abs/2109.11439>.
2. M. Matei, P. Kong, and B. Gosselin, “Visual Attention: Deep Rare Features,” *CoRR*, vol. abs/2005.12073, 2020, [Online]. Available: <https://arxiv.org/abs/2005.12073>. (Conferences)
3. Kong Phutphalla & Mancas Matei & Back Mr & Kheang Seng & Gosselin Bernard (2018). Do Deep-Learning Saliency Models Really Model Saliency?. 2331-2335. 10.1109/ICIP.2018.8451809.
4. Kong Phutphalla & Mancas Matei & Kheang Seng & Gosselin Bernard (2018). Saliency and Object Detection.
5. Kean, J., Raveu, N., Kaouach, H., Thourn, K., & Sreng, S. (2021, September). Analysis of Metamaterial Walls Reverberation Chamber by Using Modal Expansion Theory. In *2021 Asia-Pacific International Symposium on Electromagnetic Compatibility (APEMC)* (pp. 1-4). IEEE.
6. Ban, S., Lauras, M., and Srang, S. (2020, Nov.). Toward Physical Internet-Enabled Supply Chain and Logistics Networks in Developing Countries. *PRO-VE 2020 - 21st Working Conference on Virtual Enterprises*, Valence, Spain. pp.379-389.
7. Ban, S., Dan, A., Guinet, F., Portanuen, J., Lauras, M., and Srang, S. (2021, June). Assessing the potentialities of Physical Internet for Developing Countries Last Mile deliveries. *IPIC 2021 - 8th International Physical Internet Conference*, Online, Greece.
8. Petitdemange, E., Sam Ban, S., Lauras, M., and Srang, S. (2023, May). Evaluate the Potential of the Physical Internet for Last Mile Delivery in Developing Countries. *ICDSST 2023 - 9th International Conference on Decision Support System Technology*, Albi, France. pp.203-215.
9. Srun, C., Chrin, P., Am, S. & Kim, B. (2022). Design of MPPT Algorithms using Simulink Support Package for Arduino Hardware. 2. 151-161. 10.52088/ijesty.v2i4.397.
10. Srun, C., Chrin, P., Am, S. & Kim, B. (2022). Modeling and Simulation of a Double-Stage Single-Phase Grid- Connected PV System. *EPI International Journal of Engineering*. 5. 16-20. 10.25042/epi-ije.022022.03.

11. Srun, C., Lonh, V. & Ny, V. (2022). Experimental in Head Tracking Control of a Four Omni Wheeled Mobile Robot System. *Indonesian Journal of Engineering and Science*. 3. 15-26. 10.51630/ijes.v3i3.67.
12. Srun C., Ny, V., Cheat, C., Ching, Sokheang & Ny, P. (2021). Development of Speech Recognition System Based on CMUSphinx for Khmer Language. *International Journal of Innovative Research in Science Engineering and Technology*. 6. 770-775.
13. Srun C., Meas, S., Un, S., Saokun, K., & Ny, V. (2021). Prototype Self-Adaptive Traffic Light Control System Using Cameras. *EPI International Journal of Engineering*. 4. 127-133. 10.25042/10.25042/epi-ije.082021.04.

5. List of Publications of D-MSS

1. Sounean, H., Kinda, H., & Aveline, D. (2021, May). The Cracking Sensitivity of a Na-Geopolymer. In *International RILEM Conference on Early-Age and Long-Term Cracking in RC Structures: CRC 2021* (pp. 165-174). Cham: Springer International Publishing.
2. Mom, S., Hoeun, S., Bernard, F., Kamali-Bernard, S., & Han, V. (2022). The Effect of Thermal Contact Conductance (TCC) Between Aggregate Inclusion and Matrix on Thermal Conductivity of Cement-Based Material. *International Journal of Integrated Engineering*, 14(5), 99-106.
3. Bun, P., Cyr, M., Lanieste, P., Bun, K. N., & Idir, R (2022). Concrete made of 100% recycled materials - Feasibility study, *Resources, Conservation and Recycling*, Volume 180, 2022, 106199, doi.org/10.1016/j.resconrec.2022.106199.
4. Oeng, T., Keo, P., Guezouli, S., & Hjiat, M. (2023). Large displacement analysis of two-layer beam-columns taking into account slip and uplift. *Engineering Computations*, 40(1), 265-295.
5. Ouch, V., Heng, P., Nyugen, Q.-H., Hugues, S., Thierry, S. (2023). An experimental investigation on the dovetail notched connection for cross-laminated-timber-concrete composite slabs. *European Journal of Environmental and Civil Engineering*. 27. 1-31. 10.1080/19648189.2023.2194351.
6. Ouch, V., Heng, P., Nyugen, Q.-H., Hugues, S., Thierry, S. (2022). A Dovetail Notched Connection for Cross-Laminated-Timber-Concrete Composite Slabs: Experimental Investigation. *SSRN Electronic Journal*. 10.2139/ssrn.4112748.
7. Ouch, V., Heng, P., Hugues, S., Thierry, S. (2023). An Experimental and Numerical Investigation on a Dovetail Notched Connection for Cross-Laminated-Timber-Concrete Composite Slabs. 3333-3341.10.52202/069179-0434

Annex 11. ITC lecturers in overseas post-graduate program (2023-2024).

No	Nom et prénom	Sexe	Départ.	Diplôme préparé	Université	Pays	Financement
1	KETH Kannary	F	GAR	Doctorat	Université Libre de Bruxelles	Belgique	ARES - projet COMBODIA
2	LONG Makara	M	GAR	Doctorat	Université de Liège	Belgique	ARES
3	TAING Kimnenh	F	GAR	Doctorat	Université de Liège	Belgique	ARES
4	CHANTO Monychotepy	F	GCA	Doctorat	L'Institut Agro Montpellier	France	BGF-MoEYS
5	CHIN Lyda	F	GCA	Doctorat	L'institut Agro Montpellier	France	BGF-MoEYS
6	LAY Sovannmony	M	GCA	Doctorat	Université de Liège	Belgium	ARES-CCD
7	MOM Vattana	F	GCA	Doctorat	Université de Liège	Belgium	ARES-CCD
8	OEUM Kakada	F	GCA	Doctorat	Université de Montpellier	France	IRD
9	PHAL Sivchheng	F	GCA	Doctorat	INSA Toulouse	France	BGF-MoEYS
10	SIENG Sreyvich	F	GCA	Doctorat	Kanazawa Uni.	Japan	MEXT
11	THANH Channmuny	F	GCA	Doctorat	L'Institut Agro Montpellier	France	BGF-MoEYS
12	SOM Chansamnang	M	GCI	Doctorat	INSA Rennes	France	BGF+MoEYS
13	BUN Menghorng	M	GEE	Doctorat	ITC-Toulouse INP	Cambodge+France	HEIP+ITC
14	CHHLONH Chhith	M	GEE	Doctorat	Grenoble INP	France	BGF
15	ENG Samphors	F	GEE	Doctorat	ITC-Université de Namur	Cambodge+Belgium	Ares's Project
16	SENG Dararaskmey	F	GEE	Master	Chulalongkorn	Thailand	Chulalongkorn's scholarship
17	VANN Veasna	M	GEE	Doctorat	National Chung Cheng University	Tawain	National Chung Cheng University Scholarship
18	CHEA Monyneath	F	GGG	Doctorat	Kyushu University	Japan	MEXT Scholarship
19	OY Kimhouy	F	GGG	Doctorat	Kyushu University	Japan	KIZUNA- JICA Scholarship

20	SAY Sokvireak	M	GGG	Doctorat	Kyushu University	Japan	AUN/SEED-Net Scholarship
21	KUY Movsun	M	GIC	Doctorat	Université Namur	Belgique	ARES
22	NOU Sotheany	M	GIC	Doctorat	Tokyo Institute of Technology	Japan	JICA Special Scholarship
23	POENG Kokthay	M	GIC	Doctorat	Université Namur	Belgique	CyberExcellence
24	TITH Dara	M	GIC	Postdoctoral	Université de Namur	Belgique	Walloon
25	CHAN Ratboren	M	GRU	Doctorat	Université Toulouse III - Paul Sabatier	France	BGF-MOEYS- ITC
26	NHIM Chan Rengsey	M	GTR	Master	Chulalongkorn University	Thailand	Chulalongkorn's scholarship

Annex 12. ITC students in overseas post-graduate program (2023-2024).

No	Nom et prénom	Sexe	Départ.	Diplôme préparé	Université	Pays	Financement
1	KOH Tito	M	AMS	Master	ENSIIE	France	Self-funded
2	NHAR Ratanak	M	AMS	Master	ENSIIE	France	Self-funded
3	CHEA Theavy	F	GCA	Doctorat	Tokyo Institute of Technology	Japan	MEXT Scholarship
4	CHOENG Lengheang	M	GCA	Doctorat	Tokyo Institute of Technology	Japan	MEXT Scholarship
5	LEANGHY Sreyleak	F	GCA	Master	Chulalongkorn University	Thailand	ASEAN or Non ASEAN Scholarship
6	NGOUN Pengsreng	M	GCA	Master	Kanazawa University	Japan	MEXT
7	ROSCHHUK Vannet	F	GCA	Master	Kasetsart University	Thailand	Kasetsart's Agro-Industry Scholarships
8	SORN Raksa	F	GCA	Master	Kanazawa University	Japan	MEXT
9	UN Ratana	F	GCA	Master	Kasetsart University	Thailand	Kasetsart's Agro-Industry Scholarships
10	VORN Chankhemra	M	GCA	Diplôme d'ingénieur	Institut Agro Montpellier	France	La bourse d'excellence EIFFEL
11	KONG Aruntitya	M	GCI	Master	INSA Rennes	France	Erasmus+
12	MENG Senghor	M	GCI	Master	INSA Rennes	France	Erasmus+
13	POR Somethea	M	GCI	Master	INSA Rennes	France	Erasmus+
14	RITH Borey	M	GCI	Master	INSA Rennes	France	Erasmus+
15	VISETH Setha	M	GCI	Master	INSA Rennes	France	Erasmus+
16	Chea Pheng ou	M	GEE	Master	Chulalonkorn	Thailand	Chulalonkorn's scholarship
17	Chea Rothvichea	M	GEE	Master	Mine Ales	France	Erasmus
18	Chim Chakrya	F	GEE	Master	ITC	Cambodia	EDC-AFD-EU
19	EM Ennyvathana	M	GEE	Master	ITS	Indonesia	AUN-KNB
20	HAN Malin	F	GEE	Master	ITC	Cambodia	EDC-AFD-EU
21	LIM Vanthien	M	GEE	Master	KMUTT	Thailand	JGSEE scholarship
22	MENG Sreymey	F	GEE	Master	ITS	Indonesia	AUN-KNB
23	Oeun Sothea	M	GEE	Master	ITC	Cambodia	EDC-AFD-EU

24	SARY Monychot	M	GEE	Master	ITC	Cambodia	EDC-AFD-EU
25	SO Phanit	M	GEE	Master	ITS	Indonesia	AUN-KNB
26	SOUN Dalin	F	GEE	Master	Mine Ales	France	EIFFEL
27	CHEA Shanghai	M	GGG	Master	Chulalongkorn University	Thailand	ASEAN and NON- ASEAN Scholarship
28	DIEP Sodika	F	GGG	Master	Chulalongkorn University	Thailand	ASEAN and NON- ASEAN Scholarship
29	MEAK Sovannborey	M	GGG	Doctorat	Kyushu University	Japan	MEXT Scholarship
30	MET Visal	M	GGG	Master	Hohai University	China	China Government Silk Road Scholarship
31	PHANN Idol	M	GGG	Doctorat	Kyushu University	Japan	MEXT Scholarship
32	POR Vannak	M	GGG	Master	Gadjah Mada University	Indonesia	KNB Scholarship (Indonesian Government)
33	ROEUN Daro	M	GGG	Doctorat	Hokkaido University	Japan	AUN/SEED-Net Scholarship
34	SENG Bunleang	M	GGG	Master	Chulalongkorn University	Thailand	ASEAN and NON- ASEAN Scholarship
35	SOKLY Oudom	M	GGG	Master	Kagoshima University	Japan	Yonemori Scholarship
36	BORN Seanghort	M	GIC	Doctorat	Le Mans Université	France	BGF
37	CHHENG Sophin	F	GIC	Master	Claude Bernard University Lyon 1	France	BGF , Arqus
38	CHOENG Veyseng	M	GIC	Master	Tokyo Institute of Technology	Japan	MEXT Embassy Recommendation
39	HANG Sonimith	M	GIC	Master	IMT-Mines-Alès	France	Self-funded
40	HOUR Chan Pisey	M	GIC	Master	Chongqing University of Technology	China	Company Funds
41	KAO Visal	M	GIC	Master	IMT-Mines-Alès	France	Self-funded
42	KOENG Gana	M	GIC	Master	ESC Rennes School of Business	France	Self-funded
43	KORN Monit	M	GIC	Master	IMT-Mines-Alès	France	Self-funded
44	MEN Sreypich	F	GIC	Master	CY Tech University in French	France	Self-funded
45	NART Somalika	F	GIC	Master	Chongqing University of Technology	China	Company Funds
46	ROS Sereiwathna	M	GIC	Master	Chungbuk National University	Korea	MSIS Lab
47	TE Lyhourt	M	GIC	Master	University of Pécs	Hungary	Stipendium Hungaricum scholarship
48	THO Tharath	M	GIC	Master	Chongqing University of Technology	China	Company Funds

49	TRY Sreyna	F	GIC	Master	Chongqing University of Technology	China	Company Funds
50	CHEA Sovannarith	M	GIM	Master	Kagoshima University	Thailand	Company Funded
51	CHHENG Sunghork	M	GIM	Master	Chiang Mai University	Thailand	50% tuition fee from ECAM+Self-Funded
52	EKONG Yang	M	GIM	Master	Chiang Mai University	Thailand	50% tuition fee from ECAM+Self-Funded
53	HENG Sranghong	M	GIM	Master	Chiang Mai university	Thailand	50% tuition fee from ECAM+Self-Funded
54	KIMLAY Chou	F	GIM	Master	Chiang Mai University	Thailand	50% tuition fee from ECAM+Self-Funded
55	MOEURN Dear	M	GIM	Master	University of Yamanashi	Japan	MEXT Scholarship
56	MOLIKA Mon	F	GIM	Master	Chiang Mai university	Thailand	50% tuition fee from ECAM+Self-Funded
57	OU Soksamnang	M	GIM	Master	Chiang Mai University	Thailand	50% tuition fee from ECAM+Self-Funded
58	PROM Pichthida	F	GIM	Master	Chiang Mai university	Thailand	50% tuition fee from ECAM+Self-Funded
59	SOUS Monypanchakrith	M	GIM	Master	Gazi üniversitesi	Turky	Scholarship from Turkey government
60	VIRAK Alexander	M	GIM	Master	University Grenoble Alpes	France	Self-funded
61	VIRAK Somonika	F	GIM	Master	University Grenoble Alpes	France	Self-funded
62	YUOS Oudom	M	GIM	Master	Yokohama National University	Japan	MEXT Scholarship
63	CHAN Sameth	M	GRU	Master	Hohai University	China	Chinase Government Scholarship
64	CHEA Gechhor	F	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
65	CHHIM Sophara	M	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
66	CHUY Voucheng	F	GRU	Master	Chulalongkorn Universtiy	Thailande	ASEAN countries program
67	HOR Vichheka	M	GRU	Master	Hohai University	China	Hohai University Intergrated scholarship
68	HOUR Sotheara	M	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
69	HUONG Oudom satia	M	GRU	Master	Kyungpook National University	Korea	BK21 Four Scholarship
70	HUOT Boramey	F	GRU	Master	Hohai University	China	Hohai University Intergrated scholarship
71	IT Soklin	F	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
72	KA Koemsreang	F	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
73	KAING Vinhtang	F	GRU	Doctorat	Tokyo Institute of Technology	Japan	MEXT Scholarship
74	KET Dydarong	M	GRU	Master	Chulalongkorn Universtiy	Thailande	ASEAN countries program
75	KHE Sotheanea	F	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
76	KHIM Sokunthea	F	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program

77	KHOEUN Chanseyma	F	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
78	KOUN Penglong	M	GRU	Doctorat	Hohai University	China	Hohai University scholarship
79	KROUK Sothearoth	M	GRU	Master	Hohai University	China	Hohai University Intergrated scholarship
80	LENG Bovathanak	M	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
81	LY Veasna	M	GRU	Master	Hohai University	China	Chinase Government Scholarship program
82	MENG Leangse	F	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
83	NY Sithy	M	GRU	Master	Chulalongkorn Universtiy	Thailande	ASEAN countries program
84	OL Kimsor	M	GRU	Master	Kyoto University	Japan	MEXT
85	PANG Sreynich	F	GRU	Master	Chulalongkorn Universtiy	Thailande	ASEAN countries program
86	PECH Ponleu	M	GRU	Master	Chulalongkorn Universtiy	Thailande	ASEAN countries program
87	PHAL Sreyluch	F	GRU	Master	Hohai University	China	Chinase Government Scholarship program
88	PHAN Sophanny	F	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
89	PHONG Bunthai	M	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
90	PHOUTA Belasoviet	M	GRU	Master	Hohai University	China	Hohai University scholarship
91	PHY Sophea rum	M	GRU	Master	University of South Florida	USA	Project program
92	RY Nakrin	M	GRU	Master	Hohai University	China	Chinase Government Scholarship program
93	SAM Monyrachana	F	GRU	Master	Hohai University	China	Hohai University Intergrated scholarship
94	SAMRITH Chanponloeurothana	F	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
95	SEN Sireywat	M	GRU	Master	Hohai University	China	Hohai University Intergrated scholarship
96	TAING Eangthay	M	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
97	TANG Eamlong	M	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
98	TAUCH Samrethreach	M	GRU	Master	Chulalongkorn Unviversité	Thailand	ASEAN countries program
99	TES Davin	M	GRU	Master	Tokyo Institute Of Technology	Japan	MEXT Scholarship
100	THA Theara	M	GRU	Doctorat	Chulalongkorn University	Thailande	Joint CU-SEI PhD program
101	VET Sreyla	F	GRU	Master	Kanazawa Univesity	Japan	MEXT
102	VETH Seavphing	F	GRU	Master	Hohai University	China	Hohai University Intergrated scholarship
103	YONG Chhenhor	F	GRU	Master	Hohai University	China	Hohai University Intergrated scholarship
104	YOS Chantharath	F	GRU	Master	Chulalongkorn Universtiy	Thailand	ASEAN countries program

105	CHHENG Brossour	M	GS	Master	Université Toulouse III - Paul Sabatier	France	Erasmus+
106	KHOM Vivudth	M	GS	Master	Université Rennes 1	France	Erasmus+
107	LENG Seng Hak	M	GS	Doctorat	Chungbuk National University	South Korea	Prof. Scholarship
108	NOM Vannkinh	F	GS	Doctorat	La Rochelle University	France	BGF co-funding CADT
109	PLACK Sokhit	M	GS	Doctorat	Institut de technologie du Cambodge	Cambodge	ITC
110	SENG Rattana	M	GS	Master	Chonnam National University	Korea	Professor funding
111	POV Kakda	M	WEE	Master	Kyushu University	Japan	JASSO

Annex 13. Short-term overseas capacity building for lecturers (2023-2024).

No	Nom et prénom	Sexe	Dépt.	Université d'accueil	Titre	Date de mission	Financement
1	PHAUK Sokkhey	M	AMS	Pullman Bangkok King Power Hotel, Bangkok, Thailand	Empowering Minds: Round Table on Generative AI, and Education in Asia-Pacific	07-11-23 → 09-11-23	UNESCO
2	PHAUK Sokkhey	M	AMS	Hongkong University of Education, Hong Kong	The First Digital Teaching Portfolio	12-12-23 → 16-12-23	EdUK
3	AUN Srean	F	GCA	Bangkok, Thailand	Train-the-Trainer Program under Lancang-Mekong Cooperation to Enhance Production Capacity and People's Livelihood by Improving the Value Chain for Cassava Cultivation and Application: Clean Cassava Chips,	20-11-23 → 24-11-23	National Center for Genetic Engineering and Biotechnology (BIOTEC)
4	AUN Srean	F	GCA	Kanazawa University	SATREPS (Short-term training) Establishment of Risk Management Platform for Air Pollution	26-07-23 → 10-08-23	JICA
5	AUN Srean	F	GCA	Bangkok, Thailand	Train-the-Trainer Program under Lancang-Mekong Cooperation to Enhance Production Capacity and People's Livelihood by Improving the Value Chain for Cassava Cultivation and Application: Clean Cassava Chips,	20-24 November 2023	The National Center for Genetic Engineering and Biotechnology (BIOTEC)
6	AUN Srean	F	GCA	Bangkok, Thailand	Supporting the Implementation of STI Platform for Closed Loop Plastics Packaging	11-09-23 → 15-09-23	National Higher Education Science Research and Innovation Policy Council (NXPO)
7	AUN Srean	F	GCA	Kanazawa University	SATREPS (Short-term training) Establishment of Risk	26-07-23 → 10-08-23	JICA

					Management Platform for Air Pollution		
8	HENG Oudam	M	GCA	AIT, Thailand	International Fishery Symposium (IFS)	22-25 November 2023	IRD
9	HOR Sivmey	F	GCA	Institut Agro Montpellier, France	Discussion on Financial report and documents for F-STEM project audit	04-11 March 2023	F-STEM project
10	IN Sokneang	F	GCA	ULB, Belgium	Progress Activity 2 (R2) ARES-CCD project	25-30 August 2023	ARES-CCD project
11	IN Sokneang	F	GCA	AIT, Thailand	Immersing Training on Innovation, Design Thinking and Technology Transfer in the Postharvest and Food Processing	25-27 October 2023	UNIDO-Capfish
12	IN Sokneang	F	GCA	Universite libre de Bruxelles (ULB), Belgium	Follow up mission APPUI INSTITUTIONNEL 2022-2027 (ARES-ITC Project)	7-19 June 2024	ARES
13	Khoeurn Kimleang	F	GCA	Tokyo Institute of Technology, Japan	Project for strenghtening Engineering Education and Research for Industrial development in Cambodia	4-12 September 2023	JICA
14	Khoeurn Kimleang	F	GCA	Renne, France	Exchange professor from Cambodia: Training in France on Curriculum improvement and capacity building on water treatment technology of master program Water and Environmental Engineering, Specializing in Urban Water and Sanitation Engineering Program.	15-25 October 2023	AFD
15	Khoeurn Kimleang	F	GCA	Education University of Hongkong, Hongkong	First Digital Teaching Portfolio Award	12-16 December 2023	HEIP: Center of Exelence In higher education teaching and learning inovation
16	Khoeurn Kimleang	F	GCA	Universite libre de Bruxelles (ULB), Belgium	Development Course	20-26 May 2024	ARES

17	Khoeurn Kimleang	F	GCA	Tokyo Institute of Technology, Japan	Project for strengthening Engineering Education and Research for Industrial development in Cambodia	4-12 September 2023	JICA
18	MORM Elen	F	GCA	Universite libre de Bruxelles (ULB), Belgium	Development Course	20-26 May 2024	ARES
19	NET Marinich	F	GCA	UTM, malaysia	ANGEL International Conference	9-15 June 2024	ANGEL Project
20	NGET Sovannmony	M	GCA	Universite libre de Bruxelles (ULB), Belgium	Development Course for heat transfer, mass transfer and fluid mechanic	20-26 May 2024	ARES
21	PENG Chanthol	F	GCA	KU, KMUTT, Thailand	Research management, HEIP	12-15 December 2023	HEIP
22	PENG Chanthol	F	GCA	NU, ULB, UMONS, Belgium	R4 ARES-CCD, Research Management	16-13 August 2023	ARES-CCD project
23	PHAT Chanvorleak	F	GCA	Osaka, Japan	SATREPS (Short Term Training)	26-07-2023 → 10-08-2023	JICA
24	PHAT Chanvorleak	F	GCA	AIT, Thailand	Immersing Training on Innovation, Design Thinking and Technology Transfer in the Postharvest and Food Processing	25-27 October 2023	UNIDO-Capfish
25	PHAT Chanvorleak	F	GCA	Bangkok, Thailand	Train-the-Trainer Program under Lancang-Mekong Cooperation to Enhance Production Capacity and People's Livelihood by Improving the Value Chain for Cassava Cultivation and Application: Clean Cassava Chips, Native Starch, Modified Starch, Ethanol, and Biogas Production (TTC)	20-24 November 2023	The National Center for Genetic Engineering and Biotechnology (BIOTEC)
26	PHUONG Hengsim	F	GCA	Thailand Institute of Scientific and Technology and Research Thai Packaging Center	Study tour to visit ProPak Asia Exhibition and Thailand Institute of Scientific and Technology	10-14 June 2024	UnIDO-Food Technology Research Innovation Platform

					Research (TISTR) and Thai Packaging Center (TPC)		
27	TAN Reasmey	F	GCA	University of Florida, USA	Valorization of soybean residue into high value added products	15 January-16 April 2023	U.S. Department of State
28	THENG Sokuntheary	F	GCA	Okinawa Institute of Science and Technology, Japan	Microscopy and Image analysis	1-8 April 2024	Okinawa Institute of Science and Technology
29	YOEUN Sereyvath	M	GCA	Nakasaka, Japan	SATREPS (Short Term Training)	26 July to 10 August, 2023	JICA
30	Han Virak	M	GCI	Kuala Lumpur, Malasian	Calohea	07-06-2023 → 09-06-2023	Erasmus
31	Han Virak	M	GCI	HUCE	Calohea	26-10-2023 → 27-10-2023	Erasmus
32	Han Virak	M	GCI	Porto University	Calohea	12-12-2023 → 19-12-2024	Erasmus
33	HIN Raveth	M	GCI	Université de Rennes	Training on glass science and technology in theory, practice, and research	06-10-23 → 20-10-23	Erasmus+ KA171 STT
34	LY Hav	M	GCI	Kuala Lumpur, Malasian	Calohea	07-06-2023 → 09-06-2023	Erasmus
35	Oeng Thaileng	M	GCI	Toronto Metropolitan University	Composite Structure Project	10-02-2014 → 20-04-2024	Host Professor Project's fund
36	Dr. Am Sokchea	M	GEE	Université de Namur	Cooperation with Belgium Universities	10-12-2023 → 18-12-2023	ARES
37	Dr. Chrin Phok	M	GEE	KU, RMUTI, KMUTT	Field Trip Study	12-12-2023 → 16-12-2023	HEIP
38	Dr. Vai Vannak	M	GEE	Chiang Mai University	Research Finding Dissemination	06-12-2023 → 09-12-2023	HEIP+ZE

39	Khon Kimsornn	M	GEE	Sandia National Laboratories, Singapore	Research Security and Due Diligence in Academia Workshop	3-6 June 2024	U.S. Department of Energy
40	Mr. Chou Koksai	M	GEE	Université de Namur	Cooperation with Belgium Universities	10-12-2023 → 18-12-2023	ARES
41	BOEUT Sophea	F	GGG	Development Research Center of China Geological Survey	Attending the seminar on Geochemical Technology of Resources Development	08-09-23 → 13-09-23	Chinese Government Foreign Aid
42	BOEUT Sophea	F	GGG	Asian Institute of Technology (AIT)	Attending the Kic off Meeting	24-01-24 → 26-01-24	NAFOS Project
43	BUN Kim Ngun	M	GGG	Tokyo Institute of Technology	Join and observe the training on: University-Industry Collaboration for Research, Engineering Education in Japan, University-Industry Collaboration for Education, University-Industry Collaboration Closely Linked to Social Cooperation and Affiliated System	04-09-23 → 12-09-23	LBE-JICA
44	CHEA Monyneath	F	GGG	University Technology of Malaysia; Malaysian- Japanese International Institute; Universiti Sains Malaysia	Training on SEM and Discussion on academic collaboration	26-11-23 → 02-12-23	LBE-JICA
45	CHEA Monyneath	F	GGG	CEA, University Paris Saclay, École Française d'Extrême Orient, University Paris Nord, Porteur du Projet and CNRS	Training on SEM, XRD, XRF and discussion on archaeometallurgy	16-01-24 → 27-01-24	FSPI-R project
46	ENG Chandoeun	M	GGG	Tokyo Institute of Technology	Join and observe the training on: University-Industry Collaboration for Research, Engineering Education in Japan, University-Industry Collaboration for Education, University-Industry	04-09-23 → 12-09-23	LBE-JICA

					Collaboration Closely Linked to Social Cooperation and Affiliated System		
47	ENG Chandoeun	M	GGG	University Technology of Malaysia; Malaysian- Japanese International Institute; Universiti Sains Malaysia	Training on SEM and Discussion on academic collaboration	26-11-23 → 02-12-23	LBE-JICA
48	ENG Chandoeun	M	GGG	The Education University of Hong Kong	Attending workshop on Teacher Professional Digital Portfolio	12-12-23 → 16-12-23	HEIP
49	ENG Chandoeun	M	GGG	CEA, University Paris Saclay, École Française d'Extrême Orient, University Paris Nord, Porteur du Projet and CNRS	Training on SEM, XRD, XRF and discussion on archaeometallurgy	16-01-24 → 27-01-24	FSPI-R project
50	HENG Ratha	M	GGG	Universiti Teknologi Malaysia	Training on microalgae cultivation	28-08-23 → 09-09-23	LBE-JICA
51	HENG Ratha	M	GGG	Maharakham, Office of Palaeontological Research and Education Centre	Attending the the IGCP-700 meeting	24-09-23 → 27-09-23	Office of Palaeontological Research and Education Centre
52	HENG Ratha	M	GGG	CEA, University Paris Saclay, École Française d'Extrême Orient, University Paris Nord, Porteur du Projet and CNRS	Training on SEM, XRD, XRF and discussion on archaeometallurgy	16-01-24 → 27-01-24	FSPI-R project
53	KAING Sainglong	M	GGG	Development Research Center of China Geological Survey	Attending the seminar on Geochemical Technology of Resources Development	08-09-23 → 13-09-23	Chinese Government Foreign Aid
54	KAING Sainglong	M	GGG	Economic Research Institute for ASEAN and East Asia (ERIA	Study on a New Framework for the Utilization of Space Technology: Effective Collaboration among Industry, Academia, and Government to Contribute to ASEAN's Socio-Economic Development"	16-11-23 → 18-11-23	Japan Space Forum

55	KONG Sotheara	M	GGG	Development Research Center of China Geological Survey	Attending the seminar on Geochemical Technology of Resources Development	08-09-23 → 13-09-23	Chinese Government Foreign Aid
56	KRET Kakda	M	GGG	Development Research Center of China Geological Survey	Attending the seminar on Geochemical Technology of Resources Development	08-09-23 → 13-09-23	Chinese Government Foreign Aid
57	SEANG Sirisokha	F	GGG	Development Research Center of China Geological Survey	Attending the seminar on Geochemical Technology of Resources Development	08-09-23 → 13-09-23	Chinese Government Foreign Aid
58	SIO Sreymean	F	GGG	The Education University of Hong Kong	Attending workshop on Teacher Professional Digital Portfolio	12-12-23 → 16-12-23	HEIP
59	SRENG Laymey	F	GGG	University Technology of Malaysia; Malaysian- Japanese International Institute; Universiti Sains Malaysia	Training on SEM and Discussion on academic collaboration	26-11-23 → 02-12-23	LBE-JICA
60	SREU Tola	M	GGG	Development Research Center of China Geological Survey	Attending the seminar on Geochemical Technology of Resources Development	08-09-23 → 13-09-23	Chinese Government Foreign Aid
61	SREU Tola	M	GGG	The Geological Society of Thailand (GST)	Attending the conference on geopark and discussion	19-02-24 → 27-02-24	JICA- LBE
62	YOS Phanny	M	GGG	CEA, University Paris Saclay, École Française d'Extrême Orient, University Paris Nord, Porteur du Projet and CNRS	Training on SEM, XRD, XRF and discussion on archaeometallurgy	16-01-24 → 27-01-24	FSPI-R project
63	BOU Channa	M	GIC	Bangkok, Thailand	REGIONAL HIGHER EDUCATION FORUM: Higher Education of the Future: Leading Digital and Green Transformations through Collaboration	09-05-2023 → 13-05-2023	ADB
64	BOU Channa	M	GIC	University of Gadjah Mada, Indonesia	HITIHE project meeting	04-09-2023 → 08-09-2023	Erasmus+ KA2 HITIHE

