



AIT
Asian Institute of Technology

2020-2022

ANNUAL RESEARCH REPORT

ASIAN INSTITUTE OF TECHNOLOGY

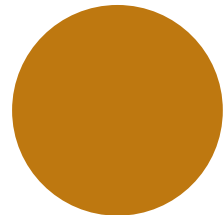




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PRESIDENT'S MESSAGE

Looking back at the past three years of continued transition, adapting, and refining how institutions work in the wake of a global pandemic, AIT takes pride in what it has accomplished while effectively tackling these new challenges.

As evidenced in this Research Report, the community of AIT—students, faculty, and staff—have actively engaged in multiple research and development projects working together with stakeholders from the region and beyond. AIT's research is already making a positive societal impact across South and Southeast Asia, playing an important role in the development of technologies, scientific competence, and capacity, by acting as a bridge between the global, regional, and local.

Forging our partnerships with international organizations, universities and enterprises, AIT continues to contribute its knowledge and expertise towards the sustainable development of the region. Our academics have worked across a variety of fields, often collaborating across departments to further develop knowledge domains, enhance multidisciplinary research and find solutions to problems not only in our immediate community but also beyond. Our research is reinforced through strengthened regional and international partnerships, enabling our research community to address regional and global challenges and make a significant and lasting influence on our communities.



We look forward to jointly working together with our stakeholders across AIT's five thematic areas of focus namely: i) Climate Change ii) Smart Communities iii) Infrastructure, iv) Technology, Policy, and Society; and v) Water-Energy-Food.

In concluding, I would like to take this opportunity to thank the AIT community for their wholehearted efforts in achieving the envisaged research objectives and to our partners for their continued trust and support.

Professor Kazuo Yamamoto
Interim President
Asian Institute of Technology (AIT)

VICE PRESIDENT'S MESSAGE

This edition of the Annual Research report for 2020, 2021, and 2022 highlights AIT's extensive work across the five thematic areas of focus namely: i) Climate Change ii) Smart Communities iii) Infrastructure, iv) Technology, Policy, and Society; and v) Water-Energy-Food.

It also showcases the important research and development projects undertaken by AIT in these areas. AIT's research and development projects are implemented by the AIT Schools and outreach Centers under their respective areas of expertise with a multidisciplinary approach. The multidisciplinary nature of AIT research themes and outcomes is evident in the work, allowing us to build on our existing strengths and invest in new complementary areas. The themes are interconnected and overlapping, crossing traditional boundaries, and allowing us to nurture innovation and deliver impactful research.

Our ambition is to make AIT's research contribute to the sustainable development of Asia with strong social impacts leveraging our strengths working with research networks, alumni, and the broader stakeholders. Considering both the changing landscape of higher learning, research needs as well as priorities and funding of development partners active in the region, AIT continues to adapt itself in the form of innovative partnerships with both the public and private sectors.



I believe this Report offers a good knowledge repository of AIT academic's work across the five thematic areas of research. It will be a valuable resource to continue to promote the joint implementation of research and development projects under our respective areas of expertise.

I would like to thank SCPU and various AIT units for their valuable contribution and support in the preparation of this Report.

Professor Shobhakar Dhakal

Vice President (Academic Affairs)

Asian Institute of Technology (AIT)

CHAPTER 1: INTRODUCTION

AIT MISSION

The Asian Institute of Technology promotes technological change and sustainable development in the Asian-Pacific region through higher education, research, and outreach. Established in Bangkok in 1959, AIT has become a leading regional postgraduate institution and is actively working with public and private sector partners throughout the region and with some of the top universities in the world. Recognized for its multinational, multi-cultural ethos, the Institute operates as a self-contained

international community at its campus located 40 km (25 miles) north of Bangkok, Thailand. Besides the usual laboratories and academic buildings, the main campus includes housing, sports, and medical facilities, a conference center, and a library with over 230,000 volumes and 830 print and on-line periodicals. All serve to fulfill the AIT mission to develop highly qualified and committed professionals who play leading roles in the region's sustainable development and its integration into the global economy.



AIT RESEARCH

Recognized as one of the leading academic institutes in the field of sustainability in Asia, AIT through its research projects, thrives to take-on new research frontiers to build a better knowledge base and facilitate actions towards the sustainable development of the region. With an aim to make a significant and lasting difference to the communities, AIT's research projects are designed to bolster technology development and application, environmental conservation, policy innovation thus promoting sustainability and sustainable development around Asia and beyond.

AIT research is importantly aligned to all 17 SDG's, contributing to the sustainable development of the region, strengthening the knowledge development and business capacity, and supporting communities with their economic development and integration into the global economy. AIT focuses on assisting stakeholders build their capacity to promote sustainability through appropriate technology, relevant and applied research, sustainable frameworks for development and planning, informed policy making and practice applications in the region. AIT's academic programs are



implemented through its three schools, the School of Environment, Resources and Development (SERD), the School of Engineering and Technology (SET), and the School of Management (SOM). AIT through its various Institute Wide outreach centers and departments jointly carry out number of research, consultancy, and capacity development projects under internationally funded projects of the Asian Development Bank (ADB), the World Bank,

Department for International Development (DFID, UK), GIZ, UN Agencies, USAID, UKRI, UNU, ISCU, AAC etc. AIT pursues excellence in research, within the five thematic areas of focus namely, Climate Change; Smart Communities; Infrastructure; Technology, Policy, Society and Water-Energy-Food. These all five research themes are interconnected and each of which is essential to creating a sustainable future for humans and the planet.

GRANTS AND SPONSORED PROJECTS AT A GLANCE

The research projects of AIT contribute to promoting technological change and sustainable development. As of 31 December 2022,

- 124 sponsored and contracted projects with budget of THB 422 million were initiated in 2020.
- 164 sponsored and contracted projects with budget of THB 463 million were initiated in 2021.
- 188 sponsored and contracted projects with budget of THB 836 million were initiated in 2022.



PROJECTS INITIATED UNDER AIT SCHOOLS AND OUTREACH CENTERS

AIT Schools and outreach Centers jointly implement research and development projects under their respective areas of expertise with a multidisciplinary approach towards addressing real-life challenges in a holistic manner. The

following graphs give an overview of the projects together with its project value, carried out by different Schools and outreach Centers in 2020, 2021, and 2022 respectively.