65	CHOM Sreylam	F	GIC	Institute of Tropical Medicine , Belgium	HITIHE project meeting	02-10-2023 → 06-10-2023	Erasmust+ KA2 HITIHE
66	HOK TIN	M	GIC	University of Namur, Belgium	Cryptography	21-03-2023 → 12-04-2023	Erasmust+
67	LAY Heng	M	GIC	UTM Kuala Lumpur, Malaysia	DX.SEA project meeting	21-05-2023 → 27-05-2023	Erasmust+ KA2 DX.SEA
68	LAY Heng	M	GIC	University of Gadjah Mada, Indonesia	HITIHE project meeting	04-09-2023 → 08-09-2023	Erasmust+ KA2 HITIHE
69	LAY Heng	M	GIC	Institute of Tropical Medicine , Belgium	HITIHE project meeting	02-10-2023 → 06-10-2023	Erasmust+ KA2 HITIHE
70	PICH Reatrey	M	GIC	Osaka Japan	The 12th International Conference on Network, Communication and Computing	14-12-2023 → 21-12-2023	Own Budget
71	VALY Dona	M	GIC	UTM Kuala Lumpur, Malaysia	DX.SEA project meeting	21-05-2023 → 27-05-2023	Erasmust+ KA2 DX.SEA
72	CHAN Sarin	M	GIM	UTM University, MJIIT	Technical skill of machining such as CNC and CAD/CAM	03-09-23 → 09-09-23	JICA
73	CHAN Sarin	M	GIM	LG Electronics	2024 LG Alumni Event. Technical seminar, referent site visit, visit of innovation museum and networking.	28-05-24-->31-05-24	LG Electronics
74	CHHITH Saosometh	M	GIM	Yokohama National University	Digital Image Correlation and LBE Implementation	14-01-24→ 21-01-24	JICA
75	CHHITH Saosometh	M	GIM	Paris-Saclay University	Training on Non-Destructive Testing Method	18-03-24→31-03-24	FSPI-R project
76	DARA Seyhak	M	GIM	Czech Technical University in Prague	Biomedical Engineering intensive training	03-06-24→15-06-24	Czech Development Agency
77	KEO Chivorn	M	GIM	UTM University, MJIIT	Technical skill of machining such as CNC and CAD/CAM	03-09-23 → 09-09-23	JICA
78	LY Leangchheng	M	GIM	UTM University, MJIIT	Technical skill of machining such as CNC and CAD/CAM	03-09-23 → 09-09-23	JICA
79	MUT MESA	M	GIM	Liège, Umon	Visit Study on Lab management	07-08-23→ 21-08-23	ARES

80	SEAB Piseth	M	GIM	CEA, University Paris Saclay, École Française d'Extrême Orient, University Paris Nord, Porteur du Projet and CNRS	Training on SEM, XRD, XRF and discussion on archaeometallurgy	16-01-24 → 27-01-24	FSPI-R project
81	SIV Easeng	M	GIM	CEA, University Paris Saclay, École Française d'Extrême Orient, University Paris Nord, Porteur du Projet and CNRS	Training on SEM, XRD, XRF and discussion on archaeometallurgy	16-01-24 → 27-01-24	FSPI-R project
82	SRY Vannei	M	GIM	Yokohama National University	Digital Image Correlation and LBE Implementation	14-01-24 → 21-01-24	JICA
83	SRY Vannei	M	GIM	Paris-Saclay University	Training on Non-Destructive Testing Method	18-03-24→31-03-25	FSPI-R project
84	VONGCHNAH Kinnalet	F	GIM	National University of Laos	Introduction to Heat Stress and Implementation of Energy Efficiency	02-05-23 → 04-05-23	Personal
85	BUN Saret	M	GRU	Chulalongkorn University	Research Visit to Department of Environmental Engineering, Chulalongkorn University	29-08-23 → 05-09-23	LBE-JICA
86	BUN Saret	M	GRU	National Cheng Kung University	International Workshop on Promoting Sustainable Protection and Restoration of Soil and Groundwater Environment	03-12-23 → 10-12-23	National Cheng Kung University
87	BUN Saret	M	GRU	Chulalongkorn University	Join IWA Sustainable Natural and Engineered Water System Management SWSM 2023 Conference	12-12-23 → 17-12-23	LBE-JICA
88	BUN Saret	M	GRU	Asian Institute of Technology	Regional Training Workshop on “Building Cities Resilience to Climate and Disaster Risks”	18-02-24 → 23-02-24	AIT RRC.AP
89	BUN Saret	M	GRU	Science Centre Singapore	Technical Visit to Science Center Singapore of Singapore	10-03-24 → 14-03-24	STEP-UP
90	BUN Saret	M	GRU	Science Centre Singapore	Study Visit to the Science Center Singapore in Singapore	07-05-24→11-05-24	STEP UP Project
91	BUN Saret	M	GRU	Stockholm Environment Institute	SUMERNET Learning Forum 2024	28-05-24→01-06-24	Sustainable Mekong Research Network (SUMERNET)

92	CHHUON Kong	M	GRU	National University of Laos and Souphanouvong University	InowAsia project workshop and meeting	01-04-23 → 07-04-23	Erasmus+ InowAsia
93	CHHUON Kong	M	GRU	Sandia National Laboratories	Research Security and Due Diligence in Academia Workshop	03-06-24→05-06-24	Sandia National Laboratories
94	CHORK Vuthy	M	GRU	Hanoi University of Science and Technology	Environmental Systems in South East Asia Regional Workshop	04-12-2023 → 08-12-2023	WatHealth/4C
95	DOUNG Ratha	M	GRU	Hanoi University of Science and Technology	Environmental Systems in South East Asia Regional Workshop	04-12-2023 → 08-12-2023	WatHealth/4C
96	ENG Khy Eam	M	GRU	Hanoi University of Science and Technology	Environmental Systems in South East Asia Regional Workshop	04-12-2023 → 08-12-2023	WatHealth/4C
97	ENG Khy Eam	M	GRU	National University of Laos and Souphanouvong University	InowAsia project workshop and meeting	01-04-23 → 07-04-23	Erasmus+ InowAsia
98	HANG Leakhena	F	GRU	Seoul, Republic of Korea	The 8th International Conference on Applied Engineering Materials and Mechanics (8th ICAEMM 2023)	14-07-23 → 17-07-23	HEIP
99	HANG Leakhena	F	GRU	Kanazawa University	SATREPS (Short-term training) Establishment of Risk Management Platform for Air Pollution)	26-07-23 → 10-08-23	JICA
100	HANG Leakhena	F	GRU	Sandia National Laboratories	Research Security and Due Diligence in Academia Workshop	03-06-24→05-06-24	Sandia National Laboratories
101	HEU Rina	F	GRU	Seoul, Republic of Korea	The 8th International Conference on Applied Engineering Materials and Mechanics (8th ICAEMM 2023)	14-07-23 → 17-07-23	HEIP
102	KET Pinnara	F	GRU	Guangxi Polytechnic of Construction	2025 Guangxi-ASEAN Vocational Skills Competition of Water Quality Testing	20-05-24→25-05-24	Guangxi Polytechnic of Construction
103	LUN Sambo	M	GRU	Hanoi University of Science and Technology	Environmental Systems in South East Asia Regional Workshop	04-12-2023 → 08-12-2023	WatHealth/4C
104	OUK Sovannara	M	GRU	Hanoi University of Science and Technology	Environmental Systems in South East Asia Regional Workshop	04-12-2023 → 08-12-2023	WatHealth/4C

105	Phaly Ham	M	GRU	Guangxi Polytechnic of Construction	2024 Guangxi-ASEAN Vocational Skills Competition of Water Quality Testing	20-05-24→25-05-24	Guangxi Polytechnic of Construction
106	Phoeurn Chan Arun	F	GRU	Wuhan university, China	Lancang Mekong Cooperation (LMC) Training Workshop on Water Management in Rice-based Cropping Systems	05-11-23 → 20-11-23	Wuhan University
107	SOK Kimhuy	M	GRU	Hanoi University of Science and Technology	Environmental Systems in South East Asia Regional Workshop	04-12-2023 → 08-12-2023	WatHealth/4C
108	SOK TY	M	GRU	Korea-Mekong Water Center (KOMEK)	Lecturer/Researcher	02-05-24→03-05-24	Korea-Mekong Water Center (KOMEK)
109	SOK Ty	M	GRU	Stockholm Environment Institute (SEI) Asia Centre	SUMERNET Learning Forum	29-05-24→31-05-24	Sustainable Mekong Research Network
110	SONG Layheang	M	GRU	Wuhan, China	Lancang Mekong Cooperation (LMC) Training Workshop on Water Management in Rice-based Cropping Systems	05-11-23 → 20-11-23	Wuhan University
111	SONG Layheang	M	GRU	Toulouse, France	Mobilité Scientifique Sud-Nord	04-03-24 → 30-05-24	Institut de Recherche pour le Développement (IRD)
112	THENG Vouchlay	F	GRU	Wuhan university, China	Lancang Mekong Cooperation (LMC) Training Workshop on Water Management in Rice-based Cropping Systems	05-11-23 → 20-11-23	Wuhan University
113	THENG Vouchlay	F	GRU	University of Girona, Spain	Exchange program and training course on resource recovery course using problem-based learning	25-06-23 → 08-07-23	EU
114	Dr. VALY Dona	M	GS	Pendidikan Ganesha University	Visiting Scholar program	06-11-23 → 10-11-23	Pendidikan Ganesha University
115	HIN Raveth	M	GS	Sandia National Laboratories, Singapore	Research Security and Due Diligence in Academia Workshop	3-6 June 2024	U.S. Department of Energy
116	HIN Raveth	M	GS	Université de Toulouse	Training on incorporate glass waste in concrete product	18-28 June 2024	Erasmus+ KA171 STT
117	CHHORN Sopheaktra	M	GTR	Czech Technical University in Prague	Biomedical Engineering intensive training	03-06-24→15-06-24	Czech Development Agency

118	NGETH Rithea	M	GTR	Japan Advanced Institute of Science and Technology	Sakura Science Exchange Program, Course A	14-01-24→ 20-01-24	Japan Science and Technology Agency
119	PROEUNG Bunrong	M	GTR	Japan Advanced Institute of Science and Technology	Sakura Science Exchange Program, Course A	14-01-24 → 20-01-24	Japan Science and Technology Agency
120	SRENG Sokchenda	M	GTR	Czech Technical University in Prague	Biomedical Engineering intensive training	03-06-24→15-06-24	Czech Development Agency
121	THOURN Kosorl	M	GTR	Chulalongkorn University	Cross Pilot Project and Meeting	06-01-24→ 14-01-25	Erasmu+ ASEAN Factori 4.0
122	DOUNG Piseth	M	RIC	Université de Mons	Development of laboratory management capabilities	07/08/2023 - 21/08/2023	ARES

Annex 14. Short-term overseas capacity building for students (2023-2024).

No	Nom et prénom	Sexe	Dépt.	Université d'accueil	Titre	Date de mission	Financement
1	HENG Seaklong	M	AMS	Handong Global University	Machine Learning Methodology	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
2	HENG Sophanha	M	AMS	Handong Global University	Machine Learning Methodology	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
3	KHUN Sithanut	M	AMS	Handong Global University	Data science camp (Standard Level)	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
4	KOSAL Chansothay	M	AMS	Handong Global University	Data science camp (Standard Level)	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
5	KRY Senghort	M	AMS	Kitami Institute of Technology	Data Science Seminar with Japanese Professor	20-11-2023→22-11-2023	JICA Organization
6	MA Ousa	M	AMS	Handong Global University	Data science camp (Standard Level)	07-08-2023-11-08-2023	UNESCO Unitwin in Cambodia
7	Men chanchhorporn	M	AMS	Kitami Institute of Technology	Data Science Seminar with Japanese Professor	20-11-2023→22-11-2023	JICA Organization
8	MORK mongkul	M	AMS	Handong Global University	Data science camp (Standard Level)	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
9	OEUN Pao	M	AMS	Handong Global University	Machine Learning Methodology	29-01-2024→02-01-2024	UNESCO Unitwin in Cambodia
10	PAV Limseng	M	AMS	Handong Global University	Data Driven Application	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
11	Pean Chhinger	F	AMS	Handong Global University	Data Science Camp(Standart Level)	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
12	PEANG Rattanak	M	AMS	Handong Global University	Data science camp (Standard Level)	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
13	PEL Bunkhloem	M	AMS	Handong Global University	Data science camp (Standard Level)	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
14	PEN Virak	M	AMS	Handong Global University	Data science camp (Standard Level)	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
15	PHO Rotha	M	AMS	Handong Global University	Data science camp (Standard Level)	29-01-2024→02-01-2024	UNESCO Unitwin in Cambodia

16	PRUONH Kimliya	F	AMS	Handong Global University	Data science camp (Standard Level)	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
17	RA Veasna	M	AMS	Handong Global University	Data science	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
18	ROEUN Sovandeth	M	AMS	Handong Global University	Data science camp	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
19	ROS Sreyneath	F	AMS	Handong Global University	Data science camp (Standard Level)	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
20	SAN Kimheang	M	AMS	Handong Global University	Data science camp (Standard Level)	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
21	VA Seyha	M	AMS	Handong Global University	Data science camp (Standard Level)	29-01-2024→02-02-2024	UNESCO Unitwin in Cambodia
22	VEN Vannuth	M	AMS	Cam-Science	Internship R&D	01-01-2024→31-12-2024	Cam-Science
23	SORN Raksa	F	GCA (ChE)	Kanazawa university	Internship Program for Science and Engineering Students	19-02-2024→26-03-2024	JASSO and SATREPS Project
24	TRY Phalla	F	GCA (ChE)	Kanazawa university	Internship Program for Science and Engineering Students	19-02-2024→26-03-2024	JASSO and SATREPS Project
25	Leanghy Sreyleak	F	GCA (FST)	University of Yamanashi	Cultural and Educational Exchange Program	20-09-2024→26-09-2023	Japan's National Museum of Emerging Science and Innovation Fund
26	POV Laysreng	M	GCA (FST)	University of Yamanashi	Cultural and Educational Exchange Program	20-09-23→26-09-23	Japan's National Museum of Emerging Science and Innovation Fund
27	LEY Satya	M	GCI	INSA Rennes	5ème année	02-10-2023 → 02-02-2024	No scholarship
28	MA Songkhun	M	GCI	INSA Rennes	5ème année	02-10-2023 → 02-02-2024	No scholarship
29	CHHUN They	F	GGG	Kyushu University, Japan	Internship	28-11-2023 →10-12-2023	JASSO Scholarship
30	DIEP Sodika	F	GGG	Kyushu University, Japan	Internship	28-11-2023 →10-12-2023	JASSO Scholarship
31	KHENG Rothana	F	GGG	Kyushu University, Japan	Internship	28-11-2023 →10-12-2023	JASSO Scholarship
32	NI Sokmeng	M	GGG	Universiti Sains Malaysia	One semester exchange program	15-03-2024→15-08-2024	Cambodian Government

33	POV Kakda	M	GGG	Kyushu University, Japan	Internship	28-11-2023→10-12-2023	JASSO Scholarship
34	RAN Chanrithi Sak	M	GGG	Kyushu University, Japan	Internship	28-11-2023 →10- Dec-2023	JASSO Scholarship
35	SOKLY Oudom	M	GGG	Kyushu University, Japan	Internship	28-11- 2023 →10-12-2023	JASSO Scholarship
36	SRI Hengleap	M	GGG	Kanazawa University, Japan	One semester excahnge program	26-09-2023→15-03-2024	JASSO Scholarship
37	TITH Nalalin	F	GGG	Universiti Sains Malaysia	One semester exchange program	15-03-24→15-08-24	Cambodian Governmenr
38	VAN Savith	M	GGG	IPTC- Society of Petroleum Engineers (SPE), Kingdom of Saudi Arabia	Attending International Conference	10→14-02-2024	IPTC- Society of Petroleum Engineers (SPE)
39	EM Hengly	M	GIC	National Chung Cheng University, Taiwan	Computer vision applications based on deep learning techniques	01-03-2023→20-06-2023	CCU Internship program
40	YANN Sovanvichea	M	GIC	National Chung Cheng University, Taiwan	6DoF (3D position and 3D Euler angles) object pose estimation from a single RGB image	01-03-2023→20-06-2023	CCU Internship program
41	CHHOUNG Yoeng	M	GRU	Institute of Urban Agriculture, Chinese Academy of Agricultural Sciences	Intership + Exchange program	26-02-2024→ 29-06-2024	IUA,CAAS Exchange Scholarship
42	LAO Chanrithy	F	GRU	Sorbonne Université	PhD student	05-02-2024→31-07-2024	BGF and ECOTERM
43	LOK Lyheng	M	GRU	Guangxi Polytechnic of Construction	Competition and Exchange Program	20-05-2024→ 24-05-2024	Guangxi Polytechnic of Construction Agency
44	MIN Tongyo	M	GRU	Institute of Urban Agriculture, Chinese Academic Of Agricultural Science (IUA)	Internship + Exchange Program	26-02-2024→ 29-06-2025	IUA,CAAS Exchange Scholarship
45	NEAK Pichbrathna	M	GRU	Guangxi Polytechnic of Construction	Competition + Exchange Program	20-05-2024→ 24-05-2024	Guangxi Polytechnic of Construction Agency
46	POV SOTHEANITH	F	GRU	Kanazawa University, Japan	One semester excahnge program	25-09-2023→05-06-2024	JASSO Scholarship

47	TANG UYTY	M	GRU	Kanazawa University, Japan	One semester exchange program	25-09-2023 →5-06-2024	JASSO Scholarship
48	VISITH Socheata	F	GRU	Institute of Urban Agriculture, Chinese Academic Of Agricultural Science (IUA)	Internship + Exchange Program	26-02-2024→29-06-2024	IUA,CAAS Exchange Scholarship
49	BUN Menghorng	M	GS	INP Toulouse	Study Doctoral	30-10-2023 →N/A	HEIP
50	CHAN Ratboren	M	GS	Université Paul Sabatier Toulouse III	Study Doctoral	30-10-2023 →N/A	BGF
51	CHIN Chan Daraly	M	GS	INP Toulouse	Study Doctoral	30-10-2023 →N/A	BGF-ITC
52	CHIN Lyda	F	GS	Montpellier SupAgro	Study Doctoral	30-10-2023 →N/A	BGF-ITC/HEIP
53	HENG Chhenglang	F	GS	Université de Montpellier	Study Doctoral	30-10-2023 →N/A	BGF
54	HENG Kimhong	M	GS	Université de Rennes 1	Study Doctoral	30-10-2023 →N/A	HEIP
55	LAY Sovannmony	M	GS	Université catholique de Louvain	Study Doctoral	30-Oct-2023 →N/A	ARES-CAMBOFISH
56	MOM Vattana	F	GS	Université de Liège	Study Doctoral	30-10-2023 →N/A	ARES-CAMBOFISH
57	PHAL Sivchheng	F	GS	INSA Toulouse	Study Doctoral	30-10-2023 →N/A	BGF-ITC
58	SOK Sereyvathana	M	GS	l'ENSCR	Study Doctoral	30-10-2023 →N/A	BGF
59	SOM Chansamng	M	GS	INSA Rennes	Study Doctoral	30-10-2023 →N/A	BGF
60	TAING Kimnenh	F	GS	Université de Liège	Study Doctoral	30-10-2023 →N/A	ARES-COMBOdIA
61	THANH Channmuny	F	GS	Montpellier SupAgro	Study Doctoral	30-10-2023 →N/A	BGF-ITC/HEIP
62	CHIM Chakrya	F	M-ETM	Grenoble INP- Ense3, UGA	Double Degree Program	26-08-2024→ 01-09-2024	EDC-AFD-EU Scholarship
63	NAING Bora	M	M-ETM	Grenoble INP- Ense3, UGA	Double Degree Program	26-08-2024→ 01-09-2025	EDC-AFD-EU Scholarship
64	OEUN Sothea	M	M-ETM	Grenoble INP- Ense3, UGA	Double Degree Program	26-08-2024→ 01-09-2025	EDC-AFD-EU Scholarship
65	SARY Monychot	M	M-ETM	Grenoble INP- Ense3, UGA	Double Degree Program	26-08-2024→ 01-09-2025	EDC-AFD-EU Scholarship
66	SRY Vanda	M	M-ETM	Grenoble INP- Ense3, UGA	Double Degree Program	26-08-2024→01-09-2025	EDC-AFD-EU Scholarship

67	KONG Aruntitya	M	M-MSE	INSA Rennes	Intership Double degree program	29-01-2024→ 01-07-2024	Erasmus+ Program
68	MENG Senghor	M	M-MSE	INSA Rennes	Intership Double degree program	29-01-2024→ 01-07-2024	Erasmus+ Program
69	POR Somethea	M	M-MSE	INSA Rennes	Intership Double degree program	29-01-2024→ 01-07-2024	Erasmus+ Program
70	RITH Borey	M	M-MSE	INSA Rennes	Intership Double degree program	29-01-2024→ 01-07-2024	Erasmus+ Program
71	VISETH SETHA	M	M-MSE	INSA Rennes	Intership Double degree program	29-01-2024→ 01-07-2024	Erasmus+ Program

Annex 15. Dispatch Professor at ITC (2023-2024).

No	Nom et prénom	Université d'origine	Matière enseignée	Date	Départ. d'accueil
1	Assoc. Prof. Dr. Hareyani ZABIDI	Universiti Sains Malaysia	Mineralogy	21-09-2023→25-09-2023	GGG
2	Assoc. Prof. Falan SRISURIYACHAI	Chulalongkorn University, Thailand	Petroleum Engineering	20-09-2023→25-09-2023	GGG
3	Assoc. Prof. Jillian Aira GABO-RATIO	University of the Philippines	Economics Geology	20-09-2023→25-09-2023	GGG
4	Assoc. Prof. Yonezu KOTARO	Kyushu University, Japan	Economics Geology	19-09-2023→21-09-2023	GGG
5	Dr. Jirapoom BUDTHO	King Mongkut's Institute of technology Ladkrabang (KMITL), Thailand	Remote Sensing	01-02-2023→02-02-2023	GGG
6	Dr. Joe DEUSCHER	CIRAD, France	Training ITC lecturers on Sensory Evalaution	26-09-2024→04-10-2024	GCA
7	Dr. Ku Esyra Hani KU ISHAK	Universiti Sains Malaysia	Mineralogy	21-09-2023→25-09-2023	GGG
8	Dr. Lin Min MIN MYINT	King Mongkut's Institute of technology Ladkrabang (KMITL), Thailand	Remote Sensing	01-02-2024→02-02-2024	GGG
9	Dr. Muhammad Irman Khalif Bin Ahmad Aminuddin	Universiti Sains Malaysia	Mineralogy	21-09-2023→25-09-2023	GGG
10	Dr. Nichole Anthony D. Pacle	Caraga State University, Philippines	Economics Geology	19-09-2023→21-09-2023	GGG
11	Dr. Nurul'Ain JABIT	Universiti Sains Malaysia	Mineralogy	21-09-2023→25-09-2023	GGG
12	Dr. Phimmasone THAMMAVONGSY	NOUL, Laos	Remote Sensing	01-02-2024→02-02-2024	GGG
13	Dr. Somkit SOPHAN	King Mongkut's Institute of technology Ladkrabang (KMITL), Thailand	Remote Sensing	01-02-2024→02-02-2024	GGG
14	Dr. Sopark SONWAI	Silpakorn University, Thailand	Visiting GCA for a collaboration	45149	GCA
15	Dr. Zakaria ENDUT	Universiti Sains Malaysia	Mineralogy	21-09-2023→25-09-2023	GGG
16	M. François Chassagne	PHARMADEV et IRD	Ethnopharmacologie	17-21/06/2024	GRU

17	M. Jean-Dominique Meunier	Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement (CEREGE)	Environnement Durable	17-21/06/2024	GRU
18	M. Jean-Emmanuel ROUGIER	LISODE	Science sociales	13-02-2024→15-02-2024	GRU
19	M. Nicolas Bottinelli	IRD	Écologie du sol	17-21/06/2024	GRU
20	M. Olivier GRANIER	Lycée j.Decour(Paris)	Physique	16-10-2024→21-10-2023	TC
21	M. Pascal JOUQUET	IRD	Écologie du sol	10-2023	GRU
22	M. Pascal PODWOJEWSKI	IRD	Science du sol	20-10-2023→20-12-2023	GRU
23	M. Philippe BARLIER	Lycée Montesquieu (Le Mans)	Maths	16-21/10/23	TC
24	M. Rainer Zaiss	IRD	Remote Sensing	17-21/06/2024	GRU
25	M. Ruben Puga Freitas	Université Paris-Est Créteil Val de Marne - Université Paris 12 (UPEC)	Biologie végétale	17-21/06/2024	GRU
26	M. Sébastien Marchand	Centre d'Études et de Recherches sur le Développement International (CERDI)	Sciences économiques	17-21/06/2024	GRU
27	Mme. Catherine Keller	Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement (CEREGE)	Environnement Durable	17-21/06/2024	GRU
28	Mme. Eve Bureau-Point	Centre Norbert Elias (CNE)	Science Sociales	17-21/06/2024	GRU
29	Mme. Martine Audibert	Centre d'Études et de Recherches sur le Développement International (CERDI)	Sciences économiques	17-21/06/2024	GRU
30	Ms. Nanako EBATA	JICA Headquarter, Japan	Human resources development	20-09-2023→25-09-2023	GGG
31	Prof. Bertrand François	Uliege	Roads	22-31/05/24	GCI
32	Prof. Christophe BUGAUD	CIRAD, France	Training ITC lecturers on Sensory Evaluation	26-09-2023→04-10-2023	GCA

33	Prof. Jacques MERCADIER	École Nationale Supérieure en Génie des Technologies Industrielles (ENSGTI)	Sub and Super-Critical Water Oxidation of Wastewater	02-05-2024→03-05-2024	GRU
34	Prof. Jean PAPEE	Total Professor Associate	Deliver the Seminar on Climate Change and Energy transitions	18-05-2024→22-05-2024	GGG
35	Prof. Jehan-Eric BLUMEREAU	Total Professor Associate	Deliver the Seminar on Oil and Gas Exploration and Production Contract	20-05-2024→24-05-2024	GGG
36	Prof. Marc DESCLOITRES	IRD	Geophysics	22-01-2024→23-01-2024	GRU
37	Prof. Melissa LENCZEWSKI	Northern Illinois University	Contaminant hydrogeologist	08-10-2023→14-10-2023	GRU
38	Prof. Naoko OKIBE	Kyushu University, Japan	Mineral Processing	20-09-2023→25-09-2023	GGG
39	Prof. Pierre Gérard	ULB	Roads	22-31/05/24	GCI
40	Prof. Pierre Leclercq	ULiege	Architecture	25-03-2024	GAR
41	Prof. Pornchai SUPNITHI	King Mongkut's Institute of technology Ladkrabang (KMITL), Thailand	Remote Sensing	01-02-2023→02-02-2023	GGG
42	Prof. Samia Ben Rajeb	ULB	Architecture	25-03-2024	GAR
43	Prof. Sopark SONWAI	Silpakorn University, Thailand	Visiting GCA for a collaboration	08-11-2023	GCA
44	Prof. Sylvain GIRAUDET	ENSCR, FRANCE	Advance Water Treatment Process	23-10-2024→04-11-2024	GRU
45	Prof. Tharakan Josesh	ULB	Roads	22-31/05/24	GCI
46	Prof. Tsuji TAKESHI	The University of Tokyo, Japan	Geophysics	20-09-2023→24-09-2023	GGG
47	Prof. Uchida ESTO	Waseda University, Japan	Geoheritage	20-09-2023→24-09-2023	GGG
48	Prof. Watanabe KOICHIRO	JICA Headquarter, Japan	Geology	20-09-2023→24-09-2023	GGG

Annex 16. Research Topics in 2023-2024 of ETM Unit.