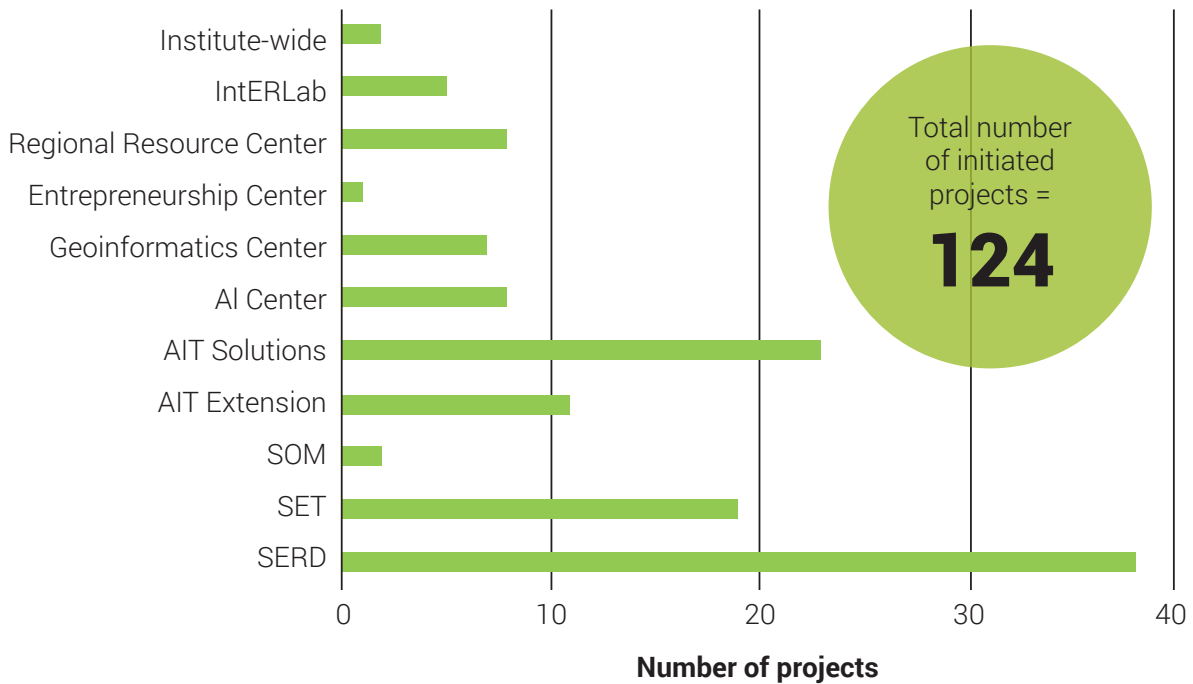


Figure 1. Projects initiated in 2020 by AIT Schools and outreach Centers

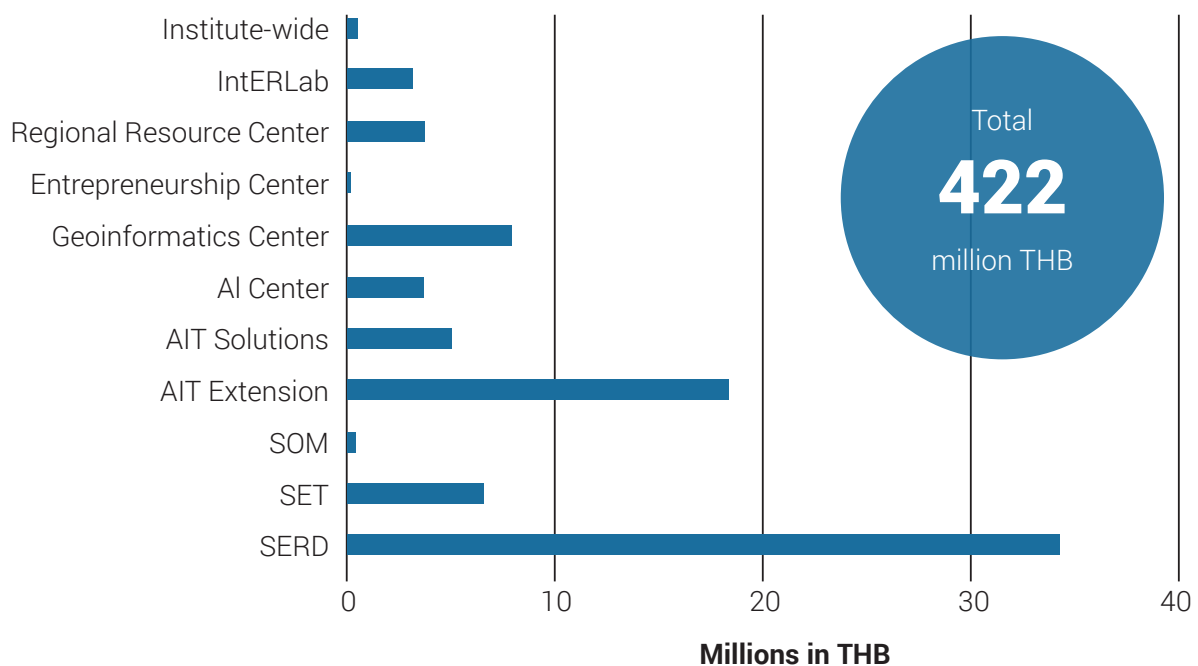


Figure 2. Value of projects initiated in 2020

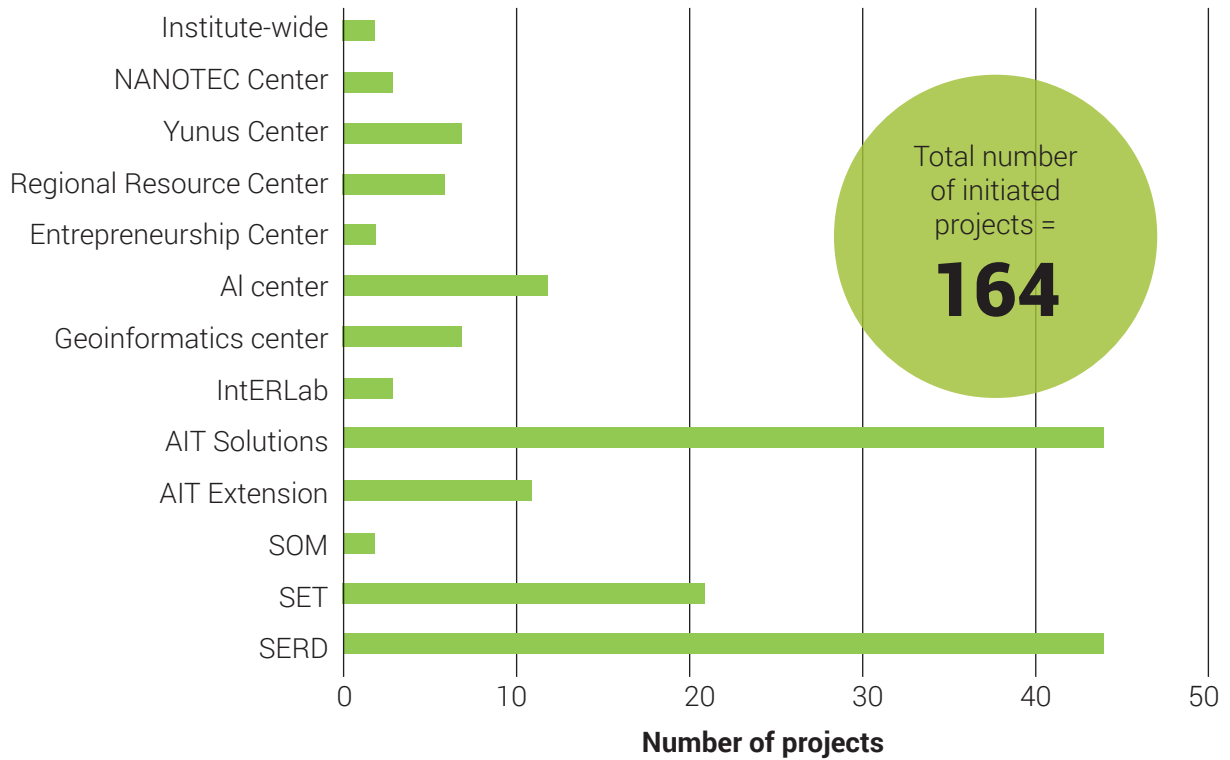


Figure 3. Projects initiated in 2021 by AIT Schools and outreach Centers

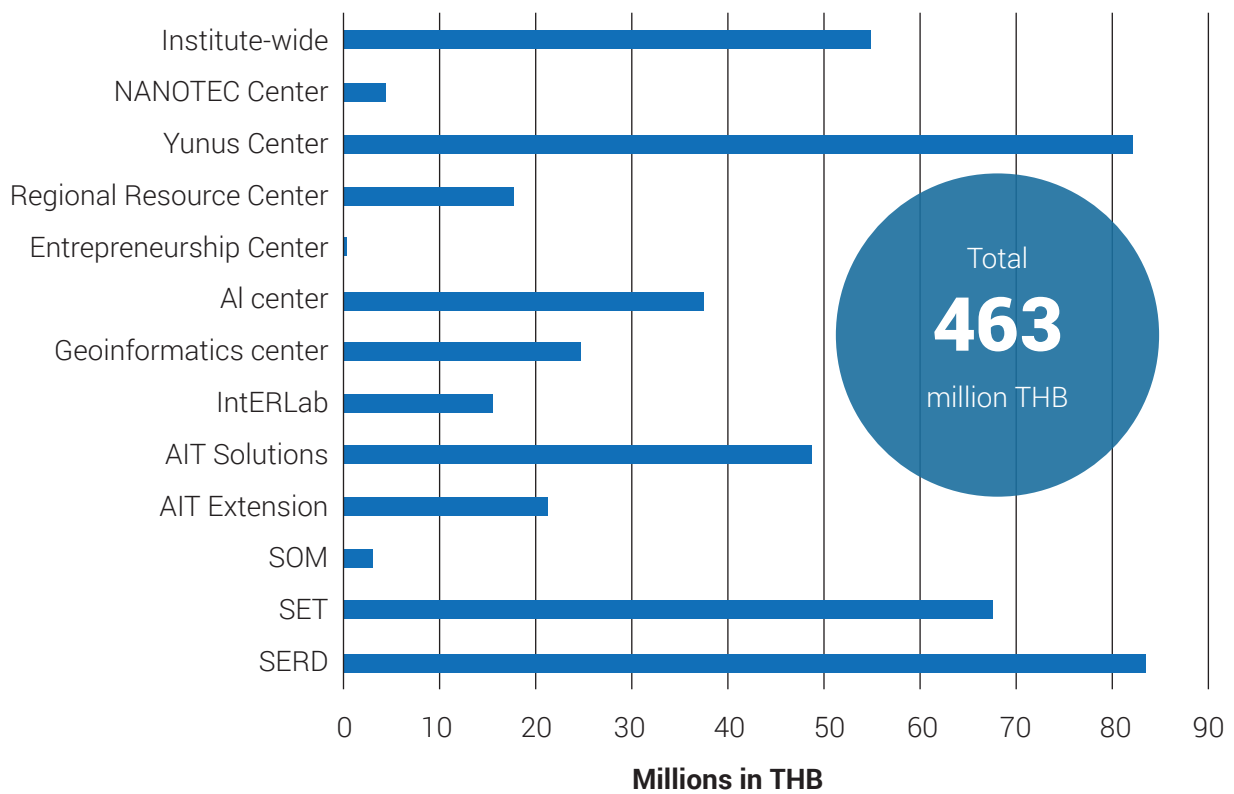


Figure 4. Value of projects initiated in 2021

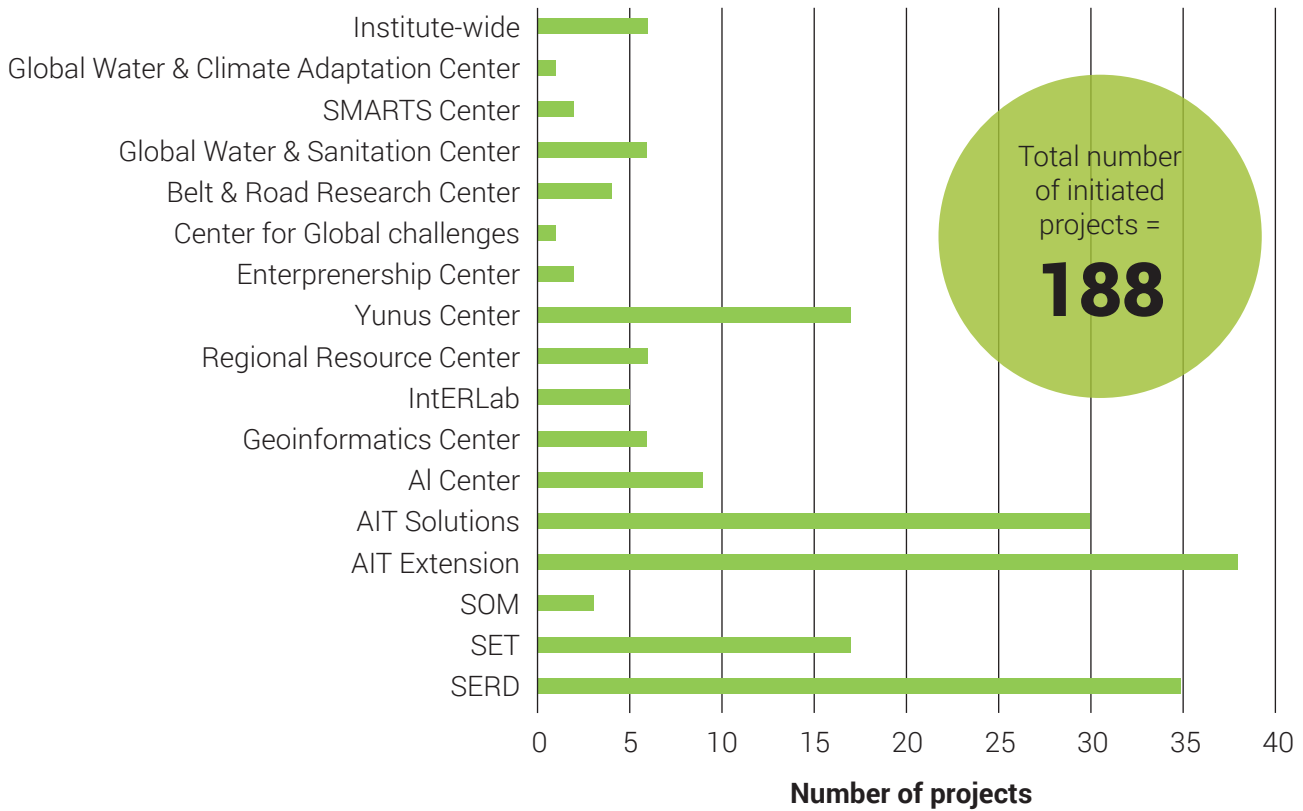


Figure 5. Projects initiated in 2022 by AIT Schools and outreach Centers

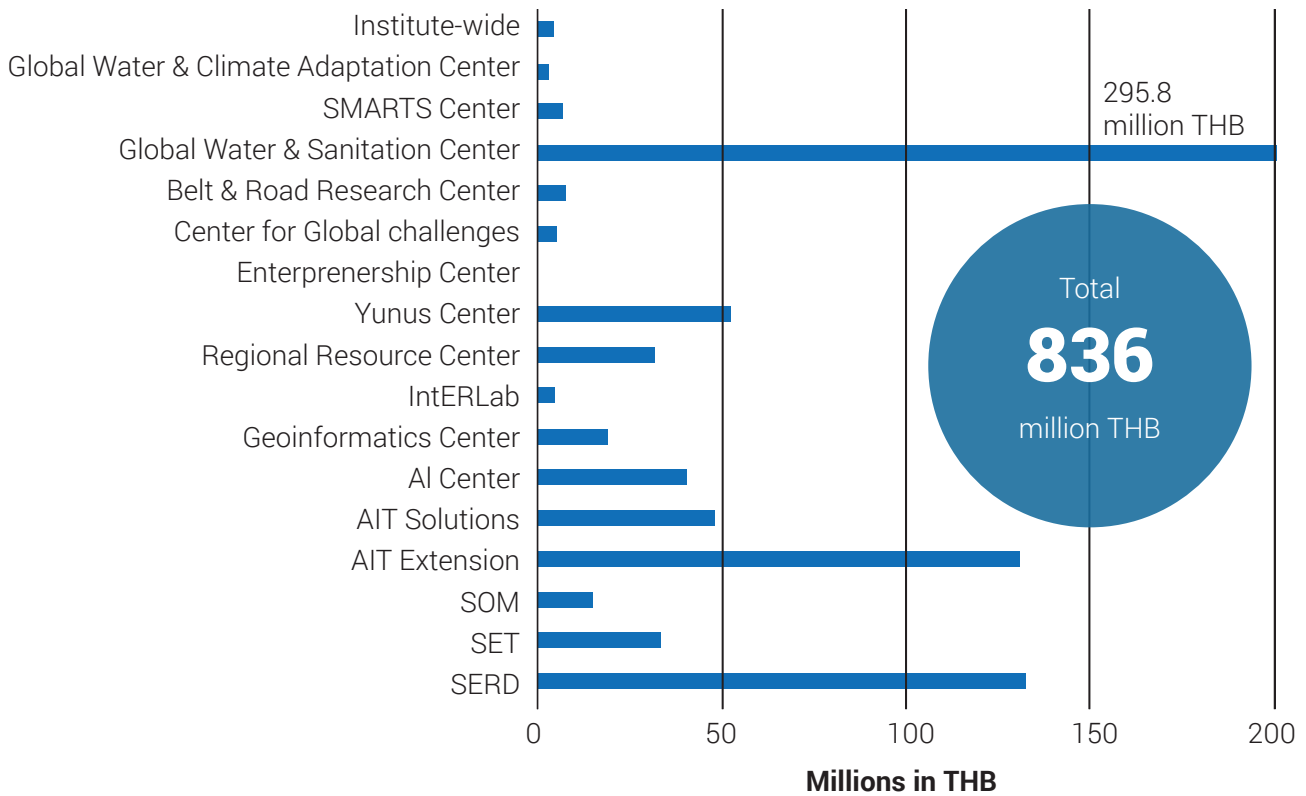


Figure 6. Value of projects initiated in 2022

PROJECTS INITIATED UNDER RESEARCH THEMES

Research at AIT is aligned under five thematic areas of focus namely:

- i. *Climate Change*
- ii. *Smart Communities*
- iii. *Infrastructure*
- iv. *Technology, Policy and Society*
- v. *Water-Energy-Food*.