No.	Project/Research Topic	Name of Researcher	Fund	Budget 2023-2024 (USD)	Total budget (USD)	Period	Objectives	Outputs
1	Applied geophysics for investigating hydrocarbon potential and depositional environment of sediments at onshore prospect, southern Cambodia	Dr. Or Chanmoly Dr. Eng Chandoeun Dr. Kret Kakda Mrs. Sio Sreymean Mr. Kan Rithy Ms. Heng Mouy Yi	HEIP	54,400	855,644	2021-2023	Intergrade geophysics and geological data for investigating the geological structures, the hydrocarbon system and depositional environment of sediments in Southern Cambodia	2 PhDs candidate, facility building-resistivity and extend collaboration with petroleum company
2	Development of a Virtual Cambodian Power System- Towards an Innovation Micro-Grid in Cambodia	Dr. Vai Vannak Ms. Eng Samphors Dr. Bun Long Mr. Eth Oudaya Mr. Khon Kimsrornn Mr. Chhith Chhlonh	HEIP	24,824	390,800	2020-2024	1) To develop tools for distribution system architectures 2) To develop tools for microgrid architectures 3) To develop tools for self-healing operation of distribution systems and microgrids 4) To set-up a testbed for distribution system and microgrid	1) Upgrade three ITC staffs from master to Ph.D., 2) At least four master students will graduate 3) At least five international peer-reviewed journals will be published 4) At least ten international peer-reviewed conferences will be published 5) A testbed platform at ITC
3	Integration of Landsat-8, ASTER, and Sentinel-2 for mapping of mineral prospective, hydrothermal alteration and geological structures for porphyry copper and epithermal gold deposits in the north Cambodia.	Dr. Kret Kakda Dr. Seang Sirisokha Dr. Kong Sitha Dr. ENG Chandeoun Dr. Boeut Sophea Dr. Boeut Sophea	JICA-LBE	10,279	29,389	2021-2023	1. To analyze band ratios and Principal Component Analysis (PCA) using Sentinel-2, Landsat-8, and ASTER datasets for delineating of hydrothermal alteration mineral 2. To delineate mineral prospective zones using weight of evidence method	- Exploration of potential mineral deposits in Cambodia using remote-sensing datasets - Journal publications, research cooperation with local and international companies and Universities - Capacity building for students and researchers mining company and train students to work and do research

							3. To verify remote sensing results by laboratory analysis and field observation	
4	Investigation the production potential of the Cambodian offshore reservoir considering effects of phase behavior and rock-fluid interaction	Dr. Kret Kakda Assoc. Prof. Dr. Or Chanmoly Assoc. Prof. Dr. Bun Kimngun Dr. Sreu Tola Dr. Eng Chandoeun Mr. Neak Kimhak	HEIP	1,3000	363,163	2021-2023	Integrate phase behavior, rock-fluid interaction and numerical simulation to determine the production potential of Cambodian offshore reservoir	Facility building-PVT equipment, extend collaboration with ministry and private company
5	Planning and Operation of Active Distribution Systems	Dr. Vai Vannak Ms. Eng Samphors Mr. Chhith Chhlonh Dr. Bun Long	JICA-LBE	18,000	30,000	2021-2023	1) To improve the algorithms of optimal phase connection, reconfiguration, and restoration 2) To develop algorithms for improving the unbalanced system 3) To develop algorithms for the quality and reliability of services through fault location and isolation 4) To develop a small scale prototype	1) Four undergraduate students will graduate under this project 2) Three international peer-reviewed journal will be published 3) Seven international peer-reviewed conferences will be published 4) GUI of an active distribution system will be developed 5) Small scale prototype of the active distribution system
6	Quality Assurance of Concrete Pile Integrity Soil Properties Investigation in Phnom Penh City using Seismic and Electrical Resistivity Tomography Approaches	Dr. Eng Chandoeun Dr. Ngo Ichhuy Dr. Kret Kakda Dr. Boeut Sophea Dr. Mao Pisith Ms. Heng Muoy Yi	HEIP	29,410	240,960	2021-2023	Integrate seismic and electrical resistivity methods to qualify concrete pile integrity Progress/ status: Start in 01/2021	Facility building-seismic and resistivity equipment, extend collaboration and private company

7	Study on impact of heat stress to human productivity and economic in Cambodia	Dr. Kinnalesh Vongchanh Dr. Sarin Chan Mr. Latin Heang	CCCA3	57,575	149,995	2020-2023	<ol style="list-style-type: none"> 1. Build human resources in the heat stress field 2. Investigate the impacts of heat stress on productivity 3. Develop an economic model on the impact of heat stress 4. Build evidence on the impacts of heat stress on productivity in three selected sectors including the construction, garment, and education sectors. 5. Identify the work rest schedule for the construction worker. 	<ol style="list-style-type: none"> 1. Min. 2 international journal 2. 2 Ph.D. candidates, 1 master student 3. Establish the measurement tools/devices in Cambodia for investigation of heat stress 4. Create local experts on economic forecasting for heat stress 5. Introduce research area on heat stress to Cambodia. 6. Enhance and strengthen activities between ITC and MoE. 7. Expand the research and academic collaboration with research partners 8. Publications 9. Collaboration with Local and international institution 10. Collaboration with garment, construction, and education sectors
8	Energy Manager and auditor Training Program	Dr. Chan Sarin (PI) Dr. Kinnalesh Vongchanh Dr. Kimsornn Mr. Latin Heang	UNDP	19,640	19,640	19 Mar 23 to Nov 2023	<ul style="list-style-type: none"> -Prepare training materials -Set up the trainer team -Host the training of energy manager 	<ul style="list-style-type: none"> - Create CEMAT (Cambodia Energy Manager and Auditor Training) program. - Hosted certified energy manager training - Hosted certified energy auditor training - CEM & CEA training materials - Launching ceremony of CEMAT - Poster, brochures of CEMAT - Attended exhibition - Syllabus of CEA and CEM
9	Optimal Fault location Isolation, and restoration procedure for LV microgrids.	Mr. Chhloh Chhith Dr. VAI Vannak Prof. RAISON Bertrand	French Government Scholarship (BGF)	19,650	28,584	2021-2024	<ul style="list-style-type: none"> • To develop an algorithm for microgrid topologies planning with 	<ul style="list-style-type: none"> - 2 international journals

		Assoc. Prof. ALVAREZ-HERAULT Marie-Cécile					<p>various options (i.e. AC, AC/DC, and DC).</p> <ul style="list-style-type: none"> To develop an algorithm to make the system self-healing operation include fault location, insulation, and restoration (FLIR) integrate with PV. 	- 3 international conferences (1 published, 2 writing)
10	Accelerating Digital Transformation for Higher Education Institutions in Southeast Asia (DX.SEA)	Dr. OR Chanmoly Mr. LAY Heng Dr. VALY Dona	Erasmus+	N/A	42,534	2023-2025	<ul style="list-style-type: none"> - developing digital campus blueprint - enhance digital leadership competencies - improve the quality of online learning and teaching - improve methodologies and pedagogical approaches for digital learning 	- The primary deliverables of this project are a digital transformation blueprint, training materials, and Train for Trainers (ToT) for developing campus ICT infrastructure and a digital learning management system, designing digital content for digital education, and implementing effective digital teaching, evaluation, and quality assurance
11	Optimal energy-management system in smart-building	Dr. KHON Kimsornn Mr. SORN Darong	JICA-LBE	14,149	14,149	2023-2024	- TO develop an algorithm for the	1) Two undergraduate students will graduate under this project 2) Three

		Mrs. ENG Samphors Ms. MIN Taingliv Mr. LIM Phing					energy efficiency in the smart building - To develop a prototype of the energy management in the smart building tools	international peer-reviewed conferences will be published
12	The Optimization of Algae Cultivation for Biofuel Production in Cambodia	Dr. OR Chanmoly Mr. HENG Ratha Dr. ENG Chandoeun Dr. YO EUN Sereyvath Ms. PECH Sopheap Ms. SIO Sreymean Mr. KONG Sela	JICA-LBE	14,985	14,985	2023-2024	- To identify the ultimate conditions suitable for Cambodia and types for cultivating algae toward the biofuel production. - To extract the biofuel from the cultivated algae	1) Two bachelor students are graduated 2) Two conference papers are submitted 3) One article journals submission/publication 4) Three students (4th -years students) will use the project data to write the internship report

Annex 17. Research Topics in 2023-2024 of FTN Unit.

No.	Project/Research Topic	Name of Researchers	Fund	Budget (2023-2024) (USD)	Total budget (USD)	Period	Objectives	Outputs
1	Biotechnology for Integrated Pest Management towards pesticide reduction in Cambodia	Dr. SUONG Malyna Ms. HENG Soukim Ms. SIENG Sreyvich Dr. YOEUN Sereyvath Dr. PHAT Chanvorleak	Government of Cambodia (HEIP)	3,999	106,600	2019-2023	To rescue all Cambodian crops from pest and diseases by integrating biotechnology into IPM approach	<ul style="list-style-type: none"> - 1 Lab established - 1 indexed publication - 1 national publication - 6 proceedings and conferences - 20 undergraduate students, 2 master students, 1 PhD student - 1 research manual
2	Valorization of high-value dry food products (agricultural products including herbal and spices) and other by-products in Cambodia	Dr. IN Sokneang Dr. PHAT Chanvorleak Ms. Heng Soukim Dr. KHOEURN Kimleang	Government of Cambodia (HEIP)	2,891	658,324	2019-2023	To set up the drying excellence center (the pilot scale of drying processing center) of agricultural products, by-products, to develop the capacity building of human resource on drying technology (including technology transfer and industrial collaboration) for agricultural products in Cambodia	<ul style="list-style-type: none"> - Drying excellence center - Lab equipment - Graduation of undergraduate and graduate students - Staff capacity building - Publications - Abstract and/or extended abstract to international conference/symposium
3	Improvement and development of rice-based products toward the growth of SMEs/Industries in Cambodia	Dr. MITH Hasika Ms. MOM Vattana Ms. CHIN Lyda	Government of Cambodia (HEIP)	4,723	800,527	2019-2023	To set up a rice-based product development platform, improving the quality of rice-based products locally produced and available in markets and to diversify rice-based products, human resource development, and enhancing collaborative research between university and SMEs	<ul style="list-style-type: none"> - Center for training of rice-based products - Lab equipment - Graduation of undergraduate and graduate students - Staff capacity building - Publications - Abstract and/or extended abstract to international conference/symposium
4	Development of Cambodian Soy Sauce by Fermentation Method	Dr. TAN Reasmey Mr. LY Luka	Government of Cambodia (HEIP)	4,489	90,000	2019-2023	To produce Cambodian soy sauce by fermentation method with good quality and transfer the developed technology of soy sauce to the private sector	<ul style="list-style-type: none"> - Lab equipment - Graduation of undergraduate and graduate students - Staff capacity building - Publications

								- Abstract and/or extended abstract to international conference/symposiums
5	Development of Cooking Oil Processes for Commercialization	Mr. KONG Sela Ms. NAT Yukleav	Government of Cambodia (HEIP)	6,886	200,000	2021-2023	To develop cooking oil processes in order to produce cooking oils with good quality, to transfer the technology to private sectors for commercialization, to develop cooking oil research platform and to develop human resource in cooking oil processing	- Graduation of undergraduate and graduate students - One manual of cooking oil research will be done including hierarchy diagram - Staff capacity building - Oil processing Research platform at ITC - Collaboration with university partner - Publications - National and international conferences
6	Improvement and development of fish and meat products for better preservation using innovative technology	Dr. PENG Chanthol Dr. SROY Sengly Dr. MITH Hasika Ms. THANH Channmuny Mr. NGET Sovanmony Ms. DOEURN Seyha	Government of Cambodia (HEIP)	6,760	210,660	2021-2023	To improve the quality, and add-value to the existing fish and meat products which are available on Cambodian market by applying different preservation technique	<ul style="list-style-type: none"> • 3 prototypes of fish products such as Nem Trey, Fish sausage and Fish cake were made • 22 SMEs were trained in knowledge-sharing workshop of the project • Technology transfer were completed with one SME who is the project partner • 1 PhD student, 1 Master's student, 14 Engineering and Technical students graduated • 3 indexed publications • 2 local peer-review papers • 6 proceedings in National and International conferences
7	Valorization of agricultural by-products in Cambodia through extractions and	Dr. HOUNG Peany Mr. LAY Sovannmony	Government of Cambodia (HEIP)	8,872	199,960	2021-2023	To identify and screen essential oils/bioactive compounds in extracts obtained from varieties of Cambodia agricultural food	- Database of essential oils/bioactive compounds in agricultural by-products - Lab equipment

	formulations of essential oils and bioactive compounds						products and wastes; then evaluate its applicability to be used as aromatherapy, food preservatives and active ingredients and to promote institutional Chemical Engineering Field, through university-SME technology transfers and strengthen university-university research collaborations	<ul style="list-style-type: none"> - Graduation of undergraduate and graduate students - Staff capacity building - Publications - Abstract and/or extended abstract to international conference/symposiums
8	Agroecology and Safe Food System Transitions (ASSET)	Dr. HOUNG Peany	EU/AFD and GRET	111,348	231,000	2020-2025	To make food and agricultural systems in Southeast Asia more sustainable, safer and inclusive, through harnessing the potential of agroecology to transform them	<ul style="list-style-type: none"> - Training/staff capacity building - Staff mobility - Strengthening network/collaboration
9	Reducing Foodborne Pathogen Contamination of Vegetables in Cambodia: Innovative Research, Targeted Interventions, and Impactful, Cambodian-Led Engagement	Dr. PENG Chanthol Mrs. CHANTO Monychot Tepy Mr. HENG Oudam	USAID	25,000	130000	2020-2024	To reduce the prevalence and incidence of foodborne pathogen contamination of vegetables produced and sold in Cambodia	<ul style="list-style-type: none"> - Strengthen collaboration with local and international research institute - Capacity building of researcher - Human resource development through involvement of Engineering and Master students in the project
10	ASEAN Network for Green Entrepreneurship and Leadership/ANGEL	Dr. YOEUN Sereyvath Ms. NET Marinich	Eramus +	50,685	60,000	2021-2024	Green entrepreneurship and leadership	<ul style="list-style-type: none"> - IT equipment - Training/staff capacity building - Staff mobility - Strengthening network/collaboration
11	Impact of initial composition and processing techniques on aromatic quality of mango	Ms. CHIN Lyda Dr. MITH Hasika Dr. HOR Sivmey	BGF & MoEYS	NA	NA	2021-2024	To identify the biochemical composition (volatile compounds and aroma precursors) of three contrasted cultivars at three ripening stages before and after each processing (drying, puree, and vacuum frying)	<ul style="list-style-type: none"> - Staff capacity upgrade - Journal publications

12	Development of high nutritional value farmed fish and safe processed products (smoked and fermented fish) in Cambodia	Dr. MITH Hasika Dr. PHAT Chanvorleak Dr. KHOEUN Kimleang Dr. SROY Sengly Ms. MOM Vattana Mr. LAY Sovannmony	ARES	14,900	200,000	2022-2027	Contribute to the development of sustainable aquaculture value chains in Cambodia and to improve food safety and nutritional quality of marketed farmed and caught fish products in Cambodia	- a strategy to empower a Cambodian sustainable agroindustrial value chain has been implemented and tested at a pilot-scale on fish value chain through the creation of a network of scientists and stakeholders working together with relevant technologies and approaches - Graduation of undergraduate and graduate students (2 Ph.D students) - Staff capacity building
13	HEALTH OF PLANTS IN THEIR SOCIO-ECOLOGICAL ECOSYSTEM (Plant Health)	Dr. SUONG Malyna Dr. MOULIN Lionel Dr. BELLAFFIORE Stéphane	Agropolis Fondation	10,000	30,000	2022-2024	To explore the root microbiome of rice in Cambodia and exploit root-associated bacteria as biofertilizers for rice plant	-Joint indexed publications - Staff capacity building - Equipment and consumable
14	Deciphering the function of the plant parasitic nematode microbiome in suppressive soils (DEPPAS)	Dr. SUONG Malyna Dr. BELLAFFIORE Stéphane Mr. BARBIER Michel (PhD student)		15,100	15,100	2022-2024	The overall objective is to decipher the plurality of interactions between a soil pathogen, the plant and soil microorganisms in different ecosystems with the aim of searching for microorganisms that may play a role in biocontrol	- Joint Indexed publications with ITC affiliation - Consumables and lab supports - Networking for further research proposals
15	Improving fresh-water fish powder production for versatile use in Cambodian diets	Dr. IN Sokneang Dr. SROY Sengly Ms. HOEUN Seanghai	CAPFish-UNIDO-EU	20,000	20,000	2023-2024	The development of fish processing solutions with the aim to improve the nutritional performance and efficiency of fish processing technologies, including relevant food safety aspects. This project will therefore contribute to the further development of a sustainable freshwater fish-based food system in Cambodia	- Graduation of undergraduate students - Lab equipment - Staff capacity building - SME collaboration - International conference

16	Improvement of Dried Fish Quality through Drying Technology Development	Dr. HOUNG Peany Dr. EK Pichmony	CAPFish-UNIDO-EU	20,000	20,000	2023-2024	To compare different drying technologies and identify the one which is suitable for obtaining good quality of dried fish products with an acceptable production cost in Cambodia context	<ul style="list-style-type: none"> - Graduation of undergraduate students - Lab equipment - Staff capacity building - SME collaboration
17	Development of Instant Fish Soups for Commercialization	Mr. KONG Sela Dr. TAN Reasmey	CAPFish-UNIDO-EU	20,000	20,000	2023-2024	To innovate 3 different instant fish soup products that will be formulated from our Khmer traditional dishes, such as Somlor Broheu Trey, instant Ngam Ngov Trey, and Khor Trey	<ul style="list-style-type: none"> - Graduation of undergraduate students - Lab equipment - Staff capacity building - SME collaboration - Internation conference
18	Development of nutrient-dense waffle rolls for children by incorporating Cambodian freshwater fish powder	Dr. EK Pichmony Dr. SROY Sengly	CAPFish-UNIDO-EU	20,000	20,000	2023-2024	To focus on the development of the waffle rolls containing fish powders from two fish species	<ul style="list-style-type: none"> - Graduation of undergraduate and graduate students - Lab equipment - Staff capacity building - SME collaboration
19	Shelf life improvement and development of fish Jerky products	Dr. MORM Elen Dr. SROY Sengly Dr. MITH Hasika	CAPFish-UNIDO-EU	10,000	10,000	2023-2024	To improve the shelf life of dry fish Jerky and to develop a ready-to-eat fish Jerky product	<ul style="list-style-type: none"> - Graduation of undergraduate students - Staff capacity building - SME collaboration
20	Production of Organic-mineral Fertilizers from Local Raw Materials	Dr. YOEUN Sereyvath	MoEYS	20,000	20,000	2023-2024	<ol style="list-style-type: none"> 1. Optimization and production of potassium humate from local raw materials (brown coal and peat) by adapting the cavitation technology. 2. Formulation and production of organic-mineral fertilizers for Cambodian agriculture based on humates. 	<ul style="list-style-type: none"> -Fertilizer analysis methods are developed -Graduation of undergraduate students - Staff capacity building -Scientific manuscript
21	Assessment of air quality and impact in potential areas in Cambodia	Mrs. SIENG Sreyvich	JICA/JST	NA	NA	2023-2026	To monitor the air pollutants emitted from various sources in Cambodia and their impact on public health and environment	<ul style="list-style-type: none"> - Staff capacity upgrade - Journal publications

22	Development of oyster sauce from Cambodian oysters and green mussels for commercialization	Dr. TAN Reasmey	CAPFish-UNIDO-EU	15,000	15,000	2023-2024	To develop oyster sauce from Cambodian oysters and green mussels for commercialization.	<ul style="list-style-type: none"> - Reduce the cost of raw material as well as the final product by mixing green mussels with oysters as green mussels are very much cheaper than oysters; - Oyster sauce made by using Cambodian fresh oysters and green mussels is first produced in Cambodia instead of importing ingredients from abroad to make oyster sauce; - Provide the technology transfer to Phnom Pich BunKhea Fish Sauce Enterprise for commercialization in order to promote the economic growth of fishery sector in Cambodia; - Oyster sauce produced can replace some commercial oyster sauces and sell in the supermarkets; - Research members and students gain the knowledge in doing research on fishery products
23	Health risk assessment and quality improvement of Cambodian smoked fish	Dr. MITH Hasika	CAPFish-UNIDO-EU	14,900	14,900	2023-2024	<ol style="list-style-type: none"> 1. Survey for health risk assessment & current practice 2. Develop analytical method for PAHs analysis 3. Assess of PAHs contaminants in smoked fish 4. Propose modified processing technique to reduce PAHs levels 	<ul style="list-style-type: none"> - Database of smoked fish consumption behaviour of different categories of consumer - Database of common practice and perception of local processors - Database of health risk assessment of carcinogenic PAHs (PAHs level) - Standard method for PAHs analysis

								<ul style="list-style-type: none"> - Updated new method/technique to enhance the quality of smoked fish - Graduation of undergraduate students - Scientific manuscript - SME collaboration
24	Improvement on quality, safety, and shelf-life (including packaging) of fermented Pangasius fish for accessing to new markets	Dr. IN Sokneang Ms. HOEUN Seanghai	CAPFish-UNIDO-EU	7,220	7,220	2023-2024	<ol style="list-style-type: none"> 1. Improvement fermented Pangasius fish processing by using different food additives. 2. Study on different packaging such as bottle, plastic bottle, seal bag packaged and vacuum packaged to extension of shelf-life of the fermented Pangasius fish product and improvement of the quality stability. 3. Produce quality control guideline for fermented Pangasius fish processing 	<ul style="list-style-type: none"> - Hygienic Practice Guideline and check list (5S and GHP) for fermented Pangasius fish production - Improve Fermented Pangasius fish products ready for new market - Graduation of undergraduate students - Scientific manuscript - SME collaboration
25	Feasibility study of Siem Reap's Prahok toward Geographical Indication: History, technology, and quality	Dr. PENG Chanthol Mr. HENG Oudam	CAPFish-UNIDO-EU	15,000	15,000	2023-2024	To characterize Siem Reap's Prahok in relation to a geographical indication (GI) with a focus on three key criteria of GI, namely the history, technology, and quality of Prahok produced in Siem Reap and compare with that of Battambang's	<ul style="list-style-type: none"> - A report of Prahok's history, technology including process involve, raw material, etc. for the Siem Reap's Prahok that can be used for applying for GI certificate; - A scientific evidence based on the distinguished characteristic of Siem Reap's Prahok in term of microbial community involved in fermentation of the Prahok as may contribute to the differentiation of unique product quality of Siem Reap's Prahok compare to other provinces. - A conclusion on the characteristic of Siem Reap's Prahok for the GI certificate and recommendation.

								<ul style="list-style-type: none"> - Graduation of undergraduate students - SME collaboration
26	Study on the effect of steam conditions (temperature, time, and green mussel size) on the organoleptic quality and safety quality of green mussels	Dr. IN Sokneang Ms. HOEUN Seanghai	CAPFish-UNIDO-EU	10,723	10,723	2023-2024	To study on the different steaming conditions, especially temperature and time and green mussels' size to produce the steam green mussels with good quality (especially organoleptic quality) and safety	<ul style="list-style-type: none"> - Development proper steam conditions for green mussels to meet market standards - Guideline on steam procedure and storage conditions for green mussels - Graduation of undergraduate students - Scientific manuscript - SME collaboration
27	Laboratory of Excellence in co-engineering for Sustainable Agrosystems (acronym: LMI LEAD)	Dr. SUONG Malyna (Southern leader) Dr. MOULIN Lionel (Northern leader) Dr. BELLAFFIORE Stéphane Ms. OEUM Kakada, PhD student	IRD	20,000	70,000	2024-2028	<ul style="list-style-type: none"> - To promote the "One Health" approach for sustainable rice production in Cambodia - To develop alternative methods contributing to the reduction of environmental pollution (incl. pesticides) - To the efficiency of water management - To increase the use of agrobiodiversity approaches in rice production 	<ul style="list-style-type: none"> • 1 laboratory platform will be established at ITC • At least 2 international journal • At least 3 scientific events will be organized • Capacity building: at least 10 master students, at least 20 undergraduate student will be graduated from the project
28	Promoting integrated pest management and sustainability of the fragrant rice quality in Cambodia by valorization of native microbiota (acronym: Healthyrice- FEF)	Dr. SUONG Malyna (ITC leader) Dr. BELLAFFIORE Stéphane (IRD leader) Dr. SENG Vang (GDA/MAFF leader) Dr. TRAN Thi Anh-Dao (Coordinator from the Embassy of France)	Ministry of Europe and Foreign Affairs (via the Embassy of France)	140,000	280,000	2024-2025	To develop integrated pest management approaches for rice crops with the farmers in order to propose sustainable alternatives based on the use of plant microbiota to guarantee the quality of rice aroma	<ul style="list-style-type: none"> - 1 Net-house will be established at ITC - Support equipments - Capacity building and networking with policymakers, and relevant stakeholders
29	Soil-borne legacy and microbiota-mediated	Dr. SUONG Malyna (ITC leader)	Agropolis Fondation	10,000	10,000	2024	<ul style="list-style-type: none"> • To understand the influence of a plant's phytosanitary 	<ul style="list-style-type: none"> • At least 1 international journal

	disease resistance in rice-based systems in Cambodia (acronym: MiMeDiR)	Dr. MOULIN Lionel (IRD leader) Ms. JOBERT Léa (PhD student)					status on its root microbiome, and to search for a specific signature of the plant's "good health" <ul style="list-style-type: none"> To identify the effects of "soil born legacy" on plant protection against pathogens to understand the links between microbial diversity, agronomic practices including the use of cover crops in the off-season, and the induction of better plant resistance to pathogens. 	<ul style="list-style-type: none"> Capacity building
30	Training in the use of molecular tools for diagnosis of rice diseases to support the transition towards integrated pest management (Acronym: DiagnoPathoRice)	Dr. SUONG Malyna (ITC leader) Dr. BELLAFFIORE Stéphane (IRD leader)	IRD	1,000	3,000	2024-2026	To train staffs/research students on the use of molecular tools to diagnosis the rice pathogens	<ul style="list-style-type: none"> Capacity building: Staffs and research students will be trained on molecular tools

Annex 18. Research Topics in 2023-2024 of MIT Unit.

No.	Project/Research Topic	Name of Researcher	Fund	Budget 2023-2024 (USD)	Total budget (USD)	Period	Objectives	Outputs
1	Ancient Manuscript Digitization and Indexation	Dr. VALY Dona	HEIP	17,870	61,535	2020-2023	To preserve cultural heritage embedded in Cambodian historical documents specifically the palm leaf manuscripts (Sleuk Rith)	A centralized system to store digitized palm leaf manuscripts with text search capability and publicly accessible
2	Plagiarism Detection System for Khmer Language	Dr. VALY Dona	LBE JICA	5,500	14,380	2022-2023	To develop a plagiarism detection framework to find duplicated texts and similarities of an input text in a document (document to be analyzed) compared to existing referenced documents	(1) Prototyped plagiarism detection system (2) Publications and student thesis
3	Toward Product Innovation via FabLab-ITC	Dr. PEC Rothna Mr. HEL Chanthan Mr. CHHORN Sopheaktra Mr. TEP Sovichea	HEIP	22,239	40,9313	2020-2024	(1) Electronic product development hub in Cambodia (2) Establishment of Digital-Control Fabrication Lab (FABLAB) at ITC and Research on smart farm to improve the productivity and management	Fablab at ITC, IoT devices, papers
4	Controller system for smart greenhouse	Mr. CHHORN Sopheaktra	HEIP + YG	6,000	10,000	2022-2023	Development of controller system for smart greenhouse application	A prototype of smart greenhouse controller (IoT control panel and Agrinode)
5	SOLAGEO's Internet of Energy	Mr. CHHORN Sopheaktra	HEIP + Trade without Border	2,500	5,000	2022-2023	Implement PayGo system for Energizer system	One prototype of hardware (Motherboard and daughterboard) that support PAYGO system
6	Development of omnidirectional semi-autonomous mobile robots for robot competition	Ms. OUM Sotheara	AI Farm	4,000	4,000	2022-2023	Producing omnidirectional mobile robots with (semi-) autonomous capabilities for educational purposes as well as joining ABU Robocon 2023.	Two semi-autonomous mobile robots will be developed

7	Development of Dual Axes Solar Tracker for a use on a UAV	Mr. KEO Chivorn	AOARD US Airforce	33,000	66,000	2022- 2023	(1) Implement State Estimation on Pixhawk controller by using UKF algorithm. (2) Evaluating performance of estimation. (3) Design and build the prototype of the 2-axes solar tracker which is mounted on movable support (Assume that the support is a multi-copter that has 3 rotational axes). (4) Experiment for model simulation validation. (5) Examine the net energy gain from the solar tracker	This project provides an experimental technique for a tracking system with movable support before a prototype of UAV with solar tracker will be built.
8	Design and Implementation of Health Data Collection Communication Protocol Using Physical-Layer Network Coding	Dr. NGET Rithea	LBE JICA	6,016	14,980	2022- 2023	Design a health data collection protocol based on physical-layer network coding and integrate the protocol on software defined radio	An international conference
9	Initiative towards electrical and electronic product testing and certification by EMC Laboratory	Dr. THOURN Kosorl Dr. SRENG Sokchenda Mr. KEAN Jeudy	HEIP	15,900	793,450	2019- 2024	(1) To set up an anechoic chamber at ITC. This chamber will be used for conducting research and development (R&D) on related EMC issues. (2) To analyze and design electromagnetic wave absorber using time domain techniques. (3) To study a new topology of reverberation chamber by using meta-material to improve spectral richness, reduce size and control direction of arrival.	(1) Chamber for EMC measurement at ITC (2) PhD and Master student thesis (3) Conference papers and Journal
10	Investigation of configuration issues related to SDN/NFV deployments	Mr. KUY Movsun	ARES	20,000	80,000	2020- 2024	(1) Experiment with NFV deployment on resource constrained datacenter. (2) Experiment with NFV deployment across federated networks.	Proposed solution to NFV deployment

11	Contribution to the optimal design, control and diagnostic of an e-tuk-tuk	Dr. KIM Bunthern Mr. BUN Menghorng	HEIP	31,660	376,500	2021-2024	(1) To retrofiting LPG tuk tuk to Solar electrical tuk tuk (2) To Select the best solutions that is less impact to the environment (air polution, land polution, etc.) (3) To Control speed and Torque AC machine with very cheap components. (4) To study the health of the battery and AC machine.	(1) PhD Student thesis (2) Conference paper and journal (3) Reused Solar Electric tuk tuk
12	The vehicle as an intelligent thing	Mr. CHIN Chan Daraly		N/A	N/A	2022-2025	Transforming the role of the vehicle into an active and intelligent actor on the road by exploiting these sensing, computing and communication capabilities for making the transportation people and goods safer, more efficient, greener and more entertaining.	A prototype system as tomorrow's vehicle system to perceive the accidents and to assist to avoid the accidents.
13	Smart farming for qualified vegetable using mechatronics techniques	Dr. CHRIN Phok Dr. KET Pinnara Dr. PEC Rothna Dr. VALY Dona Dr. KIM Bunthern	LBE JICA	0	15,000	2022-2023	The first objective of this project is to do comprehensive literature review as well as to perform site surveys in order to collect necessary information and data related to Cambodia vegetable farming style and behavior and the necessity for technological adoption. The second objective is to conceptualize and perform the detailed analysis of an appropriate automation system integrated with a smart system. The third objective is to develop and design a prototyping system which will be later installed for testing and validation. The prototype work involves farm-field construction, system setup, mechatronics design and	Conference and Student Thesis

							development, and information processing.	
14	Smart Mushroom Control System Development	Mr. TEP Sovichea Mr. CHHORN Sopheaktra Mr. PROEUNG Bunrong	iDE	10,000	82,000	2023-2024	<ul style="list-style-type: none"> - Setup mushroom houses at ITC for straw and oyster mushroom growing process - Set up a controlled environment for growing mushroom - Develop mushroom control system - Estimate the final specifications of sensing and control system including costs, capacity of control (i.e. ratio of # of system/ m³ or m²) 	
15	Integrated Decision Support System for Non-Communicable Ocular Diseases using Machine Intelligence	Dr. Wan Mimi Diyana Wan Zaki (UKM) Dr. VALY Dona	ASEAN IVO	5,948	22,016	2023-2024	<ol style="list-style-type: none"> 1. Development of the Decision Support System to screen anterior segment-related NCODs using APIs captured using smartphone cameras. 2. Development of machine intelligence models with the best classifier that provides the highest classification and prediction accuracies to detect identified anterior segment NCOD 3. Societal, health and well-being impact analysis with the underprivileged old folks and rural communities 	
16	Development of autonomous and semi-autonomous mobile robots to participate in Robocon 2024	Ms. OUM Sotheara Dr. SRANG Sarot	Takahashi Foundation	3,750	3,750	2023-2024	Producing omnidirectional mobile robots with (semi-) autonomous capabilities for educational purposes as well as joining ABU Robocon 2024.	

17	Development of APSARA-1 (2U CubeSat) Engineering Model	Dr. SRANG Sarot Mr. SREY Sokserey	MoEYS	14,000	60,000	2022-2024	To capture an image and transmit the data to the ground station.	
18	Integrating the Electrification and Smart Mechanisation of Two-Wheel Tractors with Precision Agriculture for Improved Productivity and Sustainability	Dr. SRANG Sarot Dr. VALY Dona	ACIAR	24,951	302,152	2024-2029	The aim of this project is to build the technological and socio-economic foundations for the design, manufacture, and field evaluation of electric and smart two-wheel tractors with precision agriculture capability, aiming to critically evaluate its potential to enhance the sustainability and productivity of Cambodian agriculture.	

Annex 19. Research Topics in 2023-2024 of MSS Unit.