The following chart¹ gives an overview of all projects initiated under five thematic areas in three years of 2020, 2021 and 2022

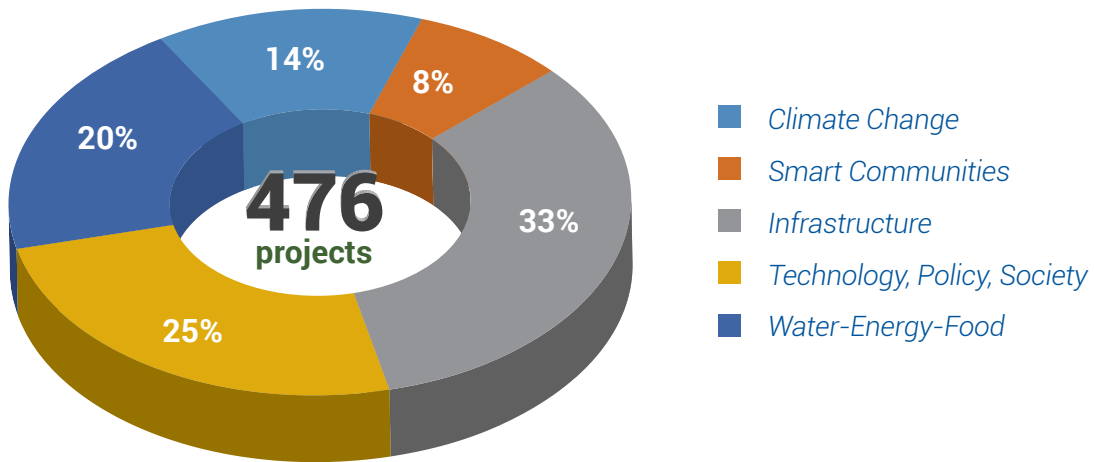


Figure 7. Cumulative number of projects initiated under research themes in 2020-2022

Further to above projects overview in all three years, the following individual graphs for 2020, 2021 and 2022 represent the projects undertaken in different thematic areas for each year.

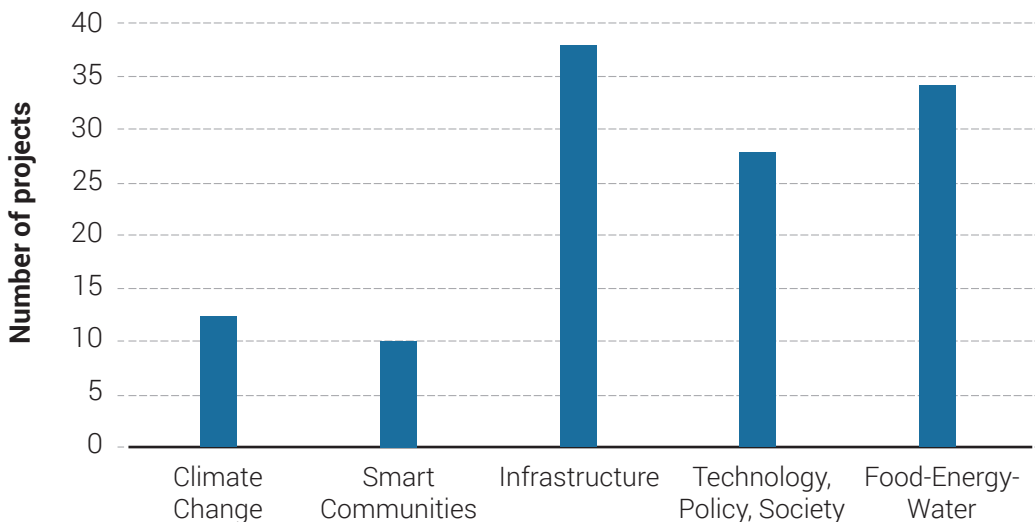


Figure 8. Projects initiated under research themes in 2020

¹ As the five research themes are interconnected and overlapping, crossing their traditional boundaries, the charts in this section (Projects initiated under Research Themes) are presented based on the indicative number of projects that fall under their most relevant (single) research themes.

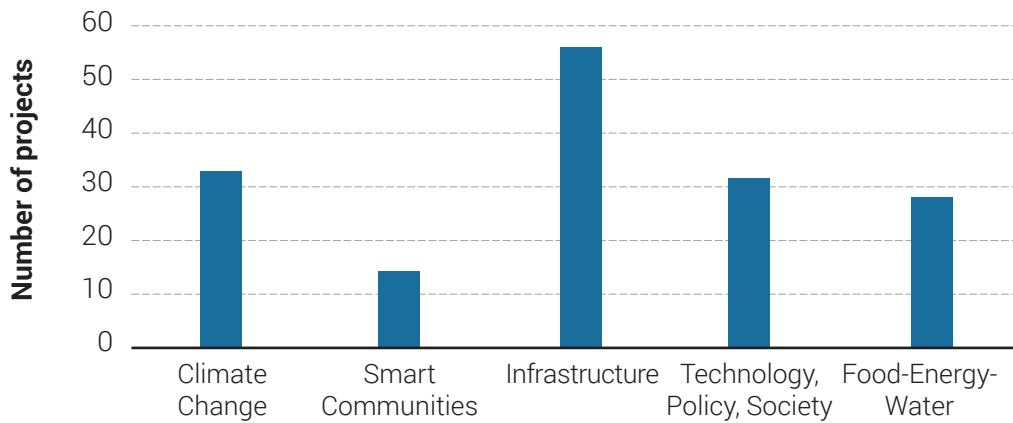


Figure 9. Projects initiated under research themes in 2021

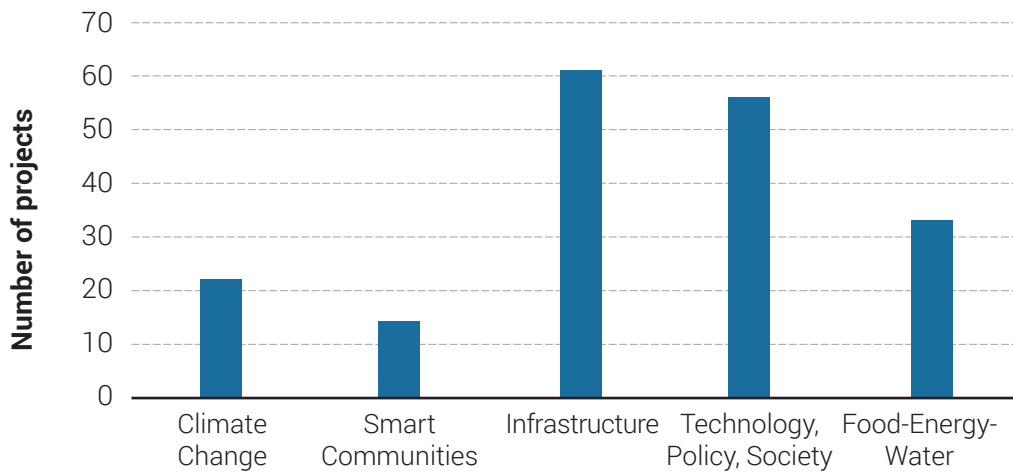


Figure 10. Projects initiated under research themes in 2022

The total value of all projects initiated in three years amounts to 1.72 billion Thai Baht (THB), as shown in below chart giving an overview of cumulative budget for each thematic area.

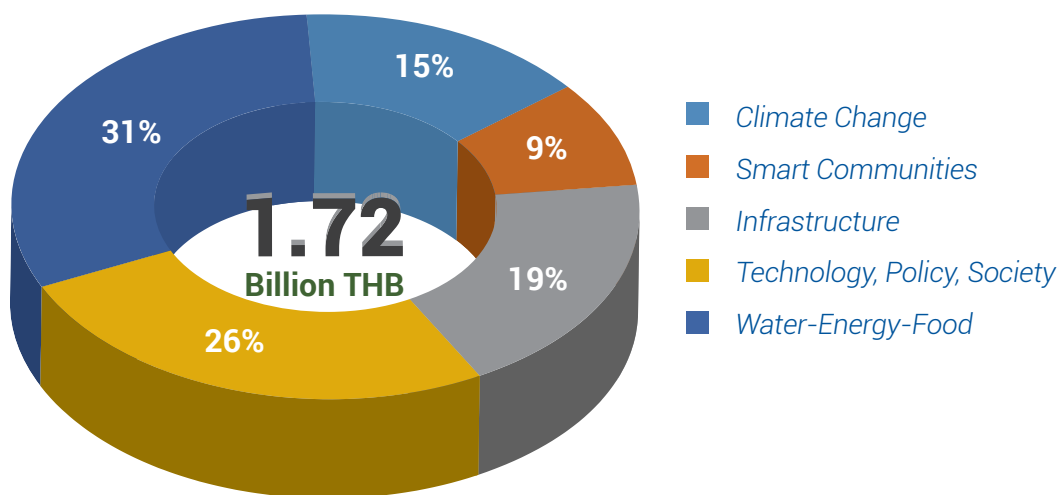


Figure 11. Cumulative value of projects initiated under research themes in 2020-2022

Further to above total project value in three years, the following individual graphs for 2020, 2021 and 2022 show the respective value of the projects initiated under different thematic areas for each year.

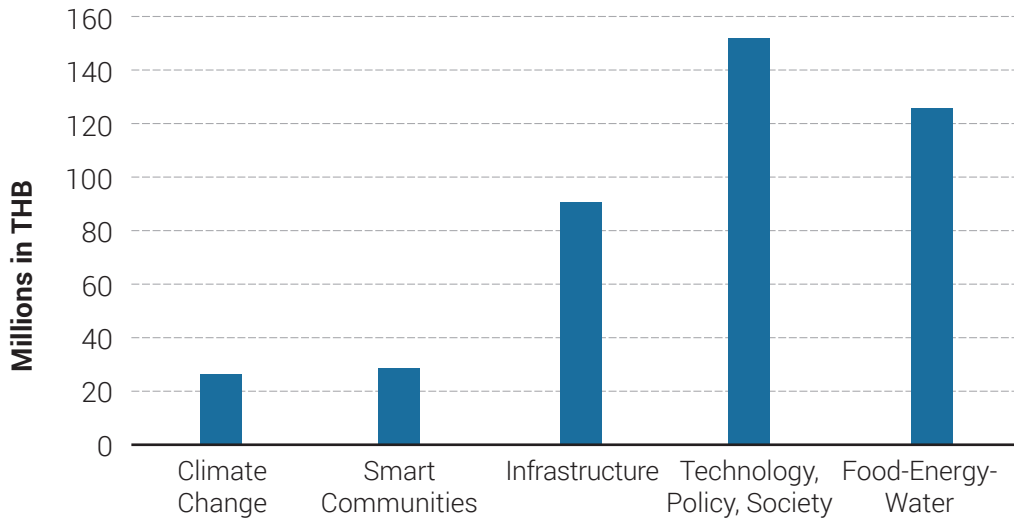


Figure 12. Value of projects initiated under research themes in 2020

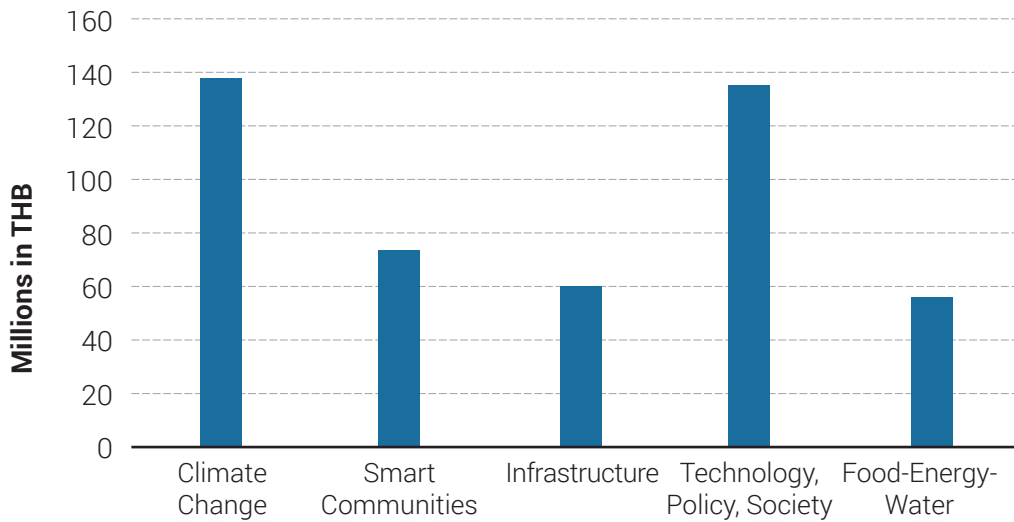


Figure 13. Value of projects initiated under research themes in 2021

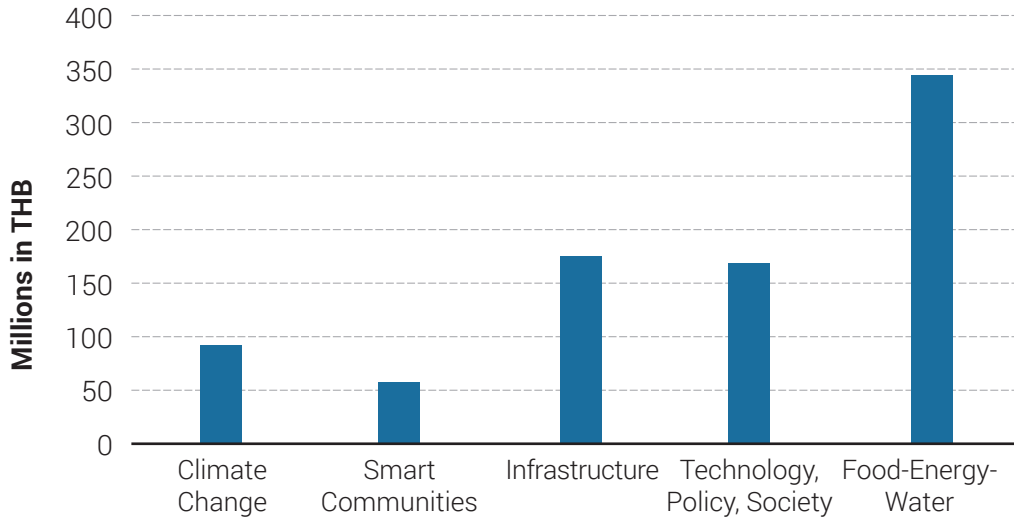


Figure 14. Value of projects initiated under research themes in 2022

AIT PUBLICATIONS

The report presents the publications available from SCOPUS database for three years (2020, 2021, 2022). Grouping under five thematic research areas, the chart below² shows the

publications in all three years, reaching a total of more than 1,100 with around 400 publications per year.

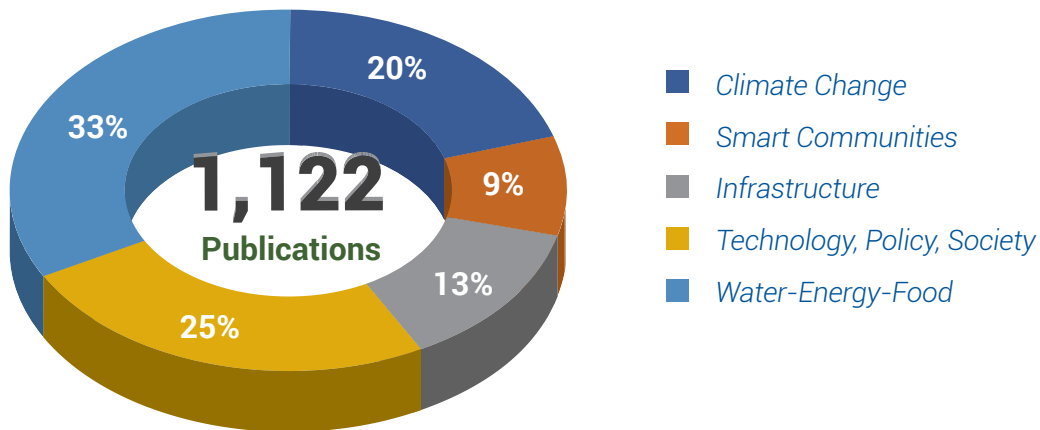


Figure 15. Cumulative number of publications associated with the research themes in 2020-2022

The individual graphs below for 2020, 2021 and 2022 represent the publications under research themes for each year.