No.	Project/Research Topic	Name of Researchers	Fund	Budget 2023-2024 (USD)	Total budget (USD)	Period	Objectives	Outputs
1	Evaluation technico-socio-économique des infrastructures routières au Cambodge	Dr. Phun Veng Kheang Dr. HAN Virak Dr. KAN Kuchvichea	ARES	25,000	80,000	2023 - 2025	Geological and geotechnical hazards linked to road infrastructure in Cambodia The quality of current road infrastructure in Cambodia The effect of the quality of road infrastructure on the socio-economic development of Cambodia	- Conference and journal publications - Master and PhD students graduated - Transfer knowledge - Policy recommendation
2	SATREPS Project: « Establishment of Risk Management Platform for Air Pollution in Cambodia, “Air sampling”	Mrs. AUN Srean	JST-JICA	1,500	4,500,000	2022 - 2027	Air sampling for: 1. Residential 2. Industry 3. Urban 4. Landfilled	- Journal publications, - Research equipment, - Capacity building for students and researchers
3	Development of Starch Based Film for Biodegradable Packaging Using Cambodian Cassava as Starch Source	Mrs. AUN Srean Mrs. Nat Yukliv	Takahashi	1,975	3,975	2023 - 2024	The purpose of this research study is to develop cassava starch-based film. Three different types of cassava starch based-film will be studied and compared its properties, which are native cassava starch film, acid hydrolysis of cassava starch film, and cassava starch/Poly Lactic Acid (PLA) film	- Publications - Students will graduate
4	Effect of The Addition of Natural Fibers on Shrinkage, Cracking Risk and Healing Capacity of Cementitious Materials	Mr. SOM Chansamng	BGF-MoEYS	8,019	32,076	2023 - 2026	- Valorize natural, local and renewable products and reduce the CO ₂ emissions comparing to the production of classic fibers - Produce self-healing capacity in cementitious materials by natural fibers as a reservoir	- PhD thesis - Publications

							<ul style="list-style-type: none"> - Limit crack and improve mechanical properties of cementitious materials - Reduce construction cost and building maintenance - Increase lifespan of structures 	
5	Managing the collaboration between architect, structure, and MEP in service of construction 4.0: ITC's workshop case	Ms. KETH Kannary	ARES	22,500	102,000	2020 - 2024	<p>The objective of this research:</p> <ul style="list-style-type: none"> -To understand the multi-disciplines collaboration (architecture, structural, and MEP) in Cambodia's current construction stage. -To identify the difference of the guideline/protocol BIM in the European context. -To propose the guideline/protocol BIM aligned with the Cambodian context. -To propose the integration of BIM training in Architectural engineering students in Cambodia. 	<ul style="list-style-type: none"> - PhD Thesis - Conferences - Journal papers
6	Green BIM - Analysis of BIM approach for designing a bioclimatic building	Ms. TAING Kimneh	ARES	22,500	102,000	2020 - 2024	<ul style="list-style-type: none"> - Find bioclimatic design to achieve thermal comfort in building specific in tropical region by using BIM as instrument - BIM to facilitate at the early stage of this design process to avoid certain conflicts between architect and engineer - Perspective of application of BIM and Bioclimatic design in AEC sector in Cambodia 	<ul style="list-style-type: none"> - PhD Thesis - Conferences - Journal papers
7	Sustainable building designs integrated life-cycle assessment (LCA), for best strategies to design the green residential building in Phnom Penh, Cambodia	Mr. LONG Makara	ARES – COMBOd IA Project	22,500	102,000	2021 - 2025	Analyze building LCA towards green residential building design by integrating the sustainability aspect to propose design strategy and guidelines to reduce the carbon footprint and overall environmental impact of building	<ul style="list-style-type: none"> - PhD Thesis - Conferences - Journal papers

8	Performance of Tyfo(R) FibrAnchor under axial load	Dr. PROK Narith Dr. RATH Sovann Sathya	Fyfe Asia	7,000	7,000	2023 - 2024	To investigate the pull-out behavior of FRP Anchor using experiment To investigate the pull-out behavior of FRP Anchor using simulation	- Publications - Students will graduate - Knowledge transfer
9	Energy-based design for buildings and Steel ring damper for seismic application	Dr. DOUNG Piseth	KMUTT	0	20,000	2020 - 2024	To develop a new steel damper To assess the cumulative seismic energy in buildings To develop an energy-based seismic design method for buildings	- Conference and journal publications - New seismic steel dampers are developed - New seismic-based design is developed
10	Investigation of Steel-Concrete Composite Structural Elements under Various Loadings	Dr. OEUNG Thaileng	TMU	15,500	15,500	2023 - 2024	- To investigate the smart high-performance concrete materials	- Conference and journal publications - Staff capacity building
11	ERASMUS KA-171 (French Partners): Capacity building on Materials Engineering	Dr. YOS Phanny	Erasmus			2023 - 2025	Capacity building of ITC staff in Materials engineering field	Staff capacity building
12	Initiative on the development of wind load for design of building structures in Cambodia	Dr. DOUNG Piseth Dr. HAN Virak	HEIP	2,146	50,200	2021 - 2023	1. Develop a reference wind speed map for the calculation of wind pressure on buildings and other low-rise structures via statistical wind analysis 2. Develop a calculation procedure for wind load. The development of a calculation procedure of wind load firstly aims for the application of the reference wind speed using the developed map along with an existing international calculation procedure (ASCE) for low-rise and regular building structures. 3. Establish the load combination for the structural analysis and design by providing reliable load combinations based on the	- Bachelor students graduated - Master student graduated - Conference and journal publications - Technical guidelines on wind load development in Cambodia

							developed calculation procedure for the wind load.	
13	Chemical Strengthening of Large-scale glass Pieces for Construction and Other Engineering Applications	Dr. HIN Raveth Dr. SEANG Chansopheak	HEIP	11,891	329,140	2020 - 2023	To study on a glass strengthening process, which is chemical tempering, and its applications.	<ul style="list-style-type: none"> - Working on tempering optimization, preparing a publication - Submitting for bidding, - Designing 1 of them, - Waiting until next 2 years to be started. <p>1 master and 1 phd students are registered at GS of ITC</p>
14	Performance of FRP Anchor Embedded into Concrete Cylinder	Dr. PROK Narith Dr. RATH Sovann Sathya	Fyfe Asia	0	7,000	2022 - 2023	<ul style="list-style-type: none"> - To investigate the pull-out behavior of FRP Anchor using experiment - To investigate the pull-out behavior of FRP Anchor using simulation 	<ul style="list-style-type: none"> - Publications - Students will graduate - Knowledge transfer
15	FSPI-R: metal-related skill and create link with archeo-metal activities in Cambodia	Dr. YOS Phanny	French Embassy	66680 €	66680 €	2023 - 2024	<ul style="list-style-type: none"> - support metal-related skills at MSE & GIM (&GCI a little) (characterisation, control and composition) - create links with archeo-metal activities in cambodia - keyword: Digital Image Correlation, Non Destructive Testing, SEM, EBSD, XRF, etc... 	<ul style="list-style-type: none"> - 9 ITC staffs mobility to French partners - 9 French staffs mobility to ITC - Link with archeo-metal
16	Experimental Identification of Hardening Behavior of G300 Steel Grade	Dr. CHHIT Saosometh	JICA-LBE	15000	15000	2023 - 2024	<ul style="list-style-type: none"> - Define another quality control technique for the raw materials to be made construction pipe. 	<ul style="list-style-type: none"> - 2 undergraduate theses - possible 1 journal paper

Annex 20. Research Topics in 2023-2024 of WAE Unit.

No.	Project/Research Topic	Name of Researchers	Source of Funding	Budget 2023-2024	Total budget	Period (2016-2023)	Objectives	Outputs
1	SATREPS: Establishment of Risk Management Platform for Air Pollution in Cambodia	Dr. OR Chanmoly Dr. PENG Chanthol Dr. KHOEURN Kimleang Ma. HANG Leakhena	JST/JICA	500,000	5M	2022-2027	To contribute to the creation and establishment of a safe and comfortable living environment from the viewpoint of air pollution, essential for the sustainable development of tourism, which leads to economic benefits to the Cambodian people and to creation of a far better and comfortable environment for residents and tourists from all over the world.	<ul style="list-style-type: none"> - Second JCC conducted on September, 2023 - Sampling training was conducted by KU postdoctoral research to students at ITC - Researcher capacity building training were conducted in Japan between July-August, 2023. - Weekly, and monthly meeting have been conducting to update each group progress, discussion, and planning - Several abstract presented and going to present in International Conference.
2	Water Evolution and Vulnerability Under Global Changes in Coastal Catchments of Cambodia	Dr. DOUNG Ratha Dr. PEN Sytharith	IRD	12,297	54,281\$	2019-2023	<p>To assess surface water resource and groundwater resource in the coastal area;</p> <p>Groundwater salinity monitoring and mapping</p>	<ul style="list-style-type: none"> - Understanding sub-surface condition of Preah Sihanouk Coastal area based on outcrop data and Geophysics survey. - Distingue type of aquifer which consist of 3 types. superficial aquifer (< 30m depth), shallow aquifer (30-80m depth) and deep aquifer (> 80m depth). There are about 3 layers confining beds which located from 30-50m below

								mls, 120-160m below msl and >185m below msl - 12 students graduated (7 masters, 5 undergraduate) - 12 local papers
3	Occurrence and Distribution Analysis of Microplastics in Different Environmental Mediums of Cambodia	Dr. BUN Saret Mr. HAM Phally	AFD/EU	0	13000	2022-2023	To assess the presence of microplastic in different water sources	- Involve engineer and master students, and ITC lecturer(s) - Conference proceeding: Microplastics in the Mekong River of Cambodia at IWA Sustainable Natural and Engineered Water Systems Management (SWSM) 2023 in Thailand - Conference proceeding: Analysis of Macroplastic and Microplastic Mass Concentrations in Seawater of Cambodia at The 12th Scientific Day
4	Investigation of the Effects of Algal Bloom in TSL Source Water on Water Supply Treatment Efficiency	Dr. HEU Rina Mr. Maypheu Wai	AFD/EU	0	13000	2022-2023	To analyze the algal concentration in TSL water source	- 1 st Abstract preparation and submission to SEAMREEC 2023 in Philippines, Title: Assessment of the relationship between nutrient availability and Chlorophyll-a concentration in Stung Sen river, Cambodia - 2 nd Abstract preparation and submission to SEAMREEC 2023 in Philippines, Title: Chlorophyll-a and its

								<p>influence on environmental parameters in Tonle Sap Lake, Cambodia</p> <ul style="list-style-type: none"> - Involve engineer and master students, and ITC lecturer(s) - Submitted a manuscript to ITC journal: Tropical level evaluation using nutrients and chlorophyll-a in Tonle Sap Lake and its tributary, Cambodia
5	Air pollution in Phnom Penh/East Asia-Nanoparticle monitoring network (EA-Nanonet)	Ms. Srean AUN	Kanazawa University	0	0	2011-Present	<p>Through monitoring of ambient aerosol nanoparticles at more than 20 sites in 10 countries in East Asia, 1) Evaluation of status and characteristics of ambient nanoparticles in East Asian area, 2) Discussion on contribution of emission sources and possible trans-boundary transportation</p>	<ul style="list-style-type: none"> - Monthly sampling, monitoring source of air pollution in Phnom Penh area
6	Development of a bio-filter system model to control air pollution toward industrial application	Ms. Hang Leakhena	HEIP	0	212,710	2021-2023	<ul style="list-style-type: none"> - Characterization of air pollutant - Development of biofiltration system - Efficiency testing - Technology transferring to industries/SMEs 	<ul style="list-style-type: none"> - Two conference proceeding - Two peer reviewed paper - Two undergraduate students involved and graduated from this project - One master student involved and graduated from this project - To host one dissemination seminar on air pollution control and technology transfer with participation of local industries and SMEs by the end of the project

								<ul style="list-style-type: none"> - To demonstrate testing of a biofiltration system at ITC to industries - Air pollution lab equipment will be installed at ITC
7	Improving Sustainable Water Supply and Sanitation in Cambodia: Case of Tonle Sap Lake's Floating Villages	Dr. Heu Rina	HEIP	0	200,000	2021-2023	The objective of this research to provide a sustainable water supply and sanitation that are adapted to the socio-economic and environmental contexts of TSL by using pilot scale of advanced water treatment technologies.	<ul style="list-style-type: none"> - Revising proposal, budget and procurement plan. - Submitted and gave presentation in AUN/SEED-Net conference: Ma L., Heu R.*, Meas M., Eang K, and Siev S. Occurrence, Transportation, Regulation and Treatment Methods of Heavy Metals in Groundwater: A Review on Case of Well Water around Tonle Sap Lake.
8	Integrated approach of precise irrigation and sustainable soil management to improve crop water productivity in Cambodia through ITC soil laboratory development: the focus on rice farming	Dr. Ket Pinnara Ms.Pheoun Chanarun Dr. TY Boreborey	HEIP		200,000	2021-2023	Develop advanced technology on irrigation system for rice farming	<ul style="list-style-type: none"> - The experiment at CARDI is almost done - 2 PhD students have done exchanged in Belgium November - 2 manuscripts are being drafts - International conference - App development is for demo
9	Development of Eco-Friendly and Low-Cost Wastewater Treatment System as an On-Site Product	Dr. Chan Rathborey, Dr Bun Saret, Mr Sok Ty, Mr. Hong Penghour, Mr Heng Borin, Ms Seng Phaya,	HEIP	0	200,000	2021-2023	To compare removal efficiencies of varies anaerobic reactors, optimize operation condition and observed removal efficient of pilot-scale anaerobic reactor	<ul style="list-style-type: none"> - Submitted revised proposal to HEIP coordinator - Learned about the processes for preparing procurement of HEIP project in joint meeting - Re-prepared budget plan and submitted specification of all lab equipment.

								<ul style="list-style-type: none"> - Signed contract - Assigned master and bachelor students to conduct experiment - Finished project
10	Development of Climate Data Information System for Cambodia	<p>Dr. SONG Layheang</p> <p>Dr. CHHIN Rattana</p> <p>Dr. Chhuon Kong</p> <p>Mr. Song Layheang</p>		0	140,500	2021-2023	<ul style="list-style-type: none"> - To construct gridded climate data from the historical point observation data over Cambodia. - To provide reliable climate data and downscaling climate data in Cambodia to users by using bias-correction method and climate downscaling method, respectively. - To share climate data and software developed in the sub-project with relevant governmental agencies and partner institutions by launching training workshops and supporting on utilizing the output herein for policy 	<ul style="list-style-type: none"> - Prepare procurement document to purchase the equipment of the project. - Recruit research assistant and engineering students work in and support the project. - Review necessary literature of the interpolation methods, bias-correction methods, climate downscaling methods. - Climate data collection for both observation and climate model data. - Finished project
11	Strengthening Flood and Drought Risk Management and Early Warning System in Lower Mekong Basin of Cambodia	<p>Dr. Oeung Chantha</p> <p>Mr. Sok Ty</p> <p>Mr. Song Layheang</p> <p>Mr. Chhin Ratana</p>	HEIP	0	200,000	2021-2023	<p>The main goal of the project is to improve flood risk management through integration of technical and institutional linkage into policy, and reducing vulnerability of local community livelihoods.</p>	<ul style="list-style-type: none"> - The study will be delivered as below: Flood risk assessment improved through integrating modelling and social approaches, and Capacity built on flood risk management and adaptation to climate change provided to local government and communities - Finished project

12	Development of Electrocoagulation Reactor Integrated Sedimentation for Turbidity and Color Removal from Industrial Wastewater	Dr. Chan Rothborey, Dr. Bun Saret, Mr Hong Penghour, and Mr. Chan Ratboren	LBE/JICA	0	15000	2021-2023	To develop and evaluate the hybrid Electrocoagulation Reactor (ECR) combining both EC and sedimentation units in terms of design criteria and operation condition in both batch and continue mode for decolorization and turbidity removal	<ul style="list-style-type: none"> - One index paper publication - One more paper in under revision - One slide presentation for closing a project
13	Preventing zoonotic diseases emergenc	Dr. THENG Voulay Dr. PENG Chanthol Mr. MA Chiva Dr. Ann Vannak	EU/AFD	0	0	2022-2027	To study risks of emergence of zoonotic diseases impacted by the hydrological dynamics, climate, and environment in diversified ecosystems in Cambodia	<ul style="list-style-type: none"> - Preliminary workshop has been done for activities planning
14	Ecosystem-base Adaptations for Sustainable Groundwater Resources Management in the Transboundary Cambodia-Vietnam Mekong Delta Aquifer, Lower Mekong Region (GEBA)	Dr. PEN Sytharith		0	5,500	2022-2023	Proposal accepted	<ul style="list-style-type: none"> - Two workshops conducted at ITC - Draft manuscript for publication
15	Development of Electrocoagulation-Floatation (ECF) Reactor for Removal Turbidity, Color, and Oil & Grease from Slaughterhouse Wastewater	Dr. SANG Davin	LBE/JICA	15000	15000	2023-2024	Proposal accepted	<ul style="list-style-type: none"> - Develop a prototype of Reactor system for treatment slaughterhouse wastewater - Field visit to slaughterhouse and ground water sampling - National journal Kimlay Ngorn, Saret Bun, Davin Sang, Phaly Ham,

								<p>Rathborey Chan (2023), Groundwater quality assessment towards sand filter modification for a rural community of Cambodia, 2023. Techno-Sciences Research Journal (accepted).</p> <ul style="list-style-type: none"> - Join international conference <p>Saret Bun, Davin Sang, Phally ham, rathborey Chan (2023), Microplastics in the Mekong river of Cambodia. " A sustainable Natural and Engineered water systems Management conference, December 13-16 at Patumwan Princess hotel, Bangkok</p> <ul style="list-style-type: none"> - one poster <p>Pisey Phorn, Sakada Peov, Sreylim Eang, Phaly Ham, Rathborey Chan, and Saret Bun (2023). Optimization of aerated electrocoagulation-flotation process for color turbidity, and oil removal from synthetic slaughterhouse wastewater's 12TH SCIENTIFIC DAY, June 8-9, 2023, Phnom Penh, Cambodia.</p> <ul style="list-style-type: none"> - 3 engineering students graduated - 1 master student is now conducting his research in the first year.
16	Development of locally-produced ceramic pot filter for household	Dr. HEU Rina	LBE/JICA	15000	15000	2023-2024	To develop hybrid ceramic pot filter combined with coconut shell based granular	<ul style="list-style-type: none"> - Fieldwork for groundwater collection - Groundwater quality testing

	groundwater purification in rural Cambodia						activated carbon for metal removal in natural groundwater	<ul style="list-style-type: none"> - Field visit to private water supply operator - Develop hybrid ceramic pot filter - Publication: Leng, B., Wai, M. P., Menh, L., Si, C. I., & Heu, R. (2023). Groundwater Purification Using Bio-Sand Filter Modified with Iron Oxide-Coated Sand and Activated Carbon. Key Engineering Materials, 972, 79-88.
17	Development of monitoring and controlling of IoT based aquaponics system using green energy (Acronym: smart aquaponics projec	Dr. TY Boreborey Dr. KET Pinnara	LBE/JICA	15000	15000	2023-2024	Proposal accepted	<ul style="list-style-type: none"> - Perform pre-trail of the system including water quality control, and sea water formulation
18	Photoproduction of radicals and their effects on carbon dynamics in tropical lakes (JSPS-Photochem)	Dr. THENG Vochlay Dr. PENG Chanthol Dr. SANG Davin	JSPS	0	70000	2023-2027		<ul style="list-style-type: none"> - Kick off meeting was conducted on October, 2023 - Primary sampling and experiment will be conducted in March, 2024
19	SATREPS: development and social implementation of greenhouse gas emission reduction technologies in paddy fields of west tonle sap lake by establishing a large	Dr. SOK Ty Dr. SONG Layheang Dr. Peng Chanthol Dr. Ket Pinnara	SATREPS/JST/JICA	150,000	250,000 (for ITC) (3.8M for all partners)	2024-2028	Preparation to launch in April 2024	<ul style="list-style-type: none"> - Manuals on the intermittent irrigation and drainage systems

	paddy area water management system							
20	Integrated River Basin Management of the Mekong Basin Tributary for Adaptation to Climate Change	Dr. SOK Ty Dr. SONG Layheang Dr. OEURNG Chantha	Mekong Korea Cooperation Fund (MKCF)	130,000	380,000	2024-2027	Preparation to launch in March 2024	<ul style="list-style-type: none"> - Improve flood resilience and reduce damage and loss for social and economic development in the river basin. - Strengthen the watershed management under climate and land-use change pressure by integrating natural base solution (NBS). - Enhance policy direction in sustainable watershed management from the national to the sub-national level.
21	Stopping Macro- and Microplastic Pollutants by Installing Solar-Powered Air Bubble Screening (SBS) Device at Discharge Wastewater Canal to the Sea of Sihanoukville, Cambodia	Dr. BUN Saret Dr. HAM Phally	UNDP	18,000	18,000	2024	To reduce both macro- and microplastic pollutions in the sea, installing the barrier at the discharge wastewater canal could be the effective and applicable concepts. Therefore, the present project aims to develop the innovative approach to block macro- and microplastics before entering the sea by using solar-powered air bubble screening (SBS) device installing at the discharge wastewater canal in Sihanoukville of Cambodia.	

22	Rural Community Training on Safe Water Quality and its On-site Demonstration Testing	Dr. BUN Saret Dr. HAM Phally	SUMERNET	5000	5,000	2024	<p>This proposed activity goal is to extent the understanding or perspective of the people in the rural community of Cambodia about how to define the safe water for their daily use and its health effect caused by contaminated water to ensure the people will not judge the water quality by eye or its clearness leading to drink direct raw water without proper treatment.</p> <p>The objective of the present activity is to provide a training and on how to define the safe water and information of health effect of drinking untreated water as well as to demonstrate the scientific measurement of on-site water use to notify that not all clear water can be drunk (e.g. using alcohol as a clear liquid but cannot be drunk). The activities will be conducted at the community scale through various instruments including lecture slide, printed document in local language, poster, actual experiment of water quality measurement and</p>	-
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							health effect. Different communities around Tonle Sap River will be designed for the activities.	
23	Addressing Water Scarcity through Groundwater Use: Development of Solar-Powered Groundwater Treatment System for Remote Area of Cambodia	Dr. BUN Saret Dr. HAM Phally	MTT-RRP	33.000	33.000	2024-2025	(i) preliminary assessment including groundwater quality assessment as an input data for treatment technology design and social survey for assessing the demand and perspective of the target end users of the newly developed water treatment unit, (ii) optimization of groundwater treatment process in terms of treatment performance and power consumption, and (iii) evaluation the operation performance of prototype system in the real scale community.	
24	Laboratory of Excellence in co-engineering for Sustainable Agrosystems (LMI-LEAD)	Dr. SUONG Malyna (Dr. EANG Khy Eam is one of work package leader)	IRD	12,200	52,000	2023-2028	<ul style="list-style-type: none"> - Reducing environmental pollution (incl. pesticides) - Better water management Increased use of agrobiodiversity - Promotion of the "One Health" approach - Improving food security 	Kick off meeting of project has not yet been conducted

25	Réhabilitation et gestion durable de la fertilité des sols pour une agriculture durable et résiliente au Cambodge (ReaSol)	Dr. Ratha MUON; Dr. SONG Layheang	IRD	40,000	130,000	2023-2025	<ul style="list-style-type: none"> - To improve understanding of socio-economic and environmental factors impact on soil fertility; - To identify and promote innovative agricultural practices for soil rehabilitation and improve of the farmer livelihood 	
26	Research collaboration on sustainable water resources management in Koh Ker and Preah Vihear heritage sites	Mr. SOK Kimhuy; Dr. HENG Sokchhay; Dr. CHHUN Kong; Mr. CHORK VUthy	National Authority for Preah Vihear (NAPV)	8,500	8,500	2024-2025	<ul style="list-style-type: none"> - To measure the flow rate at Stung Rongea in Kulean District, Preah Vihear Province, by utilizing an Acoustic Doppler Current Profiler (ADCP). - To retrieve the data and maintain the Rongea hydrological station and the Srayang meteorological station. 	First fieldwork was conducted recently (2-4 June, 2024)

Annex 21. List of publications in Techno-Science Research Journal in Volume 11.

No.	Title of papers published in volume 11 (2023)	Research Unit
Volume 11 and Issue 1		
1	Efficiency of Low Impact Development on Urban Stormwater in Phnom Penh Capital of Cambodia (Meng Hour Hout, Ty Sok, Layheang Song, Marith Mong, Ilan Ich, Chantha Oeurng)	WAE
2	Physical Properties, Proximate Analysis, and Sensory Characteristics of Gluten-free Cookies Made from Rice Flour and Okara (Marinich Nwt, Sela Kong, Manit Say, Sokly Chea, Reasmey Tan)	FTN
3	Crop Disease Dataset and Recognition using Convolutional Neural Networks (Sochetra Than, Dona Valy, Phutphalla Kong)	ETM
4	Decentralized Blockchain-based PKI for Patient Identification in the Blockchain Network (Vanny Ratanak Chheang, Dona Valy, Dara Tith)	ETM
5	Lock and Unlock Door with Face Detection using OpenCV, Python, and Arduino Board (Seangleng Ny, Dona Valy, Phutphalla Kong)	ETM
6	Low-Cost Adsorbent in Treatment of Acid Mine Drainage in Cambodia: Chong Phlah, Mondulkiri (Sovanmonyneath Heng, Sophea Boeut, Kimleang Khoeurn, Khy Eam Eang, DOUNGmony Va, Kimhouy Oy, Sovannary Pit, Mengleang Born, Kimhouy Bee)	WAE
7	Preliminary Study on Physicochemical Quality and Antibiotic-Resistant <i>E. Coli</i> and <i>Aeromonas spp.</i> in Aquaculture of Pangasius in Kompong Thom Province (Dydarong Ket, Ty Sok, Ilan Ich, Kimleang Chum, Sovatey Lim, Ratboren Chan, Ponleu Pech, Chantha Oeurng)	WAE
8	Chemical and Microbiological Analysis of Traditional Fermented Fish and Meat Products Collected from Battambang, Cambodia (Leangey Set, Sengly Sroy, Liseany Chor, Hasika Mith, Sereyvath Yeoun, Seyha Doeurn, Channmony Thanh, Chanthol Peng)	FTN
9	Investigation Surface Water and Groundwater Interactions using Ground Electrical Conductivity Measurement in the Bassac River Floodplain (Vuthy Chork, Kong Chhuon, Khy Eam Eang, Sambo Lun, Ratha Doung, Sylvain Massuel)	FTN
10	Characterization of Physicochemical Properties and Microbiological Quality of Khmer Rice Vermicelli (Num Banhchok) Collected in Phnom Penh Capital, Cambodia (Pisal Yong, Sovandara Some, Vattana Morn, Sokuntheary Theng, Hasika Mith)	FTN

Volume 11 and Issue 2

11	Study on Mechanical Structure Design for Plug-and-Play Wheel Mobile Robot (Chanvireak Samrit, Sarot Srang, Phayuth Yonrith)	MIT
12	PI Controller for Velocity Controller Design based on Lumped Parameter Estimation: Simulation and Experiment (Povnermol Gnhiok, Sarot Srang, Phayuth Yonrith)	MIT
13	Attitude Estimation by using Unscented Kalman Filter with Constraint State (Vichetra Yi, Sarot Srang, Chivorn Keo)	MIT
14	Characterization Study of Cambodian Natural Rubber and Clay Composite for Shock Absorption Floor Mat (Laymey Sreng, Sirisokha Seang, Azura A. Rashid, Phanny Yos)	MSS
15	Selection of Observed Gridded Rainfal Data for different Analysis Purposes in Cambodia (Nika Chhom, Sovanthin Chhit, Thyda Chhum, Sophal Try, Layheang Song, Rattana Chhin)	WAE
16	An Empirical Investigation of Gold Price Forecasting using ARIMA Compare with LSTM Model (Seng Hak Leng, Sockhey Phauk, Sothea Has)	Other
17	Prediction of California Bearing Ratio with Soil Properties of Road Subgrade Materials in Cambodia (Bunnasakdh Yi, Panyabot Kaathon, Tetsya Sok, Sokbil Heng)	Other
18	Non-intrusive Load Monitoring Classification Based on Multi-Scale Electrical Appliance Load Signature (Manith Chou, Kosorl Thourn)	MIT
19	The Study of Cereals Price Prediction in Terms of Trade Flows for Anticipate Price Fluctuations in Cambodia by using ARIMA Model (Khun Eang, Sockhey Phauk, Sothea Has, Sokheng Din)	ETM
20	Development of Control Framework Based on ROS Platform for a 3-Axis Gimbal (Rattana Seng, Sarot Srang)	MIT

Annex 22. List of publication from ETM Research Unit.