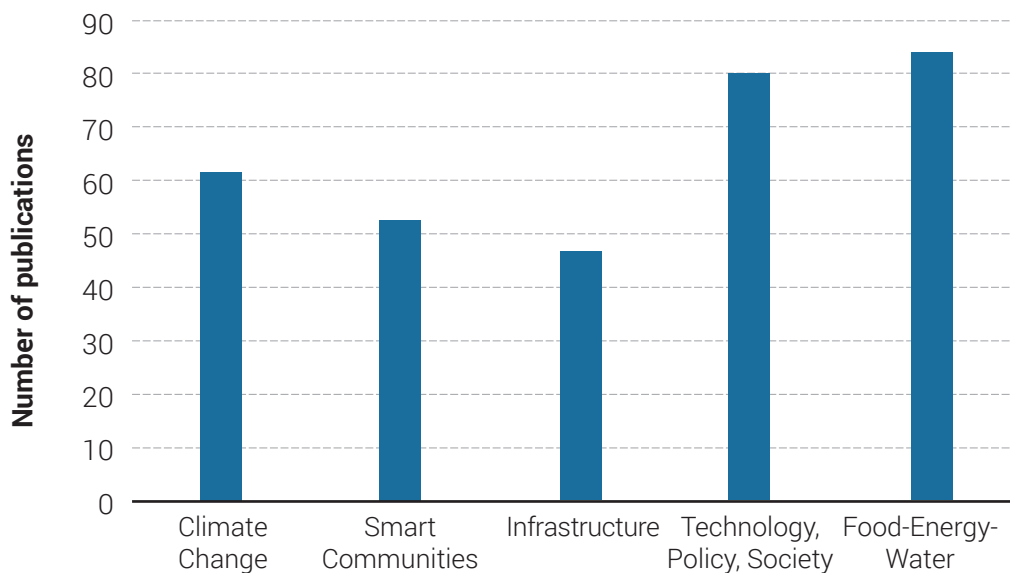


Figure 16. Publications associated with the research themes in 2020

² As the five research themes are interconnected and overlapping, crossing their traditional boundaries, the charts in this section (AIT Publications) aim to give an indicative overview of the publications that fall under their most relevant (single) research themes.

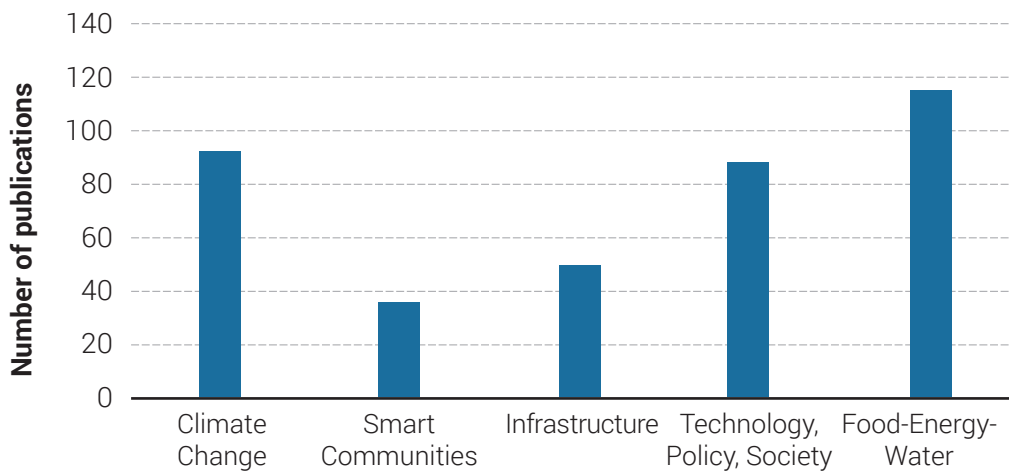


Figure 17. Publications associated with the research themes in 2021

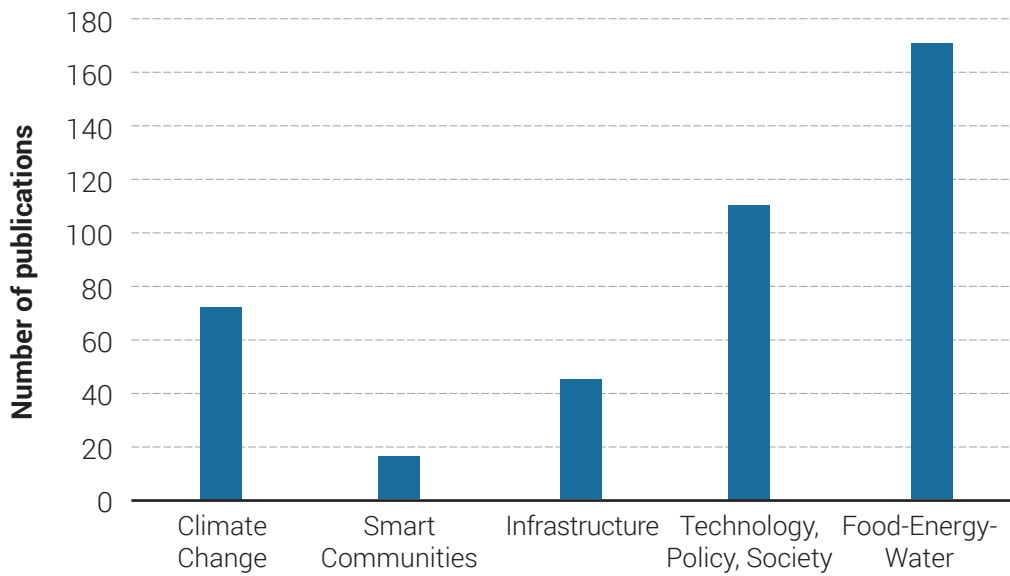


Figure 18. Publications associated with the research themes in 2022

CHAPTER 2: RESEARCH THEMES

CLIMATE CHANGE

AIT conducts cutting-edge and solution-oriented research in climate change in an interdisciplinary setting. Research addresses the issues of how human activities and changing climate affect each other and explores the technology and policy options needed towards low carbon development and improve the climate resilience for sustainability. Through interdisciplinary approach taken, AIT research examines the greenhouse gas emissions and the impacts of

climate change from social, environmental, and technological perspective. The climate change research theme aims to help determine and support development of effective solutions with appropriate mitigation and adaptation strategies including economic, social, and ecological approaches that are also complementary to other challenges such as Sustainable Development Goals.

Sub-themes

1. Transition towards Net Zero Emissions
2. Climate Change and Ecosystem
3. Enabling Technology and Innovations
4. Societal Dimension of Climate change
5. Cities and Climate Change
6. Climate Change Adaption and Resilience

Transition towards Net Zero Emissions

With the continued rise of global greenhouse gas emissions at the present time that have caused global warming already at 1.1° C from the pre-industrial times, ignoring the transition to net-zero emission is no longer an option. The climate emergency requires the swift and ambitious action to reduce emissions urgently. Rapid energy transitions to renewable energy, addressing the deforestation, the large-scale investment and innovation are needed to provide technologically viable and economically competitive alternatives to reduce GHG emissions across all sectors of the economy. In view of this, AIT research focuses on analysis of the transition pathways to low-carbon energy system, and low carbon climate resilient communities. It includes greenhouse gas (GHG) accounting and the mitigation actions and policy options – encompassing study of emission sources and monitoring of GHG emissions in key sectors of energy, agriculture,



forest and land use; sustainable forest management (REDD+); effective waste management; renewable energy such as solar, bioenergy and biofuel; energy storage technologies and its applications; clean coal technologies; carbon capture and storage; smart grids and microgrids; and climate policies, carbon pricing and carbon markets.

Climate Change and Ecosystem

Climate change threatens all ecosystems such as freshwater ecosystem, grassland, forests ecosystem, coral reefs, agro-ecosystems, and communities' livelihoods dependent on these ecosystems. Human and social systems also play a key role in both causing and responding to climate change. The drastic change in global climate and the earth's temperature is increasingly influenced by human-driven actions such as GHG emissions, land use/cover changes, deforestation, urbanization, etc. The climate change impact on ecosystems is to be exacerbated in ecosystems that already are under pressure from human activities, including air and water pollution, habitat destruction. The interactions between ecosystem vulnerability and human activities, and human well-being are the important aspects that should be emphasized in face of growing population of the present time. Understanding the causes of climate change, ecological dynamics of climate impacts, has never been more important to pave the way for effective solutions in tackling the climate change and its impacts.

AIT's research under this sub-theme focuses on the climate change and its interaction with



human activities and ecosystem. It addresses the practical challenges in ensuring the sustainable use of natural resources, land, soil, water, and environmental management. The innovative ways of adapting to, mitigating, and reducing the impacts of climate change on vulnerable ecosystems are also explored. The topics covered under sub-theme include, among others, the impact analysis and adaptation to climate change in water, land, agriculture sectors; modelling for future climate projections and ecosystem services, climate financing for adaptation and mitigation; the circular economy; micro- biology and the environment.

Enabling Technology and Innovations

In the face of changing climate and its adverse effects, the development and adoption of new technology is an essential element of response actions to global climate change. These problems cannot be addressed without technology. Technology continues to play an even more significant role as we pursue efforts through adopting climate-friendly technology for mitigation and adaptation.