List of Index publications from 2019-2023

1. Khon, K., Chhlonh, C., Vai, V., Alvarez-Herault, M. C., Raison, B., & Bun, L. (2023). Comprehensive Low Voltage Microgrid Planning Methodology for Rural Electrification. *Sustainability*, 15(3), 2841.
2. Kimsrornn KHON, Chhith Chhlonh, Vannak VAI, Marie-Cecile ALVAREZ-HERAULT, Bertrand RAISON and Long BUN. 2023. Comprehensive low voltage microgrid planning methodology for rural electrification. <https://ieeexplore.ieee.org/abstract/document/10000324>
3. O. Eth, V. Vai, L. Bun, S. Eng and K. Khon, "Optimal Radial Topology with Phase Balancing in LV Distribution System Considering Energy Loss Reduction: A Case Study in Cambodia," 2022 4th International Conference on Electrical, Control and Instrumentation Engineering (ICECIE), Kuala Lumpur, Malaysia, 2022, pp. 1-6, doi: 10.1109/ICECIE55199.2022.10000324.
4. Ikeda, M., Kret, K., Tsuji, T., Ikeda, T., Tsuji, T., Onishi, K., & Nishizaka, N. (2022). Pore fabric anisotropy and elastic moduli of fault rocks from the Median Tectonic Line, Shikoku, southwest Japan. *Tectonophysics*, 834, 229366.
5. Kinnaeth VONGCHANH, Sarin CHAN, A preliminary study on investigation of the heat stress affecting the labor productivity, a case study: garment factory Phnom Penh, *ASEAN Engineering Journal*, 2022.
6. Kimsrornn KHON, Vannak VAI, Marie-Cecile ALVAREZ-HERAULT, Long BUN, Bertrand RAISON. 2021., Planning Of Low Voltage Ac/Dc Microgrid For Un-Electrified Areas. <https://ieeexplore.ieee.org/abstract/document/9692581>
7. Kanika Yon, Marie-Cécile Alvarez-Hérault, Bertrand Raison, Kimsrornn Khon, Vannak Vai, Long Bun., 2021. Microgrids planning for rural electrification. <https://ieeexplore.ieee.org/abstract/document/9494966>
8. V. Vai, «Design of AC Microgrid Topology with Photovoltaic Uncertainties in a Rural Village,» *Makara Journal of Technology*, 2021, <https://doi.org/10.7454/mst.v25i1.3759>
9. S. Suk, V. Vai, R. Lorm, C. Chhlonh, S. Eng and L. Bun, «Modifying Switch Opening and Exchange Method for Distribution Network Reconfiguration with Distributed Generations,» 2021 9th International Electrical Engineering Congress (iEECON), 2021, pp. 85-88, doi: 10.1109/iEECON51072.2021.9440343. (International peer review).
10. S. Suk, V. Vai, R. Lorm, C. Chhlonh, S. Eng and L. Bun, «Network Reconfiguration in Distribution Systems Based on Modified Sequential Switch Opening Method,» 2021 11th International Conference on Power, Energy and Electrical Engineering (CPEEE), 2021, pp. 143-146, doi: 10.1109/CPEEE51686.2021.9383247. (International peer review)
11. V. Vai et al., «Optimal Design of LVAC Distribution System Topology for a Rural Village,» 2021 9th International Electrical Engineering Congress (iEECON), 2021, pp. 93-96, doi: 10.1109/iEECON51072.2021.9440289. (International peer review)
12. V. Vai, S. Suk, R. Lorm, C. Chhlonh, S. Eng, and L. Bun. «Optimal Reconfiguration in Distribution Systems with Distributed Generations Based on Modified Sequential Switch Opening and Exchange» *Applied Sciences*, 2021, 11, no. 5 : 2146. <https://doi.org/10.3390/app11052146>. IF:2.679
13. R. Lorm, V. Vai, S. Suk, C. Chhlonh, S. Eng, L. Bun, «Service Restoration in Distribution Systems under Different Load Levels,» 2021 11th International Conference on Power, Energy and Electrical Engineering (CPEEE), 2021, pp. 122-126, doi : 10.1109/CPEEE51686.2021.9383358. (International peer review)
14. VAI Vannak, BUN Long, KHON Kimsrornn, Marie-Cécile Alvarez-Hérault, Bertrand Raison. 2020. Integrated PV and Battery Energy Storage in LVAC for a Rural Village: A Case Study of Cambodia. <https://ieeexplore.ieee.org/abstract/document/9255336>
15. R. Lorm, S. Eng, S. Suk, C. Chhlonh, L. Bun and V. Vai, «Service Restoration in Distribution System Using Modified Sequential Opening Branches,» 2021 9th International Electrical Engineering Congress (iEECON), 2021, pp. 69-72, doi : 10.1109/iEECON51072.2021.9440266. (International peer review)
16. C. Chhlonh, D. C. Riawan and H. Suryoatmojo, "Modeling and Simulation of Independent Speed Steering Control for Front In-wheel in EV Using BLDC Motor in MATLAB GUI," 2019 International Seminar on Intelligent Technology and Its Applications (ISITIA), Surabaya, Indonesia, 2019, pp. 270-275, doi: 10.1109/ISITIA.2019.8937199.
17. C. Chhlonh, D. C. Riawan and H. Suryoatmojo, "Independent Speed Steering Control of Rear In-wheel BLDC Motor in EV Based on Fuzzy Logic Controller in GUI," 2019 5th International Conference on

- Science and Technology (ICST), Yogyakarta, Indonesia, 2019, pp. 1-6, doi: 10.1109/ICST47872.2019.9166418.
18. Chhlonh, C., Riawan, D. C., & Suryoatmojo, H. (2019, April). Simulation of independent speed steering control of four in-wheel BLDC motors direct drive for electric vehicle using hybrid fuzzy-PI controller in Matlab GUI. In *Proceedings of the 2019 2nd International Conference on Electronics, Communications and Control Engineering* (pp. 67-71).
 19. C. Chhlonh, B. Kim, P. Chrin, S. Am and T. Seng, "Four In-Wheel BLDC Motors Speed Control in EV Based on Hybrid Fuzzy-PI Controller Visual on GUI," 2021 International Symposium on Electrical and Electronics Engineering (ISEE), Ho Chi Minh, Vietnam, 2021, pp. 166-171, doi: 10.1109/ISEE51682.2021.9418790.
 20. T. Nozaki, T. Nagase, Y. Takaya, et al., « Subseafloor sulphide deposit formed by pumice replacement mineralisation, » Scientific Report 11, 8809 (2021). <https://doi.org/10.1038/s41598-021-87050-z>. IF: 5.134
 21. Kimsrornn KHON, Vannak VAI, Marie-Cecile ALVAREZ-HERAULT, Long BUN, Bertrand RAISON., 2021. Factors affecting the breakdown voltage along the insulator surface of a busbar for power modules
 22. K. KHON, S. FICHTNER, M. ALVAREZ-HERAULT, V. VAI, L. BUN, B. RAISON, ‘‘Optimal design of low voltage AC/DC microgrid’’ SYMPOSIUM DE GENIE ELECTRIQUE (SGE 2020), 30 JUIN – 2 JUILLET 2020, NANTES, France
 23. B. Kim, E. Boulaud, E. Boisaubert, S. Am, P. Chrin, ‘‘Study of the control of an AC voltage stabilizer using lqr and anti-windup’’. 22nd European Conference on Power Electronics and Applications 7-11 September 2020, Lyon (France). Doi:10.3390/en13102410
 24. Cravioto, J.; Ohgaki, H.; Che, H.S.; Tan, C.; Kobayashi, S.; Toe, H.; Long, B.; Oudaya, E.; Rahim, N.A.; Farzeneh, H. The Effects of Rural Electrification on Quality of Life: A Southeast Asian Perspective. *Energies* 2020, 13, 2410. <https://doi.org/10.3390/en13102410>
 25. Kret, K., Tsuji, T., Chhun, C., and Takano, O., 2020. Distributions of gas hydrate and free gas accumulations associated with upward fluid flow in the Sanriku-Oki forearc basin, northeast Japan. *Marine and Petroleum Geology*. <https://doi.org/10.1016/j.marpetgeo.2020.104305>
 26. M. Pietrzak-David, B. Kim, P. Maussion, C. Phok ‘‘Frugal Innovation for Sustainable Rural Electrification.’’ 22nd European Conference on Power Electronics and Applications 7-11 September 2020, Lyon (France). (Accepted)
 27. Sok Chea AM, Phok CHRIN, Bunthern KIM, Menghorng BUN, Phing LIM, ‘‘High Isolated Transformer for a Serie Connected IGBTs Power Supply’’. iEECON 2020, The international Electrical Engineering Congress, Thailand. (Accepted)
 28. Vannak Vai and Long Bun, ‘‘Study on the Impact of Integrated PV Uncertainties into an Optimal LVAC Topology in a Rural Village’’, *ASEAN Engineering Journal*, Vol. 10, No. 1, pp.79-92, March 2020
 29. Vannak Vai, Long Bun and Hideaki Ohgaki, ‘‘Integrated Battery Energy Storage into an Optimal Low Voltage Distribution System with PV Production for an Urban Village’’, *International Journal on Advanced Science, Engineering and Information Technology*, Vol. 10, No. 6, pp.2458-2464, December 2020
 30. Vannak Vai, Marie-Cécile Alvarez-Hérault, Bertrand Raison and Long Bun, ‘‘Optimal Low-Voltage Distribution Topology with Integration of PV and Storage for Rural Electrification in Developing Countries: A Case Study of Cambodia’’, *Journal of Modern Power Systems and Clean Energy*, Vol. 8, No. 3, pp.531-539, May 2020
 31. Tongsa Lan, Chandoeun Eng, and Vuthy Horng., 2019. Design of ontiguous pile wall and lateral support system for deep excavation at Chroy Changva, Phnom Penh, Cambodia. *International Symposium on Earth Science and Technology*, pp. 413-418
 32. B. Kim, M. Pietrzak-David and P. Maussion, ‘‘Novel Configuration of a Three-phase Induction Generator for Single-phase Load: Simulations and Experimentations,’’ *IECON 2019 – 45TH ANNUAL CONFERENCE OF THE IEEE INDUSTRIAL ELECTRONICS SOCIETY*, Lisbon, Portugal, 2019, pp. 5807-5813.
 33. B. Kim, M. Pietrzak-David and P. Maussion, ‘‘Novel Configuration of an Inverter-based Three-phase Induction Generator for Single-phase Load: Comparison to TSCAOI Setup,’’ *2019 INTERNATIONAL SYMPOSIUM ON ELECTRICAL AND ELECTRONICS ENGINEERING (ISEE)*, Ho Chi Minh, Vietnam, 2019, pp. 318-322.

34. Chantra Chhorn and Chandoeun Eng., 2019. Geological mapping and interpretation of Wild Boar prospect area in Ratanakiri province, Cambodia. International Symposium on Earth Science and Technology, pp. 531-536.
35. K. Vongchanch, S. Chan (2019) Preliminary study on investigation of the heat stress affecting the labor productivity, A Case Study: garment factory Phnom Penh, Icorer conference
36. Kakda Kret, Tatsunori Ikeda, Takeshi Tsuji (2019) Grid-search inversion based on rock physics model for estimation of pore geometry and grain elastic moduli: Application to hydrothermal ore deposits and basalt, Exploration Geophysics, 50, 1-11
37. Porchaing CHOENG, Lan HEANG, K. Vongchanch, S. Chan (2019) Investigation on Application of Fish Oil as Binding Material in Biomass Briquetting Process, The 10th RC MEManuE 2019
38. Vannak Vai, Long Bun, Marie-Cécile Alvarez-Hérault, and Bertrand Raison (2019) Design of LVAC distribution system with PV and centralized battery energy storage integration-A case study of Cambodia, ASEAN Engineering Journal, Vol 9, No 2, 1-16

List of Non-index publications from 2019-2023

1. Latin Heang, Porchaing Choeng, Kinnalesh Vongchanh, Sarin Chan. Experimental Investigation on Sawdust and Tree Leaf Briquette Using Fish Residues Oil as a Binder. Techno-Science Research Journal 8 (2020)
2. Porchaing Choeng, Latin Heang, Kinnalesh Vongchanh, Sarin Chan. Experimental Investigation on Rice Husk and Bagasse Briquette Using Fish Oil as Binder. Techno-Science Research Journal 8 (2020)
3. Kinnalesh Vongchanh, Sarin Chan, Heat Stress Effect on Labour Construction Productivity, policy brief, 2019.

List of Conferences from 2019-2023

1. Oeun Sothea, Eng Samphors, Vai Vannak, Chim Charkya, So Phanit, Sary Monychot, LV System Modelling Considers Reverse Power Flow Analysis using Relay Vs Battery, the 12th scientific day of ITC, 8-9 June 2023, Phnom Penh, Cambodia.
2. SARY Monychot, VAI Vannak, ENG Samphors, SO Phanit, OEUN Sothea, CHIM Chakrya, Optimize Phase Balancing and Sizing DGs at the Rural Village in Cambodia, the 12th scientific day of ITC, 8-9 June 2023, Phnom Penh, Cambodia.
3. Chim Chakrya, Oeun Sothea, Eng Samphors, Vai Vannak, So Phanit, Sary Monychot, Rural Electrification with Off-Grid system, the 12th scientific day of ITC, 8-9 June 2023, Phnom Penh, Cambodia.
4. Thyra Thon, Vannak Vai, Darong Sorn, Samphors Eng, Techno-Economic Analysis of Feeder Routing for MV Distribution Systems, the 12th scientific day of ITC, 8-9 June 2023, Phnom Penh, Cambodia.
5. Kimtheng Thieng, Vannak Vai, Oudaya Eth, Samphors Eng, Study of the Technical Impact of Battery Energy Storage on PV Hosting Capacity in LVAC Distribution System: A Case Study in Cambodia, the 12th scientific day of ITC, 8-9 June 2023, Phnom Penh, Cambodia.
6. Rorn, K., Seang, S., Kret, K., Oy, K. and Ammugauan, J. (2023) Lithology, Alteration Minerals, and Ore Mineralization in Memot, Tbong Khmum Province, Cambodia. Proceedings of the ITC's 12th Scientific Day, 8-9 May 2023
7. Por, V., Seang, S., Kret, K., and Oy, K. (2023) Lithology, Ore mineralization, and Hydrothermal Alteration of Canada Wall Porphyry Cu-Mo-Au at Andongmeas, Ratanakiri, Cambodia. Proceedings of the ITC's 12th Scientific Day, 8-9 May 2023
8. Neov Yoklin, Oudaya Eth, Kimsrornn KHON, Comparative Analysis of Different Clustering Techniques in Hybrid AC/DC Microgrid, Proceedings of the ITC's 12th Scientific Day, 8-9 May 2023
9. Pheak Kor, Latin Heang, Jackie Yang Yang, Kinnalesh Vongchanh, Sarin Chan, Assessing on the Impact of Heat Stress on Construction Labor Productivity during Cool Season in Cambodia, Proceedings of the ITC's 12th Scientific Day, 8-9 May 2023.
10. Sopal Pey, Sarin Chan, Kinnalesh Vongchanh, Simulation of an indirect evaporative cooling system using the 2-D model cross flow for Cambodia's climates, Proceedings of the ITC's 12th Scientific Day, 8-9 May 2023.
11. K Vongchanh and S Chan, Testing the hydraulic press machine for densification of biomass briquette for household use, International postgraduate conference for energy research, December 19, 2022, Kuala Lumpur, Malaysia.

12. Pheakdey Choun, Viza Heang, Sarin Chan, Kinnalesh Vongchanh, Simulation of Energy consumption for Flat using EnergyPlus, the 11th scientific day of ITC, 5-6 May 2022, Phnom Penh, Cambodia.
13. V. Chea, L. Heang, K. Vongchanh, S. Chan, A Descriptive Results on Environment Affecting Pupils in Cambodia – Case Study Primary Schools in Phnom Penh, 2nd ASEAN International Conference on Energy and Environment, 14-15 September 2022, Phnom Penh, Cambodia.
14. Morn Mengly, Kinnalesh VONGCHANH, CHAN Sarin, Latin HEANG, A Descriptive Results on Environment Affecting Pupils in Cambodia – Case Study Primary Schools in Phnom Penh, 2nd ASEAN International Conference on Energy and Environment, 14-15 September 2022, Phnom Penh, Cambodia.
15. Samoeurn Cheng, Kinnalesh Vongchanh, Sarin Chan, Latin Heang, Pisal Ken, Exergy Analysis of Biomass Briquette System, The 15th Regional Conference on Energy Engineering And The 13th International Conference on Thermofluids 2022, 25-26, October, 2022, Yogyakarta, Indonesia.
16. Pisal Ken, Kinnalesh Vongchanh, Sarin Chan, Latin Heang, Samoeurn Cheng, Thermal Properties of Biomass Briquettes made from Waste Materials. (2022). The 15th Regional Conference on Energy Engineering and The 13th International Conference on Thermofluids 2022, 25-26, October, 2022, Yogyakarta, Indonesia.
17. Kinnalesh Vongchanh, Sarin Chan, Testing the hydraulic press machine for densification of biomass briquettes for household use, The International postgraduate conference for energy research 2022, 19 December 2022, Kuala Lumpur, Malaysia.
18. Ly, P., Seang, S., Kret, K., Oy, K., Yonezu, K., Watanabe, K., Sreu, T. (2022) Lithology, hydrothermal alteration, and ore characteristics of Area-1 in Koh Sla, Chhouk district, Kampot Province, southern Cambodia. Proceedings of the International Symposium on Earth Science and Technology, Japan.
19. Chheuy, P., Kret, K., Seang, S., Or, C., Kong, S., Kry, R., Oy, K., Chan, C., Sreu, T., Hoeun, S., Hoeun, S., Chhun, C., Neak, K. (2022) Hydrothermal Alteration Mineral Mapping by Integrating of ASTER and Landsat-8: A case study in Phnom Peam Louk, Kompong Chhang Province, Southwest Cambodia. Proceedings of the International Symposium on Earth Science and Technology, Japan 2022.
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22. Kim, C., Kret, K., Seang, S., Kong, K., Or, C., Oy, K., Ammuguan, J., Heoun, S., Chhun, C., and Neak, K. (2022) Lithological Analysis of Koh Nheak, Mondoukiri Province Using Landsat-8 OLI and ASTER. Proceedings of the International Symposium on Earth Science and Technology, Japan 2022.
23. M. Morn, K. Vongchanh, S. Chan, L. Heang (2022), A Descriptive Results on Environmental Affecting Pupils in Cambodia – Case Study Primary Schools in Phnom Penh, The 2nd ASEAN International Conference on Energy and Environment.
24. V. Chea, L. Heang, K. Vongchanh, S. Chan (2022), Workers' Perceptions of Occupational Heat Stress- a survey among garment workers in Phnom Penh, The 2nd ASEAN International Conference on Energy and Environment.
25. P. Ken, K. Vongchanh, S. Chan, L. Heang, S. Cheng (2022), Investigation of Briquette Thermophysical Properties and Gas Emissions, Seminar Thermofluid UGM
26. S. Cheng, S. Chan, K. Vongchanh, L. Heang, P. Ken (2022), Investigation of Briquette Thermophysical Properties and Gas Emissions, The 11th Scientific Day
27. P. Ken, K. Vongchanh, S. Chan, L. Heang, S. Cheng (2022), Exergy Analysis of Biomass Briquette System, The 11th Scientific Day.
28. Muoy Y. H., Chungyeun L., Saranyu H., Chandeoun E., Frederic N., 2022. Quality assurance of Concrete pile using Cross-hole Sonic Logging and Soil Profile. International Symposium on Earth Science and Technology 2022.
29. KEO T., HENG. M. Y., CHORK S., LANG R., HENG H., 2022., The Primary Geochemistry Evaluation on the Geothermal source in Te Teuk Pus Hot Spring in Oral district, Kompong Speu province, Cambodia., International Symposium On Earth Resources And Geo-Environmental Technology 2022.

30. Chungyeon L., Chandoeun E., Muoy Y. H., Phanny Y., 2022., Concrete Pile Defect Identification: Insights from Cross-Hole Sonic Logging and High Strain Dynamic Pile Test., The 4th ICCEE Proceedings.
31. Chungyeon L., Chandoeun E., Muoy Y. H., Phanny Y., 2022., Cross-Hole Sonic Logging and Dynamic Load Test for Concrete Pile Integrity Analysis., THE 11TH SCIENTIFIC DAY, Phnom Penh.
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34. Sopheap PECH, Chandoeun ENG, Chanmoly OR, Sreymean SIO, Ratha HENG, Chitra BUTH (2022). Geochemistry of Shales and Limestones in Battambang Province: Implications for Depositional Environment, the 1st International Conference on Earth Resources and Geo-Environment Technology 2022,
35. Sreyleap Koem, Chandoeun Eng, Sopheap Pech, Kimhouy Oy, Sreymean Sio (2022). Sedimentary Facies and Sandstone Characteristics of Outcrop at Phnom Thippadei, Battambang Province, Cambodia, the 1st International Conference on Earth Resources and Geo-Environment Technology 2022.
36. They Chhun, Chandoeun Eng, Kimhouy Oy, Sopheap Pech, Sreymean Sio, Chaimongkhon Proeung. (2022). Petrography and geochemistry properties of limestone at Sampov Mountain in Battambang province, Cambodia, the 1st International Conference on Earth Resources and Geo-Environment Technology 2022.
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38. Sreymean Sio, Chanmoly Or, Chandoeun Eng. (2021). Review of Petroleum Systems Around Cambodia, the 10th Scientific Day of ITC.
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40. Sokheng C., Muoy Y. H., Ichhuy N., and Phanny Y. (2021). The Preliminary Investigation on Geothermal Hot Spring, Te Tek Pus in Oral District, Kampong Speu Province, Cambodia., International Symposium on Earth Science and Technology 2021., p172-176., (best paper award)
41. Menghor LEAP., Muoyyi HENG., Nallis KRY., Ichhuy NGO. (2020). Investigation on lithology and mineral alteration of geothermal resources in Te Teuk Pus hot spring, Kampong Speu province, Cambodia., 12th AUN/SEED-Net Regional Conference on Geological and Geo-Resources Engineering.
42. Menghor LEAP., Muoyyi HENG., Nallis KRY., Ichhuy NGO. 2020. Primary Investigation on Lithology and Alteration for Geothermal Resource in Te Tekpos, Oral District, Kompong Speu Province, Cambodia., Proceedings of International Symposium on Earth Science and Technology, 2020.p 450-456.
43. Sokvireak Say., Chanmoly Or., Muoyyi Heng. (2020). Hydrocarbon Reservoir Characterization Using Well Logs Data Analysis, Offshore Cambodia. Proceedings of International Symposium on Earth Science and Technology, 2020, p216-221.
44. K. Vongchanh (2021), Alternative of biomass waste to energy sources as biomass briquettes in Cambodia, 11th Annual International Conference on Industrial Engineering and Operations Management.
45. K. Vongchanh (2021), Development of home solar dryer for drying of fish in Cambodia, International Symposium on Environment/Eco-technology and Policy (EETP) in East Asian
46. L. Heang, K. Vongchanh, S. Chan. (2020). Investigation on Application of Fish Oil as Binding Material in Biomass Briquetting Process, The 10th RC MEManuE 2020
47. K. VITHEAN, K. Vongchanch, S. Chan. (2019). Study on heat stress impacting to Labor productivity in Phnom Penh: Case study on Rebar workers, 9th Scientific day.

Annex 23. List of publication from FTN Research Unit.

List of Index publications from 2019-2023

1. Nget, S., Mith, H., Boué, G., Curet, S., & Boillereaux, L. (2023). The Development of a Digital Twin to Improve the Quality and Safety Issues of Cambodian Pâté: The Application of 915 MHz Microwave Cooking. *Foods*, 12(6), 1187.
2. Houg, P., Ly, K., & Lay, S. (2023). Valorization of kaffir lime peel through extraction of essential oil and process optimization for phenolic compounds. *Journal of Chemical Technology & Biotechnology*. DOI 10.1002/jctb.7354
3. Yin, M., Bohuon, P., Avallone, S., In, S., & Weil, M. (2022). Postharvest treatments of turmeric (*Curcuma longa* L.) in Cambodia-Impact on quality. *Fruits*, 77 (6) : pp. 1-13. <https://doi.org/10.17660/th2022/026>
4. Yin, M., Weil, M., Avallone, S., Maraval, I., Forestier-Chiron, N., Servent, A., ... & Bohuon, P. (2022). Impact of cooking, drying and grinding operations on chemical content, functional and sensorial qualities of *Curcuma longa* L. *Journal of Food Measurement and Characterization*, 1-11.
5. Chin, L, N. Therdthai and W. Ratphitagsanti. (2022). Effect of conventional and microwave cooking conditions on quality and antioxidant activity of Chinese kale (*Brassica alboglabra*). *Applied Food Research*. 2 (1). Article ID 100079. <https://doi.org/10.1016/j.afres.2022.100079>
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9. Siesto, G., Pietrafesa, R., Infantino, V., Thanh, C., Pappalardo, I., Romano, P., & Capece, A. (2022). In Vitro Study of Probiotic, Antioxidant and Anti-Inflammatory Activities among Indigenous *Saccharomyces cerevisiae* Strains. *Foods*, 11(9), 1342. (F : 5.561)
10. DOI: <https://doi.org/10.3390/foods11091342>
11. Richter, J. K., Pietrysiak, E., Ek, P., Dey, D., Gu, B.-J., Ikuse, M., Nalbandian, E., Žak, A., & Ganjyal, G. M. (2022). Extrusion characteristics of ten novel quinoa breeding lines. *Journal of Food Science*, 87, 5349– 5362. <https://doi.org/10.1111/1750-3841.16360>
12. Richter, J. K., Gu, B.- J., Ek, P., Dey, D., Saunders, S. R., & Ganjyal, G. M. (2022). Potential interactions between starch and fruit pomace may impact the expansion ratio of direct expanded extrudates. *Journal of Food Science*, 87, 3513– 3527. <https://doi.org/10.1111/1750-3841.16240>
13. Yin, M., Weil, M., Avallone, S., Lebrun, M., Conejero, G., In, S., & Bohuon, P. Impact of cooking and drying operations on colour, curcuminoids and aroma of *Curcuma longa* L. *Journal of Food Processing and Preservation*, e16643. (IF : 2.190)
14. DOI: <https://doi.org/10.1111/jfpp.16643>
15. Phuong, H., Masse, A., Dumay, J., Vandanjon, L., Mith, H., Legrand, J., & Arhaliass, A. (2022). Enhanced liberation of soluble sugar, protein, and R-phycoerythrin under enzyme-assisted extraction on dried and fresh *Gracilaria gracilis* biomass. *Frontiers in Chemical Engineering*, 21. (IF:4.204)
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18. Ek, P., Gu, B.-J., Saunders, S. R., Huber, K., & Ganjyal, G. M. (2021). Exploration of physicochemical properties and molecular interactions between cellulose and high-amylose cornstarch during extrusion processing. *Current Research in Food Science*. 4(June), 588–597. <https://doi.org/10.1016/j.crfs.2021.07.001>
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DOI: <https://doi.org/10.48048/tis.2021.10>
22. Lorn, D., Ho, P. H., Tan, R., Licandro, H., & Waché, Y. (2021). Screening of lactic acid bacteria for their potential use as aromatic starters in fermented vegetables. *International Journal of Food Microbiology*, 350, 109242.
23. Rodriguez, C., Mith, H., Taminiau, B., Bouchafa, L., Van Broeck, J., Soumillion, K., ... & Daube, G. (2021). First isolation of *Clostridioides difficile* from smoked and dried freshwater fish in Cambodia. *Food Control*, 124, 107895.
24. Sroy, S., Arnaud, E., Servent, A., In, S., & Avallone, S. (2021). Nutritional benefits and heavy metal contents of freshwater fish species from Tonle Sap Lake with SAIN and LIM nutritional score. *Journal of Food Composition and Analysis*, 96, 103731.
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26. Dey, D., Richter, J.K., Ek, P., Gu, B.-J., & Ganjyal, G.M. (2020). A review of food processing by-products utilization in extrusion processing. *Frontiers (Sustainable Food Systems)*. Vol. 4. Article: 603751. <https://doi.org/10.3389/fsufs.2020.603751>
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29. Anal, A. K., Perpetuini, G., Petchkongkaew, A., Tan, R., Avallone, S., Tofalo, R., ... & Waché, Y. (2020). Food safety risks in traditional fermented food from South-East Asia. *Food Control*, 109, 106922.
30. Hor, S., Léchaudel, M., Mith, H., & Bugaud, C. (2020). Fruit density: A reliable indicator of sensory quality for mango. *Scientia Horticulturae*, 272, 109548.
31. Morm, E., Ma, K., Horn, S., Debaste, F., Haut, B., & In, S. (2020). Experimental Characterization of the Drying of Kampot Red Pepper (*Piper nigrum* L.). *Foods*, 9(11), 1532.
32. Anal, A. K., Waché, Y., Louziers, V., Laurent, R., Mens, F., Avallone, S., ... & Guidi, A. (2020). AsiFood and its output and prospects: An Erasmus+ project on capacity building in food safety and quality for South-East Asia. *Food Control*, 109, 106913.

33. Song, M., Chapuis, E., Leng, V., Tivet, F., De Waele, D., Thi, H. N., & Bellafiore, S. (2019). Impact of a conservation agriculture system on soil characteristics, rice yield, and root-parasitic nematodes in a Cambodian lowland rice field. *Journal of Nematology*, 51.
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List of Non-index publications from 2019-2023

1. A. Chung, S. Yoeun, S. Chek, C. Chey, T. Sriv, V. Soav, K. Phon (2022). Assessment of pesticide contamination in water sources in the vegetable farms in S'ang Kandal province. *The Bulletin of Cambodian Chemical Society* Vol 13.
2. L. Set, S. Sroy, L. Chor, H. Mith, S. Yoeun, S. Doeurn, C. Thanh, C. Peng* (2022). Chemical and Microbiological Analysis of Traditional Fermented Fish and Meat Products Collected from Battambang, Cambodia. *Techno-Science Research Journal* Vol 10.
3. L. Thourn, C. Phat, M. Suong, S. Sieng, S. Heng, S. Yoeun (2022). Identification of Pesticide Contamination in Water Sources Surrounding Agrochemical-Free Rice Farming in Battambang Province. *Techno-Science Research Journal* Vol 10.
4. P. Chhay, P. Houg, and S. Lay, 2022. Effect of pretreatment on extraction of essential oil from kaffir lime leaves. *Techno-Science Research Journal* Vol 10.
5. S. Song, P. Houg, and S. Lay, 2022. Optimization of extraction conditions for phenolic compounds extracted from Cassumunar ginger (*Zingiber montanum*). *Techno-Science Research Journal* Vol 10.
6. S. Met, P. Houg, P. Ek, P. Yun, and S. Lay, 2022. Drying kinetic and the changes of physicochemical properties and bioactive content of dried tomatoes during hot air drying. *Techno-Science Research Journal* Vol 10.
7. Y. Nat, P. Houg, S. Lay, 2021. Effect of Ultrasound-Assisted Extraction Condition on Extraction of Bioactive Compounds from Khmer White Turmeric (*Curcuma Zedoaria*). *The Bulletin of Cambodian Chemical Society* 12.
8. S. Yoeun, S. Ly, F. Kuok, 2021. Alcohol-Based Hand Rub Analysis by High Performance Liquid Chromatography. *The Bulletin of Cambodian Chemical Society* 12.
9. S. Hoeun, S. Lay, P. Houg, S. In, 2021. Impact of Blanching and Drying on Bioactive Compounds of Black Turmeric. *The Bulletin of Cambodian Chemical Society* 12.
10. S. Lay, P. Houg, S. In, 2021. Effects of Solvent and Time on Extraction of Bioactive Compounds from Cambodia Black Turmeric Using Ultrasound-Assisted Extraction. *Techno-Science Research Journal* 9.
11. M. Yin, S. Heng, S. Rem, L. Chin, 2021. Development of Spicy Sweet Chili Sauce. *Techno-Science Research Journal* 9.

12. M. Yin, W. Ratphitagsanti, N. Therdtai, 2021. Changes on Qualities of Gluten-free Chalky Rice Breadstick during Storage. *Techno-Science Research Journal* 9.
13. S. Chuon, M. T. Chanto, R. Tan, C. Peng, 2021. Isolation and Characterization of Lactic Acid Bacteria from Soy-based Products. *Techno-Science Research Journal* 9.
14. Ek, P. & Ganjyal, G.M. (2020). Basics of extrusion processing. In *Extrusion Cooking: Cereal Grains Processing*. Wood Publishing, an imprint of Elsevier, Inc. and Cereals and Grains Association.
15. Ek, P., Kowalski, R.J., & Ganjyal, G.M. (2020). Raw materials behaviors in extrusion processing I. In *Extrusion Cooking: Cereal Grains Processing*. Wood Publishing, an imprint of Elsevier, Inc. and Cereals and Grains Association.
16. Ek, P., Baner, J.M., & Ganjyal, G.M. (2020). Extrusion processing of cereal grains and seeds. In *Extrusion Cooking: Cereal grains processing*, an imprint of Elsevier, Inc. and Cereal and Grains Association.
17. Morantes, G., Ek, P., & Ganjyal, G.M. (2020). Food safety in extrusion processing. In *Extrusion Cooking: Cereal grains processing*, edited by Ganjyal GM, an imprint of Elsevier, Inc. and Cereal and Grains Association.
18. L. Ly, M. T. Chanto, C. Peng, R. Tan, 2020. Market study of soy sauces in Cambodia. *Techno-Science Research Journal*, 2020, Volume 8, 64–68.
19. S. Kai, S. Yeoun, C. Phat, 2020. Analysis of pesticide residues in sediment from Chhnok Tru, Kampong Chhnang using different extraction methods. *Techno-Science Research Journal* 8.
20. D. Vantha, C. Peng, H. Mith, 2020. Detection and susceptibility of antibiotic-resistant *Enterococcus* spp. in fermented and pickled vegetables. *Techno-Science Research Journal* 8.
21. C. Phat, S. Rann, P. Teav, S. Soeung, F. Kuok, E. G. Mariquit, W. Kuriniawan, H. Hinode, 2020. Assessment of pesticide residues in surface water, sediment, and fish from Chhnok Tru, Kampong Chhnang. *Techno-Science Research Journal* 8.
22. S. Hoeun, E. Mom, S. In, 2020. Optimization of white pepper (*Piper nigrum* L.) processing by enzymatic activity. *Techno-Science Research Journal* 8.
23. Kuoch, Th., Khoern, K., (2020). Distribution and Ecological Risk of Heavy Metals from Mining Areas: A Case Study in Chong Phlah Village, Chong Phlah Commune, Kaev Seima District, Mondulkiri Province, Northeast of Cambodia. *Techno-Science Research Journal* 8.
24. V. Phoem, S. Ly, H. Mith, 2020. Cambodian Rice Liquor Development using *Rhizopus oryzae*, *Saccharomyces cerevisiae* and alpha-amylase. *Techno-Science Research Journal* 8.
25. S. Yoeun, 2020. High Performance Liquid Chromatography: Principle and Basic Application. *The Bulletin of Cambodian Chemical Society* 11.
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27. R. Kong, S. Lun, P. Kang, C. Soeng, L. Blanchot, S. Kim, M. Leti, B. Fabre, H. Mith, 2020. Optimization of extraction and analysis of physico-chemical properties and chemical compositions of fatty oils extracted from kernel seed of different mango (*Mangifera indica* L.) varieties. *The Bulletin of Cambodian Chemical Society* 11.
28. K. Saing, S. HUL, 2019. Behavioural Study of People toward Plastic Bag Generation and Characteristics of Plastic Waste Composition in Phnom Penh Municipality, Cambodia. *Techno-Science Research Journal* 7.

List of Conferences from 2019-2023

1. MA Chiva, Tep Channeath, PENG Chanthol, HENG Oudom, (2023). Identification and Characterization of Lactic acid bacteria isolated from fermented products (Nem Sbak Chrouk) in Battambang province. The 14th International Conference on Environmental and Rural Development at Siem Reap, Cambodia, 3-5 March 2023.

2. Lengheang CHOENG, Chanthol PENG, Leangey SET, and Seyha DOEUN (2023). Determination of Histamine Level and Its Correlation with Viable Bacterial Count in Cambodian Fermented Fish. In The 14th International Conference on Environmental and Rural Development at Siem Reap, Cambodia, 3-5 March 2023.
3. Set LeangEy, Tep Channeath, Peng Chanthol, (2022). Traditional fermented products from Battambang, Cambodia: Their lactic acid bacteria and physicochemical characteristics. In the FOODI International Conference 2022, Nov. 2022.
4. Seyha Doeurn, Channeath Tep, Chanthol Peng, Oudom Heng, LeangEy Set, (2022). Diversity of Lactic Acid Bacteria Isolated from Nem Trey, A Traditional Fermented Fish Product of Cambodia. In the FOODI International Conference 2022, Nov. 2022.
5. Y. Nat, L. Vorleak, K. Tongor, S. Kong, S. Manit, C.P. Tan, R. Tan (2022). Effect Of Different Extraction Techniques On Yield And Physicochemical Properties Of Sacha Inchi Oil. Foodi International Conference 2022 (FOODI 2022), Universiti Teknologi Malaysai, Kuala Lumpur, Malaysia, 07-09 November, 2022.
6. S. Kong, V. Chanthy, P. Heng, M. Say, Y. Nat, C.P. Tan, R. Tan (2022). Evaluating Shelf-Life Of Commercial Soybean Oil Using An Empirical Modelling: A Case Study In Phnom Penh, Cambodia. Foodi International Conference 2022 (FOODI 2022), Universiti Teknologi Malaysai, Kuala Lumpur, Malaysia, 07-09 November, 2022.
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41. L. Ly, M. T. Chanto, C. Peng, R. Tan, 2020. Price Evaluation and Quality Control of Different Soy Sauces Sold in the Markets. *The 13th AUN/SEED-Net Regional Conference on Chemical Engineering 2020 (RCChE-2020), Jointly held with The 5th International Symposium on Conservation and Management of Tropical Lakes, Phnom Penh, Cambodia.*
 42. C. Heang, S. Keo, C. Hok, K. Kong, C. Phat, F. Kuok, E.G. Mariquit, W. Kuriniawan, H. Hinode, 2019. Analysis of pesticide residues in surface water in Chhnok Tru community of Tonle Sap Lake. *The 4th International Symposium on Conservation and Management of Tropical Lakes, Phnom Penh, Cambodia.*
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 45. M. Nishiyama, H. Mith, S. Nget, S. Say, S. In, J. Pu, T. Watanabe, 2019. Investigation of antimicrobial resistance of Enterococci collected from drinking water in Tonle Sap Lake, Cambodia. *The 4th International Symposium on Conservation and Management of Tropical Lakes, Phnom Penh, Cambodia.*
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Annex 24. List of publication from MIT Research Unit.

List of Index publications from 2019-2023

1. Movsun KUY, Laurent Schumacher, Sokchenda Sreng "Experimental demonstration of NFV deployment with RPi and MAAS", NetSoft2023. IEEE, 2023.
2. Chanreng Sey Nhim, Nita Chek, Chanthan Hel, and Rothna Pec, "Experiment on Smart Mushroom Cultivation Using the Environmental Control System", The 14th International Conference on Environmental and Rural Development at Angkor Paradise Hotel, Siem Reap, Cambodia, March 3rd to 5th, 2023
3. Sopheakra Chhorn, Sovichea Tep, Chanthan Hel, Rothna Pec, "Development of ESP32-Based Smart Greenhouse Controller", IEEE IoT World Forum, 2022
4. Born, Seanghort, Dona Valy, and Phutphalla Kong. "Encoder-Decoder Language Model for Khmer Handwritten Text Recognition in Historical Documents." In 2022 14th International Conference on Software, Knowledge, Information Management and Applications (SKIMA), pp. 234-238. IEEE, 2022.
5. Kumar, K. Dinesh, Sarot Srang, and Dona Valy. "A Review of Generative Adversarial Networks (GANs) for Technology-Assisted Learning: Solving Teaching and Learning Challenges." In 2022 International Conference on Automation, Computing and Renewable Systems (ICACRS), pp. 820-826. IEEE, 2022.
6. Ratha Siv, Matei Mancas, Bernard Gosselin, Dona Valy, and Sokchenda Sreng. "People Tracking and Re-Identifying in Distributed Contexts: Extension Study of PoseTReID." In 2022 9th International Conference on Electrical Engineering, Computer Science and Informatics (EECSI), pp. 337-342. IEEE, 2022.
7. Kong, Phutphalla, Matei Mancas, Bernard Gosselin, and Kimtho Po. 2022, "DeepRare: Generic Unsupervised Visual Attention Models" Electronics 11, no. 11:1696. <https://doi.org/10.3390/electronics11111696>
8. Chanreng Sey Nhim, Chanthan Hel, Sopheakra Chhorn, Sovichea Tep, Rothna PEC, "Development of Multi-Parameter Tester for Agricultural Application", The 9th International Conference on Information Technology, Computer, and Electrical Engineering, 2022.
9. Sok, K., Colin, J.N., Po, K. (2022). Multi-authority Decentralized Attribute-Based Authorization Framework. In: Horkoff, J., Serral, E., Zdravkovic, J. (eds) Advanced Information Systems Engineering Workshops. CAiSE 2022. Lecture Notes in Business Information Processing, vol 451. Springer, Cham. https://doi.org/10.1007/978-3-031-07478-3_2
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11. J. Kean, N. Raveu, H. Kaouach, K. Thourn and S. Sreng, "Analysis of Metamaterial Walls Reverberation Chamber by Using Modal Expansion Theory," 2021 Asia-Pacific International Symposium on Electromagnetic Compatibility (APEMC), 2021, pp. 1-4,
12. Chan Daraly Chin, Chanthan Hel, Rothna Pec, "Fab Lab Initiative in Higher Education: Digital Solutions Diverted to Traditional Farming in Cambodia Context," 2021 6th International STEM Education Conference (iSTEM-Ed), IEEE, 2021
13. Thura Peuo, Sopeak Yean, Boreth Sethy and Sarot Srang, "PD Controller and Dynamic Compensation Design for a DC Motor based on Estimated Parameters," 2021 International Conference on Advanced Mechatronics, Intelligent Manufacture and Industrial Automation (ICAMIA). Indonesia.
14. Sophyn Srey, Vongchivorn Chhour and Sarot Srang, "Lumped Parameter Estimation of a Low-Cost DC Motor for Position Controller Design," 2021 International Conference on Advanced Mechatronics, Intelligent Manufacture and Industrial Automation (ICAMIA). Indonesia.

15. Sam Ban, Andreea Dan, Félix Guinet, Julien Portanguen, Sarot Srang and Matthieu Luras “Assessing the potentialities of Physical Internet for Developing Countries Last-Mile Deliveries,” IPIC 2021, 8th International Physical Internet Conference. 2021, Germany.
16. Sai Thavath, Bunrong Proeung, Sovichea Tep, Sopheaktra Chhorn, Rothna Pec, Vichhey Nall, Pinnara Ket, Chantha Oeurng, and Chanthan Hel. "Prototyping of Smart Irrigation System Using IoT Technology." In 2021 7th International Conference on Electrical, Electronics and Information Engineering (ICEEIE), pp. 1-5. IEEE, 2021.
17. M. Mancas, P. Kong and B. Gosselin, "Visual Attention: Deep Rare Features," 2020 Joint 9th International Conference on Informatics, Electronics & Vision (ICIEV) and 2020 4th International Conference on Imaging, Vision & Pattern Recognition
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19. Maximilien Berthet et al. , “ Student-Led Policy and Technical Capacity Building Program: The Road to Cambodia's First CubeSat ,” 71st International Astronautical Congress (IAC) , 2020.
20. Sarot Srang, Sopagna Ath, and Masaki Yamkita, “Newton-Euler Based Dynamic Modeling and Control Simulation for Dual-Axis Parallel Mechanism Solar Tracker” Advances in Science, Technology and Engineering Systems Journal. Vol. 5, No. 5, 709-716, 2020.
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23. Sarot Srang and Sopagna Ath, “Dynamic Modelling and Simulation for 2DOF Parallel Mechanism Solar Tracker,” IEEE/ASME International Conference on Advanced Intelligent Mechatronics, 2019. Hong Kong
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1. Sotheara Oum, Sarot Srang, Phayuth Yonrith, "Integration of RRT* Path Planning with Trajectory Tracking for Wheeled Mobile Robot", Techno-Science Research Journal, 2022, Cambodia.
2. Penghuy Srean, Morokot Sakal, Maximilien Berthet and Sarot Srang, "Development of Orbital Simulator for Cambodian CubeSat Mission in LEO", Techno-Science Research Journal, 2022
3. Sok An Siek and Sarot Srang, “Design and Prototyping of Solar Hybrid Switch Controller and Monitoring System,” Techno-Science Research Journal, 2021.
4. Phayuth Yonrith, Sarot Srang, Morokot Sakal, Boreth Sethy, "Mobile Robot Localization using Extended Kalman Filter with Kinematic Model" Techno-Science Research Journal, 2021.
5. Hoksong Tim, Sarot Srang, Morokot Sakal, "Simulation and Numerical Characterization of Gaseous Oxygen Injector for ABS/GOX Hybrid Rocket Motor" Techno-Science Research Journal, 2021.
6. Vanyi Chao, Sarot Srang, Morokot Sakal, Chivorn Keo, "Helipad Detection for UAV based on YOLOv4 Transfer Learning Model" Techno-Science Research Journal, 2021.
7. Sarot Srang, Nguonly Taing, Fidero Kuok, “Policy Brief: Minimum Pre-Requisite for Creating High-tech and Deep-tech Startup Ecosystem in Cambodia”, Asian Vision Institute, 2021.

8. Dalin Soun, Morokot Sakal, Hokly Sor and Sarot Srang, "Design and Implementation of the Commercial-Off-The-Shelf Electrical Power System for the Satellite Training Kit – DemoSat," Techno-Science Research Journal, 2021, Cambodia.
9. Chivorn Keo, Sarot Srang, and Daro Van, "Modeling and Simulation at the Equilibrium of Fixed-Wing Unmanned Aerial Vehicle," Techno-Science Research Journal, 2020, Cambodia.
10. Boreth Sethy, Sarot Srang, and Daro Van, "Pose Estimation for Differential Drive Mobile Robot using Multi-Sensor Data Fusion," Techno-Science Research Journal, 2020.
11. Tongly Mork, Sarot Srang, and Daro Van, "Simultaneous Localization and Mapping using Intel RealSense Camera," Techno-Science Research Journal, 2020.
12. Leangchheng Ly, Sarot Srang, and Daro Van, "Modeling, Control, and Simulation on 3DOF Robot Manipulator," Techno-Science Research Journal, 2020.
13. Bunvireak Lim, Sarot Srang, and Daro Van, "Development of IoT Smart Controller: Case Study for the Gravity Irrigation System," Techno-Science Research Journal, 2020.
14. Lyhor Tem, and Sarot Srang, "CNC-Mill Construction and Automatic Control to Shape the Specimen by CAD/CAM," Techno-Science Research Journal, 2020.
15. Sarot Srang, "Dynamic Modeling for Multi Rigid Body UAV," Techno-Science Research Journal, 2019, Cambodia.

List of Conferences from 2019-2023

1. Vannkinh Nom, Dona Valy, Sokkhey Phauk. "Word Spotting on Khmer Palm Leaf Manuscript Documents". The 12th Scientific Day of ITC, 2023
2. Chanchen Pork, Dona Valy, Sokkhey Phauk. "Text-image reconstruction and reparation for Khmer Historical Documents". The 12th Scientific Day of ITC, 2023
3. Huon Sophy, Valy Dona. "Plagiarism Detection System for Khmer Language". The 12th Scientific Day of ITC, 2023
4. Kao Visal, Valy Dona, Yorn Vanda, Aing Hongsin , Korn Monit , Ham Heng , Yin Soknara , Phal Kimheng , Sophart Chhordaphea , Chhorn Kakada , Sor Sopheak , Hang Sonimith . "Air Handwriting Recognition for Khmer Characters". The 12th Scientific Day of ITC, 2023
5. Sothy Sek, Dona Valy. "Masked Language Modeling for Khmer Palm Leaf Manuscript". The 12th Scientific Day of ITC, 2023
6. Meng Thong Oeng, Ye Kyaw Thu, Zera Soeum, Sethserey Sam. "Two SignWriting Keyboard layouts for Cambodian Fingerspelling". The 12th Scientific Day of ITC, 2023
7. Dararith Khun, Dara Tith, Jean-Noël Colin, Dona Valy. "Reputation Model for Trust-Based Policy in Self-Sovereign Identity Systems". The 12th Scientific Day of ITC, 2023
8. Sothy Chhoem , Dara Tith, Jean-Noël Colin, Dona Valy. "The Trust Model in Self-Sovereign Identity Systems". The 12th Scientific Day of ITC, 2023
9. Bunthorn Liv, Dara Tith, Jean-Noël Colin, Dona Valy. "Security Enhancement of Digital Wallet in Self-sovereign Identity of Healthcare System". The 12th Scientific Day of ITC, 2023
10. Vannaroth Korn, Kimheng Sok, Rathpisey Heng. "Enhancing the accuracy and reliability of docker image vulnerability scanning technology". The 12th Scientific Day of ITC, 2023
11. Ngounhak Heng, Kimheng Sok, Rathpisey Heng. "Case Study of Organization-Task-Based Access Control (OTBAC)". The 12th Scientific Day of ITC, 2023
12. Sokserey Srey, Sarot Srang. "Comparison of Control Performance for a Low-cost DC Motor with Single-loop and Cascade Control Architecture". The 12th Scientific Day of ITC, 2023
13. Dear Moeurn, Sarot Srang. "Performance Comparison of Ball Image Detection using Deep Learning Models, UNet, Unet Crop, and FCNN". The 12th Scientific Day of ITC, 2023
14. Rattana Seng, Sarot Srang. "Development of Control Freamwork Based on ROS Platform for a 3-Axis Gimbal". The 12th Scientific Day of ITC, 2023

15. Alexander Virak, Somonika Virak, Sarot Srang. "Hardware Development of 6 Degree-of-Freedom Robot manipulator". The 12th Scientific Day of ITC, 2023
16. Sovanvichea Hort, Vannthorng Him, Sarot Srang. "Investigation of Rocket Motor Performance with Syrup-Mixture Propellant". The 12th Scientific Day of ITC, 2023
17. Piseth NUON, Kosorl THOURN. "Development a Low Cost Air Leak Testing System to Analyze Pipes Quality based on Raspberry Pi and OpenPLC". The 12th Scientific Day of ITC, 2023
18. Sok Oeun Un, Kimtho Po, Kosorl Thourn, Rathna Pec. "Communication Back-up for Natural Disaster by Emergency Amateur Radio Operator Implemented using APRS as Location Tracker in Cambodia". The 12th Scientific Day of ITC, 2023
19. Thavath Sai, Sovichea Tep, Chanthan Hel, Rothna Pec. "Development of Smart Greenhouse Controller using IoT". The 12th Scientific Day of ITC, 2023
20. Song Sok, Kosorl Thourn, Kimtho Po. "Development Model of Non-Intrusive Appliance Load Monitoring for Household Energy Improvement Basing on VI Trajectory". The 12th Scientific Day of ITC, 2023
21. CHUN Dara, THOURN Kosorl. "Design an Electromagnetic Wave Absorber using Time-Domain Techniques". The 12th Scientific Day of ITC, 2023
22. Panhapich Khe, Tithnorakneath Em, Mengkong Keng, Sambath Chhorng, Try Kot, Rithea Ngeth. "Indoor Location Tracking using UWB". The 12th Scientific Day of ITC, 2023
23. Leakana Ouk, Rothna Pec, Sopheaktra Chhorn. "Design Efficient Cell Identification Technique for 5G Terrestrial Cellular System". The 12th Scientific Day of ITC, 2023
24. Sokheng Din, Sokkhey Phauk. "Anomaly Detection of Time Series Data Based on Deep Learning for Feature Learning". The 12th Scientific Day of ITC, 2023
25. Khun Eng, Sokkhey Phauk, Sothea Has, Sokheng Din. "The Study of Cambodia's Commodity Price Flow Trade: The Cereal Price Prediction for Anticipate Price Fluctuation by Using the ARIMA Model". The 12th Scientific Day of ITC, 2023
26. Seng Hak Leng, Sokkhey Phauk, Sothea Has. "An Empirical Investigation of Gold Price Prediction Using LSTM Model". The 12th Scientific Day of ITC, 2023
27. OEUN Sothea, MENG Sokheng, NHIM Chanreng Sey, HEL Chanthan, CHHORN Sopheaktra, TEP Sovichea, KET Pinnara, "Development of Lab-Scale Composter for Mushroom Substrate Residual", LMS 2023
28. BUNTHEOUN Sophanarith*, KIM Bunthern, and VAI Vannak. "Optimal Placement of Electric Vehicle Charging Stations using Mixed-Integer Linear programming: A Case Study in Cambodia", LMS 2023
29. Sopheaktra Chhorn, Sovichea Tep, Chanthan Hel, Rothna Pec, "Development of ESP32-Based Smart Greenhouse Controller", IEEE IoT World Forum, 2022
30. Sotheara Oum, Sarot Srang, Phayuth Yonrith, "Integration of RRT* Path Planning with Trajectory Tracking for Wheeled Mobile Robot", 2022 Annual Conference on Electronics, Information and Systems, 2022, Japan
31. Sophy Huon, Dona Valy, "Handwritten Khmer Digit Recognition using Artificial Neural Network", The 11th Scientific Day of ITC, 2022, Cambodia
32. Seanghort Born, Dona Valy, Phutphalla Kong, "Encoder-Decoder Language Model for Khmer Handwritten Text Recognition on Historical Documents (Sleuk-Rith)", The 11th Scientific Day of ITC, 2022, Cambodia
33. Vanny Ratanak Chheang, Dara Tith, Dona Valy, "Distributed Authentication Infrastructure using Public Key Infrastructure and Blockchain", The 11th Scientific Day of ITC, 2022, Cambodia
34. Sotheara Oum, Sarot Srang, Phayuth Yonrith, "Integration of RRT* Path Planning with Trajectory Tracking for Wheeled Mobile Robot", The 11th Scientific Day of ITC, 2022, Cambodia.

35. Povnemol Gnhiok, Sarot Srang, Phayuth Yonrith, "PI Controller for Velocity Controller Design based on Lumped Parameter Estimation of a Low-Cost PMDC Motor", The 11th Scientific Day of ITC, 2022, Cambodia.
36. Chanvireak Samrit, Sarot Srang, Phayuth Yonrith, "Design Structure for Plug and Play Wheel Mobile Robot", The 11th Scientific Day of ITC, 2022, Cambodia.
37. Vichetra Yi, Sarot Srang, Chivorn Keo, "Roll and Pitch angle Estimation by using Unscented Kalman filter", The 11th Scientific Day of ITC, 2022, Cambodia.
38. Rattana Seng, Sarot Srang, Chivorn Keo, "Flight Transition State Machine Design for Vertical Takeoff Landing for Fixed-Wing Unmanned Aerial Vehicle", The 11th Scientific Day of ITC, 2022, Cambodia.
39. Sothea Oeun, Sokheng Meng, Chanreng Sey Nhim, Sopheaktra Chhorn, Sovichea Tep, Chanthan Hel, Pinnara Ket, "The Prototype of Smart Compost Bin (S-Mush Bin)", The 11th Scientific Day of ITC, 2022, Cambodia.
40. Sereiawthna Ros, Dona Valy, "Face Mask Recognition using ResNet and DenseNet", The 11th Scientific Day of ITC, 2022, Cambodia
41. Hutmonineat Sea, Dona Valy, Phutphalla Kong, "Insects and Abnormalities Detection using Convolutional Neural Network", The 11th Scientific Day of ITC, 2022, Cambodia
42. Sochetra Than, Dona Valy, Phutphalla Kong, "Crop Disease Data & Detection using Convolutional Neural Network", The 11th Scientific Day of ITC, 2022, Cambodia
43. Seangly Ny, Dona Valy, Phutphalla Kong, "Lock and Unlock Door with Face Detection using OpenCV, Python and Arduino Board", The 11th Scientific Day of ITC, 2022, Cambodia
44. Lykong Un, Dona Valy, "Isolated Khmer Character Recognition", The 11th Scientific Day of ITC, 2022, Cambodia
45. Rasin Koun, Pocvenh Ly, Tithola Vong, Sopheapanha Bun, Hoksong Tim, Chivorn Keo, " Concept Study of Dual Axes Camera Tracker and Rocket Detection by Using Color Based Detection", The 11th Scientific Day of ITC, 2022, Cambodia.
46. Sopheaktra Chhorn, Sovichea Tep, Chanthan Hel, Rothna Pec, "Development of ESP32-Based Smart Greenhouse Controller", IEEE IoT World Forum, 2022
47. Sothea Oum, Sarot Srang, Phayuth Yonrith, "Integration of RRT* Path Planning with Trajectory Tracking for Wheeled Mobile Robot", 2022 Annual Conference on Electronics, Information and Systems, 2022, Japan
48. Sophy Huon, Dona Valy, "Handwritten Khmer Digit Recognition using Artificial Neural Network", The 11th Scientific Day of ITC, 2022, Cambodia
49. Seanghort Born, Dona Valy, Phutphalla Kong, "Encoder-Decoder Language Model for Khmer Handwritten Text Recognition on Historical Documents (Sleuk-Rith)", The 11th Scientific Day of ITC, 2022, Cambodia
50. Vanny Ratanak Chheang, Dara Tith, Dona Valy, "Distributed Authentication Infrastructure using Public Key Infrastructure and Blockchain", The 11th Scientific Day of ITC, 2022, Cambodia
51. Sothea Oum, Sarot Srang, Phayuth Yonrith, "Integration of RRT* Path Planning with Trajectory Tracking for Wheeled Mobile Robot", The 11th Scientific Day of ITC, 2022, Cambodia.
52. Povnemol Gnhiok, Sarot Srang, Phayuth Yonrith, "PI Controller for Velocity Controller Design based on Lumped Parameter Estimation of a Low-Cost PMDC Motor", The 11th Scientific Day of ITC, 2022, Cambodia.
53. Chanvireak Samrit, Sarot Srang, Phayuth Yonrith, "Design Structure for Plug and Play Wheel Mobile Robot", The 11th Scientific Day of ITC, 2022, Cambodia.
54. Vichetra Yi, Sarot Srang, Chivorn Keo, "Roll and Pitch angle Estimation by using Unscented Kalman filter", The 11th Scientific Day of ITC, 2022, Cambodia.
55. Rattana Seng, Sarot Srang, Chivorn Keo, "Flight Transition State Machine Design for Vertical Takeoff Landing for Fixed-Wing Unmanned Aerial Vehicle", The 11th Scientific Day of ITC, 2022, Cambodia.

56. Sothea Oeun, Sokheng Meng, Chanreng Sey Nhim, Sopheaktra Chhorn, Sovichea Tep, Chanthan Hel, Pinnara Ket, "The Prototype of Smart Compost Bin (S-Mush Bin)", The 11th Scientific Day of ITC, 2022, Cambodia.
57. Sereiwithna Ros, Dona Valy, "Face Mask Recognition using ResNet and DenseNet", The 11th Scientific Day of ITC, 2022, Cambodia
58. Hutmonineat Sea, Dona Valy, Phutphalla Kong, "Insects and Abnormalities Detection using Convolutional Neural Network", The 11th Scientific Day of ITC, 2022, Cambodia
59. Sochetra Than, Dona Valy, Phutphalla Kong, "Crop Disease Data & Detection using Convolutional Neural Network", The 11th Scientific Day of ITC, 2022, Cambodia
60. Seangly Ny, Dona Valy, Phutphalla Kong, "Lock and Unlock Door with Face Detection using OpenCV, Python and Arduino Board", The 11th Scientific Day of ITC, 2022, Cambodia
61. Lykong Un, Dona Valy, "Isolated Khmer Character Recognition", The 11th Scientific Day of ITC, 2022, Cambodia
62. Rasin Koun, Pocvenh Ly, Tithtola Vong, Sopheapanha Bun, Hoksong Tim, Chivorn Keo, " Concept Study of Dual Axes Camera Tracker and Rocket Detection by Using Color Based Detection", The 11th Scientific Day of ITC, 2022, Cambodia.
63. Chan Daraly Chin, Chanthan Hel, Rothna Pec, "Initiation of the Creation of Fab Lab for Advanced Studies: Digital Solutions Focusing on Traditional Agriculture in the Context of Cambodia" 2021 3rd National Research Forum, 2021
64. S. Tep and R. Pec, "Design of Sensor Node System for Low-Cost and Customizable Applications," 12th Regional Conference on Computer Information and Engineering, 2019, Laos.

Annex 25. List of publication from MSS Research Unit.

List of Index publications from 2019-2023

1. Mao, P., Hashikawa, H., Sasaoka, T., Shimada, H., Wan, Z., Hamanaka, A., Oya, J. (2022) Numerical Investigation of Roof Stability in Longwall Face Developed in Shallow Depth under Weak Geological Conditions. *Journal of Sustainability*. 14(3). <https://doi.org/10.3390/su14031036> (IF = 3.889)
2. Bun, P., Cyr, M., Lanieste, P., Bun, K. N., Idir, R. (2022) Concrete made of 100% recycled materials - Feasibility study. 180 (2022). 106199. <https://doi.org/10.1016/j.resconrec.2022.106199> (IF = 13.716)
3. Mom, A., Hoeun, S., Bernard, F., Kamali-Bernard, S., Han, V. (2022) The Effect of Thermal Contact Conductance (TCC) between Aggregate Inclusion and Matrix on Thermal Conductivity of Cement-based Material. *International Journal of Integrated Engineering*. 14(5). pp. 99-106.
4. Chea, C., Ket, P., Taing, L., Kong, S., Um, D., Taing, C., Or, C., Aun, S. and Hang, L. (2022) Life-Cycle Impact Assessment of Air Emissions from a Cement Production Plant in Cambodia. *Open Journal of Air Pollution*, 11, 85-99. doi: [10.4236/ojap.2022.114007](https://doi.org/10.4236/ojap.2022.114007). (IF = 0.79)
5. Lorn, S., Ket, P., Or, C., Kong, S., Um, D., Aun, S., Taing, C., Hang, L. (2022) Health Impact Assessment from Rice Straw Production in Cambodia. *Appl. Sci*, 12, 10276. <https://doi.org/10.3390/app122010276> (IF = 2.838)
6. Leelataviwat, S., Doung, P., Naiyana, N. (2021) A review on performance-based plastic design method: concept and recent developments. 155. https://doi.org/10.1007/978-3-030-73932-4_8 (Book chapter)
7. Piseth, D., Sutath, L., Eiichi, S. (2021) Tensile strength and failure mechanism of internal diaphragms in wide flange beam-to-box column connections with concrete filling. Elsevier, <https://doi.org/10.1016/j.jobe.2020.102037> (IF: 5.138)
8. Sophea, B., Yoshiaki, F., Jun-ichi, K., Daisuke, F., Anjula, D., A.K.M. Badrul A. (2020) Laboratory Investigation on the Permeability Variation of Fractured Inada Granite by Multiple Transient Axial Stress Disturbances. *Pure and Applied Geophysics*. 177(11). 5385-5396 (2020). DOI: 10.1007/s00024-020-02565-2
9. Amirthan, T., Lahiru, D., Tharaka, D., Anjula, D., Chulantha, J., Maheshwari, W., Yoshiaki, F., Sophea, B. (2020) Stability Analysis of Slopes in Aruwakkalu Limestone Mine During Rain: A Finite Element Approach. *IEEE*. DOI: 10.1109/MERCon50084.2020.9185268
10. Takashi, S., Pisith, M., Hideki, S., Akihiro, H., and Jiro, O. (2020) Numerical Analysis of Longwall Gate-Entry Stability under Weak Geological Condition: A Case Study of an Indonesian Coal Mine. *Energies* 13, no. 18: 4710
11. Kafi, M.A., Aktar, M.K., Phanny, Y., Todo, M. (2019) Adhesion, proliferation and differentiation of human mesenchymal stem cell on chitosan/collagen composite scaffold. *Journal of Materials science*, 131. <https://doi.org/10.1007/s10856-019-6341-8>
12. Seang, S., Kotaro, Y., Thomas, T., Tetsuya, N., Koichiro, W., Jocelyn, P. (2019) Litho geochemistry of Intrusive Rocks in the Halo Porphyry Copper-Molybdenum Prospect, Northeast Cambodia. *Open Journal of Geology*. 7 (342). <https://doi.org/10.4236/ojg.2019.97023>

List of Non-index publications from 2019-2023

1. Seang, S., Kan, K., & Okamoto, M. (2022). Feasibility Study of Using Recycled Waste Plastic in Bituminous Concrete Application. *Techno Science Research Journal*. 10(2).
2. Oeung, K., Doung, P., Leelataviwat, S., Han, V. (2022) Analytical Assessment of Earthquake Energy Demand in Single Degree of Freedom Systems, *Techno Science Research Journal*. 10(1).
3. Doung, P., Leelataviwat, S. (2022) Direct Seismic Design Methods for Buckling-Retrained Knee-Braced Frames with Single Plate Shear Connections. *Techno Science Research Journal*. 10(1).
4. Sreng, L., Azura, A. R., Yos, P. (2021) Effects of Cambodian Clay on the Physical and Mechanical Properties of Natural Rubber Latex Foams. *Techno Science Research Journal*, In Press

5. Chea, L., Prok, N., Rath, S.S. (2020) Effect on Capacity of RC Beam and Column Strengthened with Fibrwrap® System by Cyclic Exposure to Water and Salt Water Techno Science Research Journal, Vol. 9.
6. Chab, H., Rath, S.S., Prok, N. (2020). “Mechanical Properties of Reinforced Concrete Beam and Column Strengthened by Fibrwrap® System after being Submerged to Different Exposure Solutions”. Techno Science Research Journal, Vol. 9.
7. Cheng, K., Hin, R., Han, V., Bernard, F. (2019) Development of Connection of Glass Beam: A Numerical Study. Techno Science Research Journal V6, pp. 35-43.