In view of technological solutions playing a key role towards mitigating and adapting to impacts of climate change, the research under this sub-theme focuses on technology, policy options and strategies through AIT's leadership role to Technological Needs Assessments (TNA) in over 25 countries of Asia with United Nations Environment Program (UNEP) and technology enabling through UN Framework Convention on Climate Change (UNFCCC)'s CTCN programme, as well as other innovative mechanisms from technological, managerial, and institutional aspects in mitigating and adapting to the climate change.



Some of the AIT's areas that have covered this sub-theme, are, for example, geospatial technologies (GIS, remote sensing, AI based approaches) in environmental monitoring and resource management such as water resource and air quality under changing climate conditions; climate smart agriculture technologies and practices; farm green innovation; early-warning and climate information services; innovative climate risk financing; technology clinic for Agro-food SMEs, data driven approaches in environmental research landscape, and the role of inclusive social media and digital platforms for climate adaptation and resilience building in Southeast Asia.

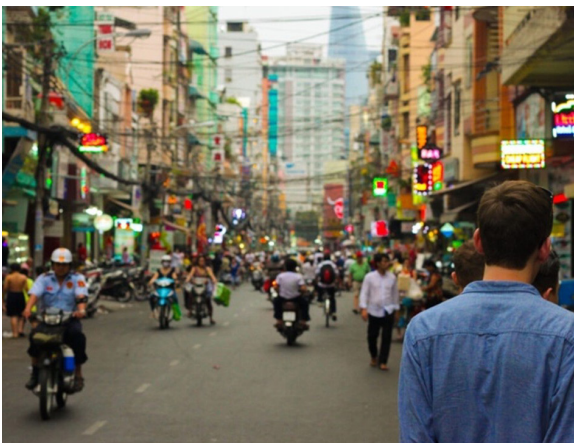
Societal Dimension of Climate Change



Climate change affects the people's lives from several aspects of economic, social, and environmental dimensions. Certain social groups of the society with vulnerability to the climate crisis including women, children, persons with disabilities and the elderly face disproportionate impacts of climate change despite being the least contributor to the crisis. The social crisis caused by climate change highlights the need to step up the efforts in addressing the core issues of inequality on many levels between rich and poor, women and men. The climate actions thus need to take a holistic approach addressing the social drivers of climate change across disciplines and the sectors.

AIT's research seeks to understand the social factors and conditions that make social systems less vulnerable and resilient to climate change; and examine opportunities to adapt social systems in ways that are fair and sustainable. With a focus on social impacts and climate change, research covers a wide range of areas encompassing the role of economic, social, and institutional resources in building resilience to climate change. That includes social learning and networking, health, livelihoods, gender, migration, lifestyle changes, civil society organizations and NGOs, and inclusive strategies for climate mitigation and adaptation support system.

Cities and Climate Change



The cities are increasingly consuming the natural resources at large scale while producing growing amount of waste and emissions, which

leads to negative impacts on the environment and the climate. Cities contribute to over 70% of global CO₂ emissions but they have enormous potential to incorporate strategies for reducing the root causes of climate change by changing people's lifestyles, enhancing resource efficiency, and other actions. At the same time, as the climate change continues, the growing effects of climate change are also increasingly felt by the cities – including the impacts of climate induced disasters such as flooding, intense rainfall, landslides, and strong typhoons, etc. It is thus critical to make cities an integral part of the solution in combating the climate change.

AIT's research addresses the urban carbon accounting, pathways to low carbon city

development and analysis of city climate actions. Practical application of urban resilience approaches and promoting green city concepts are further key areas addressed under the sub-theme. This includes urban resilience assessment to disasters and climate risks, urban cooling for heat island mitigation, urban ecosystem services exploration and valuation, climate change impact scenarios on cities,

climate-resilient urban planning and design including green infrastructure, infrastructure resilience planning, smart energy building, circular economy, responsible consumption, urban water-energy-food nexus including groundwater vulnerability and resilience assessments; the policy analysis and options for harnessing the innovation potential in cities to foster resilience and sustainability.

Climate Change Adaptation and Resilience



In the face of climate crisis, the efforts to adapt to the changing climate and reduce the climate-induced disaster risks have become a global priority. Promoting resilient societies to the climate risks require a range of complementary approach from climate change adaptation and disaster risk reduction concepts to prevent massive loss of life and destruction of infrastructure and hard-won development gains. The incomplete and uncertain knowledge bases, interplay of multiple actors for effective integration of disaster risk reduction and climate change adaptation in the development work are the issues that need to be urgently addressed. AIT's research focuses on climate change adaptation, disaster risk reduction and resilience

building for sustainable society through risk-sensitive policies, practices and tools. Among other topics covered under sub-theme, are the role of governments, NGOs in climate change adaptation; early warning systems and tools for detection of natural disaster; risk, vulnerability, and impacts assessment of floods, droughts, tsunami; solutions to overcome extreme seasonal events of floods and droughts, social vulnerability analysis; multi-hazard risk assessment; community-based disaster risk reduction; remote sensing and GIS in disaster risk reduction; risk sensitive land use planning; risk perception and implication on risk governance.

HIGHLIGHTED PROJECTS UNDER CLIMATE CHANGE

The following lists some examples of projects that highlight AIT's global, regional, and country development experience under "Climate Change" thematic area during 2020, 2021 and 2022.

Technology Needs Assessment (TNA) Project – phase IV & V

Project budget- 2.2 million THB

Project duration- January 21 to August 23

Donor- United Nations Environment Programme (UNEP)

The TNA Project supports developing countries in identifying national priorities for both adaptation and mitigation, with strong focus on technology. The objective of TNA project spread across three phases is to assist participant developing country Parties identify and analyze priority technology needs, which can form the basis for a portfolio of environmentally sound technology (EST) projects and programs to facilitate the transfer of, and access to, the ESTs and know-how in the implementation of Article 4.5 of the UNFCCC Convention. Hence TNAs are central to the work of Parties to the Convention



on technology transfer and present an opportunity to track an evolving need for new equipment, techniques, practical knowledge, and skills, which are necessary to mitigate GHG emissions and/or reduce the vulnerability of sectors and livelihoods to the adverse impacts of climate change.

Climate Change Adaptation in Agriculture for Enhanced Recovery and Sustainability of Highlands- Climate-smart agriculture

Project budget- 50 million THB

Donor- Asian Development Bank (ADB)

Project duration- December 20– November 23

The project supports building Thailand's technical and institutional capacities to assess the agriculture sector vulnerabilities, demonstrate climate-smart agriculture (CSA) practices and digital technologies for traceability of agri-food products, and support local governments to integrate climate change concerns in agriculture planning. AIT and the team specifically focus its development efforts in reinvigorating food security in Nan Province to achieve the desired long term-impact of "improved agricultural competitiveness in the high lands" which is aligned with Thailand's Twenty-Year Agriculture and Cooperative's Strategy (2017-2036) (MoAC, 2017). The delivery of the technical assistance four main outputs supports creating a better enabling environment



for the adoption of CSA in the selected project area, the outputs include (1) baseline data for assessing vulnerability of highland agriculture improved, (2) gender conscious CSA practices demonstrated, (3) agriculture product quality, value addition and market linkages enhanced, and (4) capacity of local governments and farming communities to address climate change strengthened.

Promoting disaster preparedness and resilience by co-developing stakeholder support tools for managing the systemic risk of compounding disasters (PARATUS)-Global



Project budget- 3 million THB

Donor- European Research Executive Agency

Project duration- October 2022- Dec 2026

The PARATUS project involves 19 partners from 12 countries and is part of the Horizon Europe Framework Programme. The PARATUS project aims to provide stakeholders in disaster risk management with tools to account for cross-sectoral impacts and the dynamic nature of compounding disasters. The project will develop

an open-source platform for dynamic risk assessment that allows to analyze and evaluate multi-hazard impact chains, risk reduction measures, and disaster response scenarios in the light of systemic vulnerabilities and uncertainties. These services will be co-created within a unique transdisciplinary consortium of research organizations, NGOs, SMEs, first and second responders, and local and regional authorities.

PROJECTS INITIATED UNDER CLIMATE CHANGE

Below is the list of research, consultancy and capacity development projects initiated under “Climate Change” by various Institute wide outreach centers and departments during 2020, 2021 and 2022.