List of Conferences from 2019-2023

1. Kouleam, S., Prok, N., Rath, S. S. (2022) Experimental Study on Performance of Fiber Anchor Under Axial Tension, NPIC Conference Proceeding. 12th December 2022, Cambodia
2. Chan, R., Prok, N., Rath, S. S. (2022) Experimental Study of the Effectiveness of Anchor Fibers Inserting into Concrete Cylinder Confined by Glass Fiber Reinforcing Polymer, NPIC Conference Proceeding. 12th December 2022, Cambodia
3. Sreng, L., Seang, S., Azura, A.R., Yos, P. (2022) Characterization of Cambodian natural rubber/common clay composites for shock absorption applications: Primary results. *Materials Today: Proceedings*. 66(5). pp. 3112-3115, <https://doi.org/10.1016/j.matpr.2022.08.013>.
4. Taing, K., Leclecrq, P. (2022) Adoption contextuelle des pratiques pédagogiques: entre écosystèmes physique et logiciel, le cas de l'architecture bioclimatique en Asie du sud-est. *SHS Web of Conferences*. 147(2022). <https://doi.org/10.1051/shsconf/202214707002> (open access)
5. Doung, P., Leelataviwat, S., Chea, L., Sorn, C. (2022) Experimental Assessment of Strength and Failure Modes of Post-Installed Bundled Rebar in Concrete. Second International Conference on Construction Materials and Structures (ICCMS-2022). 13-20 December 2022, National Institute of Technology Calicut (NITC), India (online)
6. Ly, P., Seang, S., Kret, K., Oy, K., Yonezu, K., Watanabe, K., Sreu, T. (2022) Lithology, hydrothermal alteration, and ore characteristics of Area-1 in Koh Sla, Chhouk district, Kampot Province, southern Cambodia. *Proceedings of the International Symposium on Earth Science and Technology, Japan*
7. Chheuy, P., Kret, K., Seang, S., Or, C., Kong, S., Kry, R., Oy, K., Chan, C., Sreu, T., Hoeun, S., Hoeun, S., Chhun, C., Neak, K. (2022) Hydrothermal Alteration Mineral Mapping by Integrating of ASTER and Landsat-8: A case study in Phnom Peam Louk, Kompong Chhang Province, Southwest Cambodia. *Proceedings of the International Symposium on Earth Science and Technology, Japan 2022*
8. Neak, K., Kret, K., Sreu, T., Or, C., Seang, S. (2022) Hydrothermal Alteration Mineral Mapping by Integrating of ASTER and Landsat-8: A case study in Phnom Peam Louk, Kompong Chhang Province, Southwest Cambodia. *Proceedings of the International Symposium on Earth Science and Technology, Japan 2022*
9. Boeurn, C., Seang, S., Kret, K., Yonezu, K., Watanabe, Z., Zaw, K. (2022) Geology and Hydrothermal Alteration of Skarn Deposit in Area 4, Phnom So Ngam Tenement, Chhouk District, Kampot Province, Cambodia. *Proceedings of the International Symposium on Earth Science and Technology, Japan 2022*
10. Kim, C., Kret, K., Seang, S., Kong, K., Or, C., Oy, K., Ammuguan, J., Heoun, S., Chhun, C., and Neak, K. (2022) Lithological Analysis of Koh Nheak, Mondoukiri Province Using Landsat-8 OLI and ASTER. *Proceedings of the International Symposium on Earth Science and Technology, Japan 2022*
11. Seang, S., Kan K., & Okamoto, M. (2022). Feasibility Study of Using Recycled Waste Plastic in Bituminous Concrete. *Proceedings of Conference on Business, Social Sciences and Technology (CoNeScINTech)*, 2(1), 59-66.
12. Lin, L., Chhin, R., Han, V., Doung, P. (2022) Prediction of Basic Wind Speed for Battambang Province. *Conference on Business, Proceedings of Social Sciences and Technology (CoNeScINTech)*. 2(1), pp. 67-72. ISSN 2808-5485

13. Lin, L., Chhin, R., Han, V., Doung, P. (2022) Determination of Basic Wind Speed for the Design of Buildings in Cambodia. The 4th International Symposium on Civil and Environmental Engineering (ISCEE 2022). Universiti Tun Hussein Onn Malaysia, 3-4 October 2022. (online)
14. Lin, L., Chhin, R., Han, V., Doung, P. (2022) Beginning Step of the Development of Basic Wind Speed for Structural Design in Cambodia. AUN/SEED-NET Joint Graduate Research Seminar in Civil Engineering. Institute of Technology of Cambodia, 21 December 2022
15. Keth, K. (2022) Understanding the Collaborative Works in Construction Projects in Phnom Penh, Cambodia. AUN/SEED-NET Joint Graduate Research Seminar in Civil Engineering. Institute of Technology of Cambodia, 21 December 2022
16. Keth, K., Ben Rajeb, S., Han, V. (2022) Multidisciplinary Collaboration in Construction projects in the Cambodian Context. Séminaire inaugural de l'école doctorale thématique (Architecture, Urbanisme, Ingénierie Architecturale et Urbaine – EDT 62, Brussels, 4 March 2022
17. Long, M., Leclercq, P., Han, V., Reiter, S. (2022) Life Cycle Assessment Approach for the Future Green Affordable Housing in Phnom Penh, Cambodia. AUN/SEED-NET Joint Graduate Research Seminar in Civil Engineering. Institute of Technology of Cambodia, 21 December 2022
18. Long, M., Leclercq, P., Han, V., Reiter, S. (2022) Green Building Design Strategy for a House in Phnom Penh from Life Cycle Assessment. Young Researchers Overseas Day, 12 December 2022
19. Khim, R., Han, V., Doung, P. (2022) Performance-Based Plastic Design and Evaluation of Tall Knee-Braced Frames with Simple Connections. AUN/SEED-NET Joint Graduate Research Seminar in Civil Engineering. Institute of Technology of Cambodia, 21 December 2022
20. Vong, S., Chhin, R., Doung, P. (2022) Basic wind speed analysis and serviceability evaluation of tall reinforced concrete building subjected to wind and earthquake: a case study in Phnom Penh. NPIC Conference Proceeding. 12th December 2022, Cambodia
21. Sorn, C., Heng, S., Doung, P. (2022) Assessment of Bond Behavior of Post-Installed Bundled Reinforcement using Finite Element Method. NPIC Conference Proceeding. 12th December 2022, Cambodia
22. But, R., Heng, S., Doung, P. (2022) Bond Strength Assessment of Post-Installed Single Reinforcement using Finite Element Analysis. NPIC Conference Proceeding. 12th December 2022, Cambodia
23. Taing, K., Andre, P., Leclercq, P. (2022) Analysis of thermal performance of naturally ventilated residential building in tropical climate: case study of Phnom Penh, Cambodia, 2nd ASEAN International Conference on Energy and Environment (AICEE), Phnom Penh, Cambodia
24. Karagianni, C., Schwede, D., Taing, K., Han, V., (2022) Smart technology supporting traditional and bioclimatic building functions in reducing cooling energy demand in Cambodia, Digital Insights
25. Taing, K., (2022) Bio-climatic design as a solution for residential building thermal comfort in tropical climate, 2nd Biennial of Tropical Architecture of Reunion Island, Reunion Island
26. Hun, P., Chung, C., Doung, P. (2022) A Comprehensively Comparative Review of Wind Load Codes for the Conformity to Cambodia Wind. 4th National Research Forum. 20-21 October 2022, Phnom Penh, Cambodia
27. Lim, M., Seang, S., Kret, K., Oy, K., Ammugauan, J. (2022) Ore Mineralization, Hydrothermal Alteration of China Wall Porphyry Cu-Mo-Au at Adongmeas, Ratanakiri, Cambodia. Proceedings of the ITC's 11th Scientific Day, 5-6 May 2022
28. Boern, C., Seang, S., Kret, K., Oy, K., Kong, S., Kong, S. (2022) Petrography and Hydrothermal alteration of Skarn prospect in Area 4, Phnom Sro Ngam Tenement, Chhouk District, Kompot province, Cambodia. Proceedings of the ITC's 11th Scientific Day, 5-6 May 2022
29. Ly, P., Seang, S., Kret, K., Oy, K., Kong, S., Ammugauan, J., Kong, S. (2022) Hydrothermal Alteration and Ore Mineralization of Area-1 in Koh Sla, Chhouk district, Kampot Province, Southern Cambodia. Proceedings of the ITC's 11th Scientific Day, 5-6 May 2022
30. Kim, C., Kret, K., Seang, S., Kong, S., Or, C., Kry, R., Oy, R., Ammugauan, R., Keat, L., Neak, K., Chhun, C., Hoeun, S., Hoeun, S., Sreu, T. (2022) Lithological Mapping using Landsat-8 Oli and Aster

- Multispectral Data in Koh Nheak, Monduliri Province, Northeast Cambodia. Proceedings of the 1st International Conference on Earth Resources and Geo-Environmental Technology 2022
31. Boeurn, C., Seang,S., Oy,K., Kret,K., Kong,S., Ammuguan, J. (2022) Lithology and Skarn Mineralogy in Area 4, Phnom So Ngam Tenement, Chhouk District, Kampot Province, Cambodia. Proceedings of the 1st International Conference on Earth Resources and Geo-Environmental Technology 2022
 32. Sreng, L., Seang,S., Rashid,A,A., and Yos, p. (2022) Performance Study of Cambodian Natural Rubber/Clay Composites for Shock Absorption Application: Primary Results.Proceedings of the 1st International Conference on Earth Resources and Geo-Environmental Technology 2022
 33. Chheuy,P., Kret, K., Seang,S., Or,C., Kong,S., Kry,R., Keat,L., Chhun,C., Hoeun,S., Sreu,T. (2022) Application of ASTER and Landsat-8 for hydrothermal alteration mineral mapping for prospective mineral deposits exploration in Kompong Chhnang, in Southwest of Cambodia Proceedings of the 1st International Conference on Earth Resources and Geo-Environmental Technology 2022
 34. Yuth, Y.O., Kret, K., Seang, S., Or, C., Kong, S., Sokeang, Hoeun, S., Hoeun, S. (2022) Estimation of Land Surface Temperature Using Landsat-8 in Teh Teuk Pus Geothermal Field, Kompong Speu province, Southwest Cambodia. Proceedings of the 1st International Conference on Earth Resources and Geo-Environmental Technology 2022
 35. Ly, P., Seang, S., Hlaing, K.M., Oy, K., Kret, K. (2022) Initial investigations on the alteration mineralogy and ore characteristics of Area-1 in Koh Sla, Chhouk district, Kampot province, southern Cambodia. Proceedings of the 1st International Conference on Earth Resources and Geo-Environmental Technology 2022
 36. Lin, L., Chhin, R., Han, V., Doung, P. (2022) Prediction of Basic Wind Speed for Design of Building in Sihanoukville. the ITC's 11th Scientific Day, 5-6 May 2022
 37. Soung, R., Doung, P. (2022) Numerical Performance Evaluation of Steel Ring Damper Under Uni-axial Cyclic Loading. Proceedings of the ITC's 11th Scientific Day, 5-6 May 2022
 38. Sion, R., Chhin, R., Han, V., Doung, P. (2022) Estimating Basic Wind Speed used for Building Design in Phnom Penh. Proceedings of the ITC's 11th Scientific Day, 5-6 May 2022
 39. Mut, M., Phann, P., Ung, C., Yuos, O., Sry, V. (2022). Tensile Properties of PE/rPETG blend from 3D printing. Proceedings of the ITC's 11th Scientific Day, 5-6 May 2022
 40. Mai, S., Sok, S., Soun, N., Prok, N., Rath, S.S. (2022) Durability of Concrete beam Strengthened with Fibrwrap® System and of Fiber Composite Laminate. Proceedings of the ITC's 11th Scientific Day, 5-6 May 2022
 41. Oeung, K., Doung, P., Leelataviwat, S., Han, V. (2022) Assessment Study of Energy Demand in Multi-Story Steel Moment Frames. The Regional Conference in Civil Engineering, 22-23 January 2022, Malaysia. (online)
 42. Sreng, L., Seang, S., Azura, A.R., Yos, P. (2021) Characterization of Cambodian Natural Rubber/Common Clay Composites. Proceeding of the 14th AUN/SEED-Net Regional Conference on Materials 2021 & 4th International Postgraduate Conference on Materials
 43. Seang, S., Kakda, K., Jaydee, A., Kov, R., Hang, B., Ly, S. C. S., Chan, C., Oy, K., Sitha, K. (2021) Initial Study on Lithological, Hydrothermal Alteration, and Geochemistry for Mineral Exploration in Chhouk District, Kampot Province, Southwest Cambodia. Regional Conference on Natural Disaster, Yangon University Research Center, Yangon, Myanmar
 44. Kret, K., Chan, C., Seang, S., Kuoch, T., Kong, S., Kry, R., Boeut, S., Hoeun, S. (2021) Hydrothermal alteration mineral mapping by integrating ASTER and Landsat-8 OLI: A case study in Ratanakiri province, northeast Cambodia. Regional Conference on Natural Disaster, Yangon University Research Center, Yangon, Myanmar
 45. Kret, K., Chan, C., Seang, S., Kuoch, T., Kong, S., Kry, R., Boeut, S., Hoeun, S. (2021) Hydrothermal alteration mineral mapping by integrating ASTER and Landsat-8 OLI: A case study in Ratanakiri province, northeast Cambodia. Regional Conference on Natural Disaster, Yangon University Research Center, Yangon, Myanmar

46. Ly, S., Sirisokha, S., Oy, K., Kakda, K., Kov, R., Hang, B., Chorn, S., Jaydee, A., Kong, S., Sitha, K., Kotaro, Y., Koichiro, W., Sophea, B., Tola, S., Seangleng, H. (2021) Preliminary study on lithology, hydrothermal alteration, and soil and rock geochemistry for gold and copper at Area 6, Phnom Sro Ngam Tenement, Chhouk District, Kampot Province, Cambodia. International Symposium on Earth Science and Technology, Japan
47. Chhayo, C., Kakda, K.t, Sirisokha, S., Chanmoly, O., Sitha, K., Reaksmey, K., Sophea, B., Kimhouy, O., Seangleng, H., Jaydee, A., Kong, S. (2021) Hydrothermal alteration mapping from ASTER and Landsat-8 in Kampot Fold Belt, southwest Cambodia. International Symposium on Earth Science and Technology, Japan
48. Leakhena, H., Phalla, T., Srean, A., Dalin, U., Taing, C. (2021) Air Emission Inventory of Factory Boiler and impact to human health. Case Study in Phnom Penh, Cambodia The 6th International Symposium on Conservation and Management of Tropical Lakes” In Conjunction with
49. Leakhena, H., Phalla, T., Srean, A., Dalin, U., Taing, C. (2021-A) Assessment of human health impact of particulate matter formation from industry textile boiler in Cambodia. 15th Regional Conference in Environmental Engineering
50. Leakhena, H., Phalla, T., Srean, A., Dalin, U., Taing, C. (2021-B) Feasibility of air quality standard compliance link with perception of people : case study Phnom Penh Cambodia. Asean young scientist conference
51. Menghor, L., Mouyyi, H., Nallis, K., Sirisokha, S., and Ichhuy, N. (2020) Primary Investigation on lithology and alteration minerals for geothermal resource in Te Teuk Pus, Oral district Kampot Speu province, Cambodia. International of Symposium on Earth Science and Technology. 420-425.
52. Hin, R., Cheng, K., Han, V., Bernard, F., Seang, C., Keryvin, V., Sangleboeuf, J.-C. Flexural strength improvement for structural glass: a numerical study. IOP Conf. Series: Materials Science and Engineering, 849 (2020) 012083. doi:10.1088/1757-899X/849/1/012083
53. Seang, S., Kotaro, Y., Koichiro, W., Thomas, T. (2019) Litho-geochemistry, Alteration, and Mineralization in the Halo Porphyry Copper-Molybdenum Prospect, Northeast Cambodia. Regional Conference on Geological and Geo-Resources Engineering, University of the Philippines Diliman, Philippines.

Annex 26. List of publication from WAE Research Unit.

List of Index publications from 2019-2023

1. Wai, M.P., Chem, V., Ean, K.E., Chhin, R., Siev, S., Heu, R. (2022). Accessing the Impact of Floating Houses on Water Quality in Tonle Sap Lake, Cambodia. *Sustainability*, 14, 247. <https://doi.org/10.3390/su14052747> (IF: 3.25)
2. Jouquet, P., Harit, A., Hervé, V., Moger, H., Carrijo, T., Donoso, D., Eldridge, D., Cunha, H., Choosai, C., Janeau, J.L., Maeght, J.L., Thu, T.D., Briandon, A., Skali, M.D., Thuyne, J.V., Mainga, A., Florian, Q., Issa, O., Podwojewski, P., Rajot, J.L., Tureau, T., Smaili, L., Labiadh, M., Boukbida, H., Shanbhag, R., Muon, R., Ann, V., Cheik, S., Fall, S., Traoré, S., Dupont, S., Chouvenec, T., Mullins, A.J., Syaokani, S., Zaiss, R., Tien, T., Šobotník, J., Auclerc, A., Qiu, R., Tang, Y., Huot, H., Dussès, D., Bottinelli, N. (2022). The impact of termites on soil sheeting properties is better explained by environmental factors than by their feeding and building strategies. *Geoderma*, 412: 115706. <https://doi.org/10.1016/j.geoderma.2022.115706> (IF: 6.1)
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List of Conferences from 2019-2023

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Annex 27. List of Foreign Students at ITC.

No	Civilité	Nom et prénom	Départ.	Date d'arrivé	Date de départ	University d'origine	Pays	Thème (Quel est le sujet du stage?)	Financement
1	M.	BONNIER Thomas	ECAM	28-01-24	06-06-24	ECAM LaSalle	France	One semster exchange	Self-funded
2	Mlle	BOURGADE Elisa	ECAM	28-01-24	06-06-24	ECAM LaSalle	France	One semster exchange	Self-funded
3	Mlle	CONJAT Camille	ECAM	01-02-24	10-06-24	ECAM LaSalle	France	One semster exchange	Self-funded
4	M.	FALANDRY Julien	ECAM	28-01-24	06-06-24	ECAM LaSalle	France	One semster exchange	Self-funded
5	M.	GELIOT Cyprien	ECAM	04-02-24	10-06-24	ECAM LaSalle	France	One semster exchange	Self-funded
6	M.	GRANJARD Mathew	ECAM	04-02-24	10-06-24	ECAM LaSalle	France	One semster exchange	Self-funded
7	M.	BARBIER Michel	FTN	17-05-24	30-11-24	Université de Montpellier	France	PhD Student under MiMeDiR project	Agropolis Fondation & IRD
8	M.	Antoine Moreau	SF	18-04-24	24-06-24	Université Lille II	France	Volontaire	Self-funded
9	M.	JOBERT Léa	FTN	15-01-24	15-05-24	Université de Montpellier	France	PhD Student under DEPASS project	Agropolis Fondation & IRD
10	Mlle	LEBEL Noémie	GCI	21-02-23	11-07-23	Insa de Rennes	France	One semester Exchange	Personnel
11	Mr.	PIRALLA Clement	GEE	08-10-23	25-01-24	INSA de Rennes	France	One semster exchange	Self-funded
12	M.	KAZUMA Kimura	GGG	09-09-23	25-09-23	Kyushu University	Japan	Short- exchange (2weeks)	JASSO Scholarship
13	Mlle	SAE Yamamoto	GGG	09-09-23	25-09-23	Kyushu University	Japan	Short- exchange (2weeks)	JASSO Scholarship
14	M.	TOKOSHIMA Ryosuke	GGG	09-09-23	25-09-23	Kyushu University	Japan	Short- exchange (2weeks)	JASSO Scholarship
15	Mlle	BLANDIN Liana	GIC	09-10-23	17-01-24	INSA de Rennes	France	One semster exchange	Self-funded
16	M.	FURET Arthur	GIC	8-10-23	25-01-24	INSA de Rennes	France	One semster exchange	Self-funded
17	Mlle	GERARD Ilona	GIC	09-10-23	27-01-24	Université de INSA TOULOUSE	France	One semster exchange	Self-funded
18	M.	LEGRAND Bastien	GIC	08-10-23	22-01-24	INSA de Rennes	France	One semster exchange	Self-funded

19	M.	PIERRE-Evan Gaveau	GIC	29-09-23	28-01-24	Université de Le Mans	France	One semester exchange	Self-funded
20	M	DURET Pierre	GIM	24-02-24	06-07-24	INSA Toulouse	France	One semester exchange	Self-funded
21	M.	KINGLATTANA Latsamee	GRU	01-05-23	01-08-23	National University of Laos (NUOL)	Lao	ITC INOWASIA Water Oriented Living Lab (3 months)	Erasmus+ InowAsia
22	Mlle	LUONG Thi Thu Huong	GRU	01-05-23	01-08-23	Vietnam National University (VNU)	Viet Nam	ITC INOWASIA Water Oriented Living Lab (3 months)	Erasmus+ InowAsia
23	M.	KARTHIKEYAN Dinesh Kumar	GS		11-24	SASTRA University	Inde	One Semester Exchange, PhD student	KIT-ITC
24	M.	LAFAYE Locas	GS	12-02-24	12-08-24	Institut polytechnique de Grenoble	France	One semester exchange, PhD Student	AFD-EU
25	Mlle	TASTET Maëlle	GS	22-04-24	21-07-24	IUT de Saint-Jérôme Marseille	France	Internship (1 Semester): Stage de 2ème année de BUT, Aquaculture treatment system	Self-funded and Under LBE project at ITC
26	M.	AGNUS Oscar	MIT	02-05-24	31-08-24	ENSTA Bretagne	France	Internship (Investigation of IMU sensor performance for use with aerial vehicle)	Self-funded

Annex 28. Organizing Seminars and Workshops for lecturers and students.

No.	Date	Subject	Organizer (Department)	Co-organizer (Industry)	Participants
1	24-05-23	Reputation building strategies for employees	GIC	CJCC	GIC students
2	12-06-23	Information sharing session of scholarship at Above+ Beyond school	GIC	ABOVE+BEYOND	GIC students
3	20-07-23	Intellectual Property Law	UIL	ARES Project - Result #2 Dr. IN Sokneang	10 ITC staffs
4	26-07-23	Workshop “To assess the current status of the structure and implementation process at UL office”.	UIL	ARES Project - Result #1 Dr. OR Chanmoly	20 ITC staffs
5	09-08-23	Waterproofing Solution	GCI	EVERSAFE SOLUTION CO., LTD	GCI (200 Students)
6	09-08-23	Seminar on Waterproofing Solution	GCI	EVERSAFE SOLUTION CO., LTD	200 GCI and GAR students
7	16-08-23	The benefits of BIM (Building Information Modeling) technology in the construction sector, especially the use of BIM in project management	GCI	ONEBIM CAMBODIA CONTECH CO., LTD	GCI
8	16-08-23	Seminar on BIM Technology	GCI	ONEBIM Company	150 GCI and GAR students
9	18-08-23	Seminar on “High Rise Building Solutions from Basement to Roof”	GCI	Sika Cambodia Company	250 GCI and GAR students
10	04-10-23	Launching new associate’s degree of engineering program "Water Supply and Plumbing" and MoU signing ceremony	UIL, GRU	K & K Pipe (Cambodia) Co., Ltd. and Cambodian Water Supply Association (CWA)	Direction, UIL, GRU lecturers and students
11	25-10-23	Experience Sharing session on Working Oversea from Alumni	GIC	Our alumni GIC	GIC students
12	27-10-23	Workshop on Financial Technology (FinTech)	GIC	Non-bank Financial Services Authority	GIC students
13	01-11-23	Workshop on Application and technologies of speech	GIC	CADT	GIC students
14	08-11-23	Panasonic Product and Technology	GIM	Panasonic Cambodia	GIM students and lecturers

15	08-11-23	Seminar on BIM Technology	GCI	MCC Shanghai Baoye Company	70 GCI students
16	14-11-23	Seminar on Flooring Solutions	GCI	Sika Cambodia Company	170 GCI students
17	15-11-23	Seminar on Entrepreneurship and Business Model Canvas	GIC	Khmer Enterprise	GIC students
18	22-11-23	Workshop " Intellectual Property Policy", ITC, Phnom Penh, Cambodia	UIL	MISTI and ERIA	Direction, MISTI, University (CADT, NPIC), industry, lecturer and students
19	23-11-23	IP PBX Fundamental and How to Grow Your Career	GIC	MaxBIT	GIC students
20	23-11-23	Practical Training on Air Conditioning System Installation	GIM	LG Cambodia	GIM students and lecturers
21	23-11-23	Seminar on Strengthening and Repairing Solution of Buildings and Infrastructures by Using TYFO® FIBRWRAP® SYSTEMS	GCI	Fyfe Asia Pte Ltd and Aisd Co., Ltd	200 GCI and GAR students
22	29-11-23	Dissemination workshop on "Soy Sauce Quality and Development of Different Soy Sauces by Fermentation"	RIC	N/A	E Che Ngov Heng Food Production of Kampot Leang Leng Enterprise Phnom Pich Bun Khea Kong Sosedo Enterprise Camfood Enterprise, GCA students
23	08-12-23	Monozukuri Workshop on QC 7 Tools and Basic TPM 08-09 December 2023)	GIM	Denso Cambodia Co., Ltd	GIM students and lecturers
24	18-12-23	Dissemination workshop on "Quality assurance of concrete pile integrity and soil properties investigation using geophysical approached	GGG		GGG students and lecturers; Panhchaksela Construction; Total Energies; Arup (Cambodia) Limited
25	27-12-23	Introduction to Self-Sovereign Identity	GIC	University of Namur, Belgium	GIC students
26	02-01-24	Workshop " The Golden-Brown Award competition provides opportunities for students." ITC, Phnom Penh, Cambodia	UIL	PPM	GCA (100 students)
27	10-01-24	Workshop " Scholarship and Job Opportunities from Sailun Tire", ITC, Phnom Penh, Cambodia	UIL-RIC	Cart Tire Co., Ltd	Direction, RIC, UIL, leturers and students

28	10-01-24	Workshop " Job opportunity from ORRIN Cambodia	UIL	ORRIN Cambodia	Direction, UIL, Students
29	17-01-24	Internship and Employment opportunities from tech companies	GIC	Codingate Technology, Proseth Solutions, Udaya Technology, Mbanq	GIC students
30	02-02-24	Training Workshop on Enhancing Geospatial Precision: NTRIP Utilization and RTK application	GGG	King Mongkut's Institute of Technology Ladkrabang	GGG lecturers, GGG Students
31	28-02-24	Training on VoIP on the cloud: 3CX Server on Alibaba Cloud	GIC	Khcolo	GIC students
32	07-03-24	Workshop " Business model competition to promote university startups", ITC, Phnom Penh, Cambodia	UIL	MISTI and ERIA	Direction, MISTI, (CADT, NPIC), industry, lecturer and students
33	18-03-24	Seminar on Climate Change and Energy Transitions (18 - 22 March 2024)	GGG	Total Energies	70 I4-GGG students and 2 staffs from MME
34	15-05-24	Fundamental of VRV System (15-16 May 2024)	GIM	Daikin Cambodia (DAC)	- I4-Meca, I3-GIM, few lecturers
35	16-05-24	Completion Ceremony on BIM Seminar Phase 1	GCI	MCC Shanghai Baoye Company	200 GCI and GAR students
36	16-05-24	Special Seminar on ASEAN's Empowering Future Leveraging Innovation and Digital Transformation for Regional Prosperity and Inclusive Growth	GS	Hunan University of Science and Technology	ITC (I4 and I5)
37	20-05-24	Seminar on Oil and Gas Exploration & Production Contract (20 - 24 May 2024)	GGG	Total Energies	70 I4-GGG students and 2 staffs from MME
38	23-05-24	Scientific seminar on "Natural Plant Extracts Innovation Solution for Beer Stabilization and Sugar Reduction in Soft Drinks"	GCA	Bluetechni and Natural Specialties by Ajinomoto	I4-GCA
39	29-05-24	Seminar on Recruitment Plan for Management Program Trainer (MT program)	UIL	YI DA Manufacturer Co., LTD	65 GIM, GEE, GCA
40	29-05-24	An Impactful Career Through STEM	UIL, GRU	Tech For Cambodia	ITC (I4 and I5)
41	31-05-24	Feed and Feed Production	UIL, GCA	De Heus TMH Co., Ltd	GCA-FST students (I4)
42	05-06-24	Seminar on Job opportunities and Internship	UIL	Sailun Group	70 GIM, GEE
43	19-06-24	Chip Mong Insee Career Talk	UIL	Chip Mong Insee	GCA, GIM, GEE (I4)

Annex 29. Joining Seminars and Workshops Organized by External Entities.

No.	Date (DD-MM-YY)	Subject	Organizer	Participate	Department
1	27-06-23	Joining workshop on "Research on the IP Education for Business Startup in Cambodia" at MISTI, Phnom Penh, Cambodia	Ministry of Industry, Science, Technology and Innovation (MISTI)	Dr. Molika Yin (Head of UIL) Dr. Peany Houng (Head of ITC Journal)	UIL, RIC
2	31-07-23	Joining the project opening with MISTI, Phnom Penh, Cambodia	Ministry of Industry, Science, Technology and Innovation (MISTI)	Mr. Ratboren Chan (UIL)	UIL
3	28-08-23	Consultation Workshop on Pavement Design Standards	MPWT	Dr. PROK Narith, GCI Lecturer Dr. CHEA Savuth, GCI Lecturer Dr. POUV Keang Sè, GCI Lecturer Dr. KAN Kuchvichea, GCI Lecturer Dr. DOUNG Piseth, GCI Lecturer	GCI
4	08-09-23	Join seminars on "Geochemical Technology of Resource Development and Environmental Protection for Lancang-Mekong Countries"	Development and Research Center of China Geological Survey	Dr. SREU Tola (GGG-lecturer) Dr. KRET Kakda (GGG-lecturer) Dr. SEANG Sirisokha (GGG-lecturer) Dr. BOEUT Sophea (GGG-lecturer) Mr. KAING Sainglong (GGG-lecturer) Mr. KONG Sotheara (GGG-lecturer)	GGG
5	14-09-23	Joining "PROSAFE Knowledge-Sharing Event", Phnom Penh, Cambodia	Mekong Institute	Dr. Molika Yin (Head of UIL)	UIL
6	18-09-23	Joining training on "Research on the IP Education for Business Startup in Cambodia" on 18-24 September 2023 in Tokyo, Japan	Ministry of Industry, Science, Technology and Innovation (MISTI) and Economic Research Institute for ASEAN and East Asia	Dr. Davin Sang (Deputy-Head of UIL)	UIL
7	15-10-23	Joining Training on "Curriculum Improvement and Capacity Building on Advance water Management/Treatment",	Project: Provincial Water Supply and Sanitation Project (PWSSP), AFD	Dr. Davin Sang (Deputy-Head of UIL) Dr. Khoeurn Kimleang (Vice-dean GCA)	Faculty/Department

		on 15 to 26 October 2023, Rennes, France			
8	16-11-23	Joining International Symposium on " Southeast Asian Water related Jobs for Environmental Sustainability (SEAWAT)", on 16 to 21 November 2023, Siem Reap, Cambodia	National University of Battambang	Dr. Davin Sang (Deputy-Head of UIL)	UIL
9	20-11-23	Joining workshop on " Research and Intellectual Property Right", CADT, Phnom Penh	CADT (Project: Economic Research Institute for ASEAN and East Asia)	Dr. Molika Yin (Head of UIL)	UIL
10	13-12-23	Join Training on " Building Successful Startup Ecosystem 13-17 December 2023, MISTI, Phnom Penh, Cambodia	MISTI	Dr. Davin Sang (Deputy-Head of UIL)	UIL
11	18-12-23	Joining workshop on " Promoting University-initiated startups", NICC, Phnom Penh, Cambodia	NICC (Project: Economic Research Institute for ASEAN and East Asia)	Dr. Davin Sang (Deputy-Head of UIL)	UIL
12	19-12-23	Techno Digital Talent Scholarship Orientation Day	CADT	Ms. SEAK Leng	GIC
13	19-12-23	Joining The 3rd Annual Forum of Technology Transfer " Promoting Technology Transfer through Navigating Challenges and Opportunities to Reshape Cambodia's Tech Startup Landscape", MISTI, Phnom Penh, Cambodia	MISTI	Dr. Davin Sang (Deputy-Head of UIL)	UIL
14	25-12-23	Joining workshop on " Research Promotion of Higher Education Improvement Project for SMEs and Private Sectors", ITC, Phnom Penh, Cambodia	Project: HIEP 1	Dr. Davin Sang (Deputy-Head of UIL)	UIL

15	30-01-24	Joining workshop on " Smart business" MISTI, Phnom Penh, Cambodia	MISTI	Dr. Davin Sang (Deputy-Head of UIL) Mr. Chanthan Hel (UIL-Representative)	UIL
16	17-02-24	KE-Reactor Unipreneur Educator	Khmer Enterprise	Ms. SEAK Leng	GIC
17	27-03-24	Join a sharing session “Power of Data Science and Cyber Security - Real World Application Sharing Session”	AMS	GIC I3 and I4 students	GIC
18	21-05-24	Introduction to the Cambodia Enterprise Innovation Index (CEII): The Role of the CEII in Economic Growth and Industrial Policy Development	MISTI	Dr. Molika Yin (Head of UIL)	UIL
19	28-05-24	Presentation on the SDF studies (S4C Project)	SDF Office	Dr. Molika Yin (Head of UIL)	UIL
20	05-06-24	SDF’s Co-funding on Skills Training for Private Sector	Royal Group Phnom Penh SEZ	Dr. Molika Yin (Head of UIL) Dr. Davin Sang (Deputy-Head of UIL)	UIL
21	20-06-24	Seminar on "Roadmap of SDF Creation for Private Sector"	SDF Office	Dr. Molika Yin (Head of UIL)	UIL
22	07-12-23	Workshop on Understanding the Accelerator Model, Best Practices, and Tips for Measuring Success	CAMESCO and ANDE Global Accelerator Learning Initiative	Ms. SEAK Leng	GIC
23	12-10-23	Workshop on SDC's support to Social and Impact Entrepreneurship	Swiss Agency for Development and Cooperation (SDC)	Ms. SEAK Leng	GIC

Annex 30. Industrial Visits to ITC.

No.	Date (DD-MM-YY)	Industries	Subject	Participant (ITC)	Faculty/Department
1	22-06-23	Japaness companies (coordinating by Chiho-san)	Future collaboration	Dr. Molika Yin (Head of UIL) Ms. Chiho Miyake (JICA)	UIL
2	28-06-23	Oyika Co., Ltd Mr. Thy Pee and his colleagues	Discuss about event organization at ITC (E-Motorbike showcase)	Dr. Molika Yin (Head of UIL) Representative from GEE	UIL, GEE
3	29-06-23	Royal Trust Trading Co., Ltd CEO	Discuss the mango peel and banana flour products development	Dr. Sokneang In (Dean of GCA) Dr. Molika Yin (UIL) Dr. Chanvorleak Phat (Head Unit of FTN) Dr. Elen Morm (Lecture of GCA)	UIL, GCA
4	06-07-23	Meng Yee Garment Manufactory Co., Ltd. - Managing Director	<ul style="list-style-type: none"> - Invite ITC team work such as teachers/researchers and students to visit the factory - Examine the feasibility 'Industry visit ITC 'Industry visit ITC of providing scholarships to more students (number and criteria will be discussed in detail between the two parties) - Provide job opportunities for graduate students (approximately 10) with an initial stipend of \$ 600 - Examine the possibility of establishing and developing some laboratories in the institute. 	Dr. Chantha OEURNG (Deputy director of ITC) Dr. Peany Houng (On behalf of UIL Office) Dr. Sivmey Hor (Vice-dean of GCA) Mr. Rothboren Chan (UIL/GRU) Dr. Saosameth Chhith (Deputy-Head of GIM) Mr. Koksai Chou (Deputy-Head of GEE) Mr. Sambo Lun (GRU)	Director, UIL,GCA, GRU, GEE, GIM
5	19-07-23	Phnom Penh Autonomous Port	<ul style="list-style-type: none"> - Students internship (I3, I4, I5-GIM) - Job recruitment for I5-GIM - RIS and WBL 	Dr. Chhith Saosometh, vice head of GIM	GIM, GEE, GCI
6	20-07-23	Smart Axiata	Discuss about internship opportunity for ITC students	Mr. Ty Soy (Deputy-director of ITC) Dr. Molika Yin (Head of UIL)	Direction, UIL

7	07-08-23	CART TIRE Co., Ltd WANG Chuanwei (CEO)	The company will welcome students and professors who want to use the laboratory for the benefit of both parties; Develop new skills in the technology school that the market in the above field needs; The company will include Techno School as the company's research partner in the future.	Dr. Kollika Nguon (Deputy-Director General) Dr. Molika Yin (Head of UIL) Dr. Phany Yos (Deputy of RIC) Dr. Saosameth Chhith (Deputy-Head of GIM) Dr. Dr. Sivmey Hor (Vice Dean of GCA)	ITC, UIL, RIC, GIM, GCA
8	08-08-23	RMA Cambodia HR	Discuss about Collaboration, job opportunity for students	Dr. Chantha Oeurng (Deputy director of ITC) Dr. Molika Yin (Head of UIL) Dr. Phany Yos (Deputy-derector of RIC) Dr. Sarin Chan (Head of GIM)	ITC, UIL, RIC, GIM
9	10-08-23	Steaming Cambodia	- Software (Siemens Solid Edge) license provision - Possible future collaboration	Dr. Chan Sarin, head of GIM dept	GIM
10	10-08-23	Panasonic Cambodia	- Capacity building of staff in AC system - AC system provision for training the students - Scholarships for the Students	Dr. Chan Sarin, head of GIM dept Dr. Chhith Saosometh, vice-head of GIM dept	GIM
11	17-08-23	An Cuong Wood - Working Materials (Cambodia) Mr. Kanha Rin (Sale Representative)	Discuss about the organization of seminar for ITC students and possibility to support the ITC Mart Decoration. The company will propose in their next year budget and ITC will provide space for the company to showcase their products at GCI's lab.	Dr. Molika Yin (Head of UIL) Representative from GCI	UIL, GCI
12	17-08-23	Prince Foundation	Discuss about the scholarship for ITC students	Mr. Ty Soy (Deputy-director of ITC) Dr. Molika Yin (Head of UIL)	Direction, UIL

13	04-09-23	Royal Trust Trading Co., Ltd CEO	Discuss the progress and the possibility to apply fund together for the project of mango peel and banana flour products development	Dr. Molika Yin (Head of UIL) Dr. Chanvorleak Phat (Head of FTN) Dr. Elen Morm (Lecturer of GCA) Mr. Adrien Servent (Researcher from CIRAD, France)	UIL, FTN, GCA
14	21-09-23	Yazaki (Cambodia) Products Co., Ltd CEO	Future collaboration: welcome ITC lecturers and students to visit and internship their factory at Koh Kong Special Economic Zone	Dr. Molika Yin (Head of UIL) Ms. Chiho Miyake (JICA) Dr. Sarin Chan (Head of GIM) Dr. Saosameth Chhith (Deputy-Head of GIM)	UIL, GIM, JICA
15	29-09-23	Urata Cambodia Mr. UENO Toshio	Future collaboration: to learn about the academic program of Civil Engineering (GCI) at ITC and visit ITC lab facilities - Seeking for collaboration with Ministry of Land - Need construction management engineer - Provide internship opportunity (maybe between Aug-Sep 2024)	Dr. Molika Yin (Head of UIL) Ms. Chiho Miyake (JICA) Dr. Virak Han (Head of GIM)	UIL, GCI
16	02-10-23	Meng Yee Garment Manufactory Co., Ltd. - Mr. Anthony Wong, HR Manager	Discuss about: - Current situation of ITC students who just get the job at Meng Yee Garment Manufactory Co., Ltd. (9 slots) with basic salary 600\$ - Progress and recruitment workflow of HOIMENG Group Scholarship for ITC students for academic year 2023-2024 (5 slots)	Dr. Molika Yin (Head of UIL) Dr. Peany Houng (In charge of Techno-SRJ)	UIL
17	09-12-23	Denso Cambodia Co., Ltd - Mr. Sato Atsushi, vice president	- Visit the production line - Real case example of TPM	Dr. Siv Easeng, lecturer at GIM dept Mr. Phuoy Lyheng, lecturer at GIM dept Mr. Ly Leangchheng, lecturer at GIM dept	GIM

				Mr. Chhoun Bora, lecturer at GIM dept	
18	13-12-23	Kobelco Eco-Solutions Co.,Ltd. Mr. HIROSHI Tochiki, Manager of planning and administration section Mr. HIROYUKI Mukai, Deputy General Manager Mr. SUSUMU Ono, General Manager	Discuss about: - Company to announce internships in January 2023 for internships starting at the end of February 2023 → UIL office to share this information with students. - Proposal for a seminar in late December or January 2024 to share the company profile and internship opportunities → ITC to assist in disseminating information to students. - Dr. Nguon Kollika suggests the company consider lecturer internships (2-3 months) to help the company and upgrade the capacity of lecturers.	Dr. Kollika Nguon (Deputy-Director General) Dr. Molika Yin (Head of UIL) Dr. Davin SANG (Deputy-head of UIL) Dr. Saosameth Chhith (Deputy-Head of GIM) Mr. LUN Sambo (UIL-representative GRU)	UIL
19	14-12-23	Codingate Technology	- Visit research lab and discuss about potential collaboration	Dr. VALY Dona M-ECS students	GIC, RIC
20	15-12-23	Fine Flooring (Cambodia) Co., Ltd	Discuss about: - Recruit ITC engineering students	Dr. Molika Yin (Head of UIL)	UIL
21	22-12-23	NIPON Paint company Ms. Pheavy	Discuss about: - Possible to conduct career faire for student at year 4 & year 5	Dr. Davin Sang (Deputy-head of UIL)	UIL
22	30-01-24	LOTTE FOUNDATION	- Visit lab facilities and learn about current GGG services to industries	Ms. Chea Monyneath Mr. Seng Mengly	GGG
23	29-03-24	BAUER Special Foundation (Cambodia) Co., Ltd	Visit GGG faculty	Dean of GGG and Dr. Mao Pisith	GGG
24	10-05-24	ATR Company	Visit GGG and GRU to discuss for possible collaboration	Dean of GGG and Dr. Mao Pisith and Mr. Seng Mengly	GGG Lab

25	13-05-24	Toua LLC	To explore collaborative opportunities. The visit extended beyond discussions, including a tour of ITC's civil engineering and architecture labs. This firsthand look at ITC's facilities provided valuable insight into the university's capabilities and potential areas for collaboration.	Dr. Molika Yin (Head of UIL) Dr. Davin Sang (Deputy-Head of UIL) Dr. Kimleang Khoeurn (Vice-Dean of GCA) Mr. Hav Ly (Vice-Dean of GCI)	UIL, GCA, GCI and GAR
26	22-05-24	CART TIRE Co., Ltd and Qingdao University of Science and Technology (QUST) WANG Chuanwei (CEO)	To discuss the exchange program between ITC and QUST under financial support from Sailun Group	Mr. Ty Soy (Deputy-Director) Dr. Molika Yin (Head of UIL) Dr. Davin Sang (Deputy-Head of UIL) Dr. Phanny Yos (Deputy-Director of RIC) Dr. Sivmey Hor (Vice-Dean of GCA)	Direction, UIL, RIC, GCA
27	23-05-24	KASEKAM YOUVEAKCHUN SVAY RIENG CO., LTD (TTC AgriS)	To explore collaborative opportunities: student internship and job	UIL, GCA, GEE, GIM	UIL, GCA, GEE, GIM
28	23-05-24	Codeus and Labtech Academy	To explore collaborative opportunities: short course training at ITC	Dr. Long Bun (Deputy-Director) Dr. Molika Yin (Head of UIL)	Direction, UIL
29	31-05-24	Chinese Archaeology	Visit GGG and GRU to discuss for possible collaboration	Dean of GGG and Dr. Mao Pisith and Representative from GRU	GGG Lab
30	10-06-24	Beijing Ark Talent Education and Technology Group	To explore collaborative opportunities: the possibility to build Huawei College at ITC in the field of Information Technology	Dr. Long Bun (Deputy-Director) Dr. Molika Yin (Head of UIL) Dr. Tepmony Sim (Director of GS) Dr. Piseth Doung (Head of MSS)	Direction, UIL

Annex 31. ITC Lecturers and Students' Visits to Industries.

No.	Date	Industries	Subject	Participant	Faculty/Department
1	23-06-2023	AEON and Makro (Cambodia)	Study tour of Thai stakeholders and stakeholder meeting in Cambodia	Dr. Molika Yin (Head of UIL) Dr. Chanvorleak Phat (Head of FTN) Dr. Hengsim Phoung (Lecturer of GCA)	UIL, RIC, GCA
2	05-07-23	RMA Automotive (Cambodia) Co., Ltd - Mr. Sok San, production manager - Mr. Ly Narong, HR operation specialist - Mr. An Kimhuot, plant facility & maintenance manager - Representative from IT department - Representative from Manufacturing Engineer department - Representative from Safety department - Representative from warehouse department - Mr. Richard D'Souza, manufacturing engineering (ME) manager	Visit the Assembly line of Ford at Pursat Plant - Discuss about RIS and WBL - Discuss about internship for students	- Dr. Chan Sarin, Head of GIM dept - Dr. Chhith Saosometh, Vice-head of GIM dept - Dr. Kinnaleth Vongchanh, lecturer and researcher at GIM - Dr. Siv Easeng, lecturer at GIM - Mr. Phuoy Lyheng, lecturer at GIM	GIM

3	14-07-23	DENSO Cambodia	<p>To deepen collaboration between ITC and Denso.</p> <ul style="list-style-type: none"> - Discuss on “Monozukuri workshop” for GIM students - mainly interested in consultation of GIM’s curriculum integration including joining some lectures, as well as joining “lecturer go back to industry”. - Denso may be able to contribute especially to the field of Industrial Engineering. - Being open to signing a MoU with ITC 	<p>Dr. Bun Kim Ngun, Deputy Director Dr. Yos Phanny, Deputy Director of Research and Innovation Centre Dr. Chan Sarin, Head of Department of Industrial and Mechanical Engineering (GIM) Dr. Chhith Saosometh, Deputy Head of GIM Dr. Srang Sarot, in charge of DC Lab, GIM Ms. Chiho Miyake (JICA)</p>	ITC, RIC, GIM, JICA
4	20-07-23	N C X Co., Ltd - Mr. Eat Seng Ny, deputy-head of HR and Admin	<p>Visit the manufacturing plant of Honda motorcycles</p> <ul style="list-style-type: none"> - Discuss about technical issues in Die Design Department - Students internship and job recruitment - Future site visit 	<ul style="list-style-type: none"> - Dr. Chhith Saosometh, vice-head of GIM department - Mr. Phyo Lyheng, lecturer at GIM - Mr. Keo Chivorn, lecturer at GIM - Mr. Ly Leangcheng, lecturer at GIM 	GIM
5	29-07-23	Solar Green Energy (SOG E)	Visit and discuss about potential collaboration	<ul style="list-style-type: none"> - Dr. SRANG Sarot - Dr. VALY Dona - Dr. PEC Rothna - Mr. HEL Chanthan 	RIC
6	05-08-23	Meng Yee Manufactory Co., Ltd - Mr. Dennis Chung, Managing Director - Mr. Anthony Wong, HR Manager	Study tour to Meng Yee Manufactory Co., Ltd for ITC students to learn about the garment manufactory	<p>Dr. Peany Houng (In charge of Techno-SRJ) Mr. Ratboren Chan (UIL) Ms. Somaly Mean (Assistant of UIL) Students from GIM, GEE, GIC, GCA, GRU</p>	UIL, RIC, GIM, GEE, GIC, GCA, GRU

7	10-08-23	Steaming Cambodia - Kan Te Udom, academic trainer	Visit the steaming cambodia training center - Check the progress of students' internship (I3-GIM)	- Dr. Chhith Saosometh, vice-head of GIM department	GIM
8	13-09-23	Cart Tire Co., Ltd - Mr. Jiang Renshuang, Director - Mr. Tian Kexu, HR Manager	Visit the production line at Tay Ninh province in Vietnam - Discuss about student internships and jobs - Research collaboration "Technology transfer to the private sector" - In future, planning to establish "Salatechno-Sailun" at ITC to enhance the research collaboration.	Dr. Kimtho Po, Director Dr. Kollika Nguon, Deputy-Director Dr. Chanmoly Or, Director of RIC Dr. Yos Phanny, Deputy Director of Research and Innovation Centre Dr. Chhith Saosometh, Deputy Head of GIM Dr. Sokkey Phauk, Deputy-Head of AMS Mr. Sovannmony Nget, Lecturer of GCA Mr. Phen Sieang, Head of Collaoration Office Mr. Ratboren Chan, UIL Officer	ITC, RIC, UIL, GIM, AMS, GCA
9	07-10-23	CMED Construction Co., Ltd.	Visit and discuss about potential collaboration	- Dr. VALY Dona - Mr. CHHORN Sopheaktra - Mr. LIV Bunthorn	RIC
10	17-01-24	Vital Premium Water NVC Coporation Co., Ltd One More Manufacturing Co., Ltd (Mee Chiet)	Visit the Mee Chiet Manufacturing Process and Vital drinking water process	- Asst. Prof. Dr. Tan Reasmey, Deputy Director of Research and Innovation Center - Dr. Nget Sovannmony, lecturer at GCA Faculty - I5 ChE students from Faculty of Chemical and Food Engineering	GCA, RIC
11	24-01-24	Chip Mong Industries - Mr Suphaktra	Visit the manufacturing plant of tiles, PVC pipes, and concrete - Discuss about job recruitment - PVC pipes provision to ITC to train students	- Dr. Chhith Saosometh, vice-head of GIM dept - Mr. Keo Chivorn, lecturer at GIM dept - Mr. San Sophak, lecturer at GIM dept	GIM

12	06-03-24	YAZAKI (CAMBODIA) PRODUCTS CO., LTD.(YCP) (06-07 March 2024)	- Visit the wire harness manufacturing plant - Future recruitment if the company expand another branch in Phnom Penh	Dr. Chhith Saosometh, Dr. Sry Vannei, Mr. Mut Mesa, Mr. Keo Chivorn, Mr. Chhorn Rath	GIM and GEE
13	13-03-24	HEINEKEN Cambodia, Cambodia Brewery Limited	- Recruitment and master scholarship for students	Dr. Chhith Saosometh, Mr. Mut Mesa, Mr. Seab Piseth, Mr. Chhorn Rath	GIM
14	26-03-24	MCC SHANGHAI BAOYE (CAMBODIA)	- Visit the BIM Technology and MEP used in the company - Understand on the requirement of the company on our graduated students	- Mr. LY Hav, Vice dean of FGC - Dr. Prok Narith, GCI Lecturer - Dr. CHHANG Sophy, GCI Lecturer - Dr. OUCH Vanthet, GCI Lecturer - Ms. EA Monika, GCI Lecturer - Mr. NUTH Visal, GCI Lecturer - Mr. VENH Lay Ou, GAR Lecturer	GCI and GAR
15	27-03-24	An Cường Wood-Working Materials	- Visit the Wood-Working Materials products of the company	- Mr. LY Hav, Vice dean of FGC - Mr. LEU Leanghong, GAR Lecturer - 85 4th Year GAR Students	GAR
16	03-05-24	Kirirom Food Production	Visit production line, waste water treatment, energy plants and fertilizer to explore the possible research collaboration	Dr. Bun Long UIL RIC	Direction, UIL, RIC
17	07-05-24	Cambodian Energy Limited	- Visit coal power plant	- Dr. Chhith Saosometh, Mr. San Sophak, Mr. Dara Seyhak	GIM
18	11-05-24	Cart Tire Co., Ltd	- Students internship	- Dr. Siv Easeng, Mr. Mut Mesa	GIM and GGG
19	24-05-24	Chip Mong Industries	- Visit roof tiles and pipes products	- Mr. LY Hav, Vice dean of FGC - Dr. MAY Raksmeay, GAR Lecturer - Dr. HENG Sounean, GCI Lecturer - 3rd Year GCI Students	GCI

Annex 32. Event Organization.

No.	Date	Subject	Faculty/Department	Participant
1	08-12-23	The 6th Industry Consortium and the discussion points are (more info in industry consortium report): <u>20231215_Report of Industry Consortium 2023.pdf</u>	ITC, UIL, RIC, Dean of Faculty, Head of department	40 participants (mostly directors) from 27 companies and industries:
2	21-09-23	The 2nd International Conference on Earth Resources and Geo-Environment Technology 2023 (EraGET) and the 14th AUN/SEED-NET Regional Conference on Geological and Geo-resources Engineering	GGG	There were 475 (56 international) participants, including Professor, researcher, student, and representative from industry, from 15 international universities (Japan, Malaysia, Philippine, China, and Africa), 3 local university, 16 private sector, and 3 public sectors.
3	06-06-24	The 13th Scientific Day: Catalyzing Innovation Human Capital, Research, and Industry Linkages Jointly Held with International Symposium on URBAN WATER SUPPLY AND SANITATION ENGINEERING and the 1st Symposium of FOOD TECHNOLOGY, RESEARCH AND INNOVATION (06 - 07 June 2024)	ITC, RIC, UIL	Lecturers, Researchers and Students of ITC, Company, High school students

Annex 33. Projects Developed with Private Sectors and Other Services.

No	Date	Industries	Subject	Coordinator and Trainers	Faculty / Department	Origin of Company
1	June 2023 - January 2024	Lotus Green Team Co., Ltd	Training on "Revit BIM software for MEP"	Dr. Molika Yin (Head UIL) Mr. Chanthan Hel (Representative of GTR and Coordinator) Dr. Yoeng Sereyvath (Coordinator for WBL) Mr. Mey Dina (GCI, Trainer)	UIL, GCI (35 trainees) Training 126 h	Cambodia
2	October - December 2023	LBL International Co., Ltd	Training on "Construction project management" with budget supported from Skills Development Fund (SDF)	Dr. Molika Yin (Head UIL) Mr. Chanthan Hel (Representative of GTR and Coordinator for SDF) Dr. Yoeng Sereyvath (Coordinator for WBL) Dr. Virak Han (GCI, Trainer) Dr. Raveth Hin (GCI, Trainer)	UIL, GCI (18 trainees) Training 16 h	France
3	08 - 15 September 2023	TR Plus Engineering Co., Ltd PD & E Power Engineering INTERSYS Solution	Training on "Energy Efficiency on Electrical System in Buildings and Industries"	Dr. Molika Yin (Head UIL) Mr. Chanthan Hel (Representative of GTR and Coordinator for SDF) Dr. Yoeng Sereyvath (Coordinator for WBL) Dr. KHON Kimsrornn (Trainer) Mr. SORN Darong (Trainer) Ms. ENG SAMPHORS (Trainer)	TR Plus Engineering Co., Ltd (6 trainees) PD & E Power Engineering (6 trainees) INTERSYS Solution (5 trainees) Training 16 h	Cambodia

4	25 - 28 September 2023	Kirirom Food Production Co., Ltd	Training on "Microbial Analysis in Food and Processing Area and Production of Alcohol from Syrup"	Dr. Molika Yin (Head of UIL) Dr. Yoeng Sereyvath (Coordinator for WBL) Mr. Chanthan Hel (Representative of GTR and Coordinator for SDF) Dr. Chanvorleak Phat (GCA, Trainer) Ms. CHANTO MONYCHOT TEPY (GCA, Trainer) Ms. Socheata Mao (GCA, Trainer)	UIL, GCA (20 trainees) Training 26 h	Cambodia
5	02 September - 07 October 2023	Department of Applied Mathematics and Statistics, Institute of Technology of Cambodia	Training on "Data Analysis with Spreadsheets, SQL and Python" - Batch 1	Dr. Molika Yin (Head of UIL) Dr. Mongkolsery Lin (Head of AMS) Dr. Sokkey Phauk (Deputy-Head of AMS)	UIL, AMS (22 trainees) Training 36 h	Cambodia
6	From 16 September 2023	Department of Applied Mathematics and Statistics, Institute of Technology of Cambodia	Training on "Data Analysis with Spreadsheets, SQL and Python" - Batch 2	Dr. Molika Yin (Head of UIL) Dr. Mongkolsery Lin (Head of AMS) Dr. Sokkey Phauk (Deputy-Head of AMS)	UIL, AMS (20 trainees) Training 36 h	Cambodia
7	29-20 January 2024	Faculty of Chemical and Food Engineering	Capacity building on Cashew nut Processing and Quality control of Cashew nut SME and Cashew nut Association	Dr. IN Sokneang and Cambodian Cashew nut association	GCA	Cambodia
8	12-16 February 2024	Faculty of Chemical and Food Engineering	Capacity building on Food Quality and Safety, and access to market to Food SME	Dr. IN Sokneang and UNIDO	GCA	Cambodia

9	22-25 January 2024	Faculty of Chemical and Food Engineering	Capacity building on Food Quality and Safety, and access to market to Food SME at Banteaymean Chhey	Dr. IN Sokneang and UNIDO	GCA	Cambodia
10	23 to 25 November 2023	Faculty of Chemical and Food Engineering	Capacity building on Food Quality and Safety, and access to market to Food SME at Battambang	Dr. IN Sokneang and UNIDO	GCA	Cambodia
11	August - October 2023	UNDP	CEMAT Project: Develop and organize energy manager and energy auditor certified training programme	Dr. Sarin Chan (Thermal Lab)	GIM	USA
12	November 2023 - April 2024	iDE CAMBODIA	Research activity budget for Smart Mushroom Cultivation	Mr. Chanthan Hel (Representative of GTR)	GTR	Cambodia
13	September 2023 - March 2024	Kirirom Food Product Co., Ltd	Project Development	Dr. OR Chanmoly	RIC	Cambodia
14	20-Feb-24	Minebea (Cambodia) Co., Ltd	CAD Software	Dr. Saosometh CHHITH	GIM	Japan
15	20-Feb-24	Minebea (Cambodia) Co., Ltd	Basic PLC	Dr. Saosometh CHHITH	GIM	Japan
16	21-Feb-24	RMA Automotive (Cambodia) Co., Ltd	Training on CAD Software	Dr. Saosometh CHHITH	GIM	USA
17	21-Feb-24	RMA Automotive (Cambodia) Co., Ltd	Training on Statistical Process Control	Dr. Saosometh CHHITH	GIM	USA
18	18-Mar-24	Agri House Co., Ltd	Consulting on determination of drying methods for dried fish, chili, and banana based on nutritional composition	Dr. Peany HOUNG	GCA	Cambodia
19	25-Mar-24	People in Need	Consulting on determination of drying methods for cashew nut and banana based on phenolic compounds variation during drying	Dr. Peany HOUNG	GCA	Cambodia
20	25-Jan-24	Open Development Cambodia (ODC)	Consultation	Dr. Peany HOUNG	GCA	Cambodia

21	Apr-24	Royal Trust Trading Co., Ltd	Research on the effect of drying on the compositions in mango and mango peel	Dr. Morm Elen	FTN	Cambodia
22	Apr-24	Rock Mineralogy Development Co., Ltd	IP line (Pole-Dipole)	GRU	ITC	Cambodia
23	May-24	UNIDO	CAPFish Project Round I: RP-002	GCA	ITC	Australia
24	May-24	UNIDO	CAPFish Project Round I: RP-003	GCA	ITC	Australia
25	May-24	UNIDO	CAPFish Project Round I: RP-004	GCA	ITC	Australia
26	May-24	UNIDO	CAPFish Project Round I: RP-006	GCA	ITC	Australia
27	May-24	UNIDO	CAPFish Project Round I: RP-008	GCA	ITC	Australia

Annex 34. Memoranda of Understanding (MoU) and Memoranda of Agreement (MoA) with Industry.

No.	Name of partner	Sector	Agreement type	Effective Date	Expiration Date	Outcome	Country
1	LBL International Co., Ltd	Industry	MoA	7/18/2023	7/18/2024	Provide short course training to the staffs of the company in field of Civil engineering	France
2	Cambodian Water Supply Association (CWA)	Organization	MoU	10/4/2023	Indefinite	CWA helps to promote associate's degree of engineering program in Water Supply and Plumbing at ITC.	Cambodia
3	K & K Pipe (Cambodia) Co., Ltd.	Industry	MoU	10/4/2023	Indefinite	K & K Pipe (Cambodia) Co., Ltd. will donate various sizes of HDPE and LDPE pipes as well as fitting for Plumbing Lab at ITC for research and teaching purpose.	Cambodia
4	Meng Yee Garment Manufactory Co., Ltd.	Industry	MoU	11/30/2023	Indefinite	Provide 9 job positions and scholarship for 5 ITC students	China
5	Cart Tiire Co., Ltd	Industry	MoA	12/20/2023	12/20/2024	Provide scholarship 5000\$ to ITC students	China
6	SNKRP Co., Ltd	Industry	MoU	3/22/2024	3/22/2029	Provide job around 200 places to ITC students in field of Electricity, Civil, Mechanic	Cambodia
7	Prince Huan Yu Real Estate	Industry	MoU	4/30/2024	4/30/2029	Provide internship and job	China
8	MISTI	Government	MoU	5/8/2024	5/8/2029	Join research on water supply	Cambodia
9	ERIA Digital Innovation and Sustainable Economy Centre	Organization	MoU	5/30/2024	5/30/2025	Embrace good relationships with academia in the university for development in various program cooperation in digital innovation and sustainable economy through E-DISC as the platform.	Japan