- ◎ **Development of Capacity & Implementation of modelling for the preparation of date for a Climate Atlas**

 - Duration – 16 Dec-19 to 31-Aug-20
 - Project Investigator(s): Dr.Kavinda Gunasekara
 - Sponsor – Food & Agriculture Organization of the United Nations
 - Total contracted amount- 2,701,500.00
- ◎ **Willingness to Pay Study for Climate Mitigation through Increasing Renewable Sources of Power Mix**

 - Duration - 1-Jan-20 to 31-Aug-20
 - Project Investigator(s): Dr. Vilas Nitivattananon
 - Sponsor – University of Tokyo
 - Total contracted amount- 459,000
- ◎ **Willingness to Pay Study for Climate Mitigation through Increasing Renewable Sources of Power Mix: Case of Thailand (Extended Study)**

 - Duration - 1-Dec-20 to 30-Dec-21
 - Sponsor – University of Tokyo
 - Total contracted amount – 659,280
- ◎ **Study on system approach & climate change of domestic wastewater management in Thailand**

 - Duration - 20-Mar-20 to 1-Mar-21
 - Project Investigator(s): Prof.Thammarat Koottatep,
 - Sponsor – Deutsch Gesellschaft fürInternationale Zusammenarbeit GmbH (GIZ)
 - Total contracted amount- 5,041,250
- ◎ **Development of capacity & Implementation of modelling for the preparation of 30 years of downscaled date for a Climate Atlas**

 - Duration - 1-Apr-20 to 30-Nov-20
 - Project Investigator(s): Dr.Kavinda Gunasekara
 - Sponsor – Food & Agriculture Organization of the United Nations
 - Total contracted amount- 3,087,600.00
- ◎ **Assessment of the emissions of street cooking activities in Bangkok & subsequent effects on ambient PM2.5 & human health**

 - Duration - 1-Apr-20 to 30-Apr-21
 - Project Investigator(s): Prof.NguyenThi Kim Oanh
 - Sponsor – International Science Council Regional Office for Asia & the Pacific
 - Total contracted amount- 484,650
- ◎ **Investigation of Leachability & Migration of Plastics from a Dumpsite**

 - Duration - 1-Aug-20 to 31-Dec-21
 - Project Investigator(s): Prof. C. Visvanathan
 - Sponsor – SINTEF AS, represented by its institute SINTEF Community, Norway
 - Total contracted amount- 632,748.47
- ◎ **Circular Economy for Sustainable Consumption & Production (SCP) in Asia & the Pacific**

 - Duration - 1-Jul-20 to 31-May-21
 - Project Investigator(s): Dr.Naveed Anwar
 - Sponsor - United Nations Environment Programme
 - Total contracted amount – 2,484,000
- ◎ **Plastics & Packaging Waste Management during a Pandemic (COVID 19)**

 - Duration - 8-Sep-20 to 15-Oct-21
 - Project Investigator(s): Prof. C. Visvanathan
 - Sponsor – United Nations Environment Programme (UNEP), Kenya
 - Total contracted amount- 469,822.50
- ◎ **Climate Change Risk Assessment for Southeast Asian Lakes**

 - Duration - 1-Oct-20 to 30-Sep-23
 - Project Investigator(s): Dr.Salvatore G.P. Viridis, Prof.Sangam Shrestha.
 - Sponsor – Asia-Pacific Network for Global Change Research (APN)
 - Total contracted amount- 2,620,440.00

- ◎ **Development of Specialized Expert System for Agro-Meteoroidal Early Warning (SESAME) for Climate Resilient Agriculture for Pakistan**
 - Duration 1-Oct-20 to 31-Dec-21
 - Project Investigator(s): Dr.Avishek Datta
 - Sponsor – Regional Integrated Multi-Hazard Early Warning System (RIMES)
 - Total contracted amount – 775,000.00
- ◎ **Development of capacity & implementation of modelling for Future Climate Projections**
 - Duration - 1-Dec-20 to 31-May-21
 - Project Investigator(s): Dr.Kavinda Gunasekara
 - Sponsor – Food & Agriculture Organization of the United Nations (FAO)
 - Total contracted amount- 2,992,500
- ◎ **Climate Change Adaptation in Agriculture for Enhanced Recovery & Sustainability of Highlands**
 - Duration - 1-Dec-20 to 30-Nov-23
 - Project Investigator(s): Prof.Mukand S. Babel; Prof.Sangam Shrestha
 - Sponsor – ADB
 - Total contracted amount –49,542,450.00
- ◎ **Clean Air solutions for children**
 - Duration - 9-Dec-20 to 29-Dec-21
 - Project Investigator(s): Prof.Nguyen Thi Kim Oanh
 - Sponsor – UNEP solution
 - Total contracted amount- 1,098,160
- ◎ **Enhancing Agro-Meteorological Early-Warning Services in the RIMES Member Countries**
 - Duration - 13-Jan-21 to 12-Jan-28
 - Project investigator (s) - Dr.Avishek Datta
 - Sponsor - Regional Integrated Multi-Hazard Early Warning System (RIMES)
 - Total Contracted amount – 15,000,000
- ◎ **Capacity development programme on air quality management & emission reduction of PM2.5 ASEAN Countries**
 - Duration - 1-Jan-21 to 28-Feb-23
 - Project Investigator(s): Dr.Ram Lal Verna; Mrs.Charina May Lepiten
 - Sponsor – Asia-Pacific Network for Global Change Research (APN)
 - Total contracted amount – 2,380,593.6
- ◎ **Technology Needs Assessment Project IV**
 - Duration - 1-Jan-21 to 31-Aug-23
 - Project Investigator(s): Dr.P.Abdul Salam, Prof. S. Kumar, Dr. Rajendra Shrestha
 - Sponsor – UNEP DTU Partnership, Denmark
 - Total contracted amount- 1,518,750
- ◎ **Promotion of Countermeasures against Marine Plastic Litter in Asia & the Pacific (Counter MEASURE II)**
 - Duration - 26-Jan-21 to 30-Jun-22
 - Project Investigator(s): Dr.Kavinda Gunasekara
 - Sponsor – United Nations Environment Programme (UNEP)
 - Total contracted amount- 6,420,000
- ◎ **Plastic Categorization and Analysis of Residual Wastes from Dumpsites**
 - Duration - 16-Mar-21 to 16-Dec-21
 - Project Investigator(s): Prof. C. Visvanathan
 - Sponsor – INSEE-Ecocycle, Thailand
 - Total contracted amount- 85,000
- ◎ **AADCP Phase II “Assessment on Agricultural Techniques & Technologies to Mitigate the Potential Negative Effects of Climate Change in CLMV Countries”**
 - Duration - 13-Apr-21 to 10-Feb-22
 - Project Investigator(s): Mr.Chatuphol Pholwan
 - Sponsor- ASEAN-Australia Development Cooperation Program (AADCP) Phase II
 - Total contracted amount- 1140,000
- ◎ **Circular System Innovation for Polyurethane Foam: Catalytic approach to upcycle foam waste from waste from mattresses & beyond**
 - Duration - 1-Apr-21 to 31-Mar-23
 - Project Investigator(s): Dr.Tanujjal Bora
 - Sponsor – Royal Academy of Engineering, UK & Circularity Co.,Ltd., Thailand
 - Total contracted amount- 4,280,000

- ◎ **Developing of Risk Sensitive Land Use Planning for Lamkichuha & Godawari Municipalities in Nepal**
 - Duration - 18-Apr-21 to 31-Mar-22
 - Project Investigator(s): Dr.Manzul K. Hazarika
 - Sponsor – DAI Global, LLC (DAI), USAID TAYAR Nepal
 - Total contracted amount- 2521,695
- ◎ **Global Water and Climate Adaptation Centre Aachen-Bangkok-Chennai-Dresden (ABCD Centre)**
 - Duration - 1-May-21 to 30-Apr-26
 - Project Investigator(s): Prof. Mukand S. Babel
 - Sponsor – DAAD, Germany
 - Total contracted amount- 1,4030,480
- ◎ **Implementation of the Project Atmospheric Brown Cloud (ABC) activities at the Maldives Climate Observatories (MCOH) Year 2021**
 - Duration - 12-May-21 to 30-Jun-23
 - Project Investigator(s): Dr.Ram Lal Verna
 - Sponsor – Stockholm University (SU-ACES)
 - Total contracted amount- 3,007,681.00
- ◎ **Contribution of Inside & Outside-city Air Pollution Sources to the PM2.5 Concentration in Bangkok**
 - Duration - 11-May-21 to 10-Nov-22
 - Project Investigator(s): Dr. Ekbordin Winijkul
 - Sponsor – NA
 - Total contracted amount- 1,540,000
- ◎ **Risk perception & implication on risk governance for dual disasters Cyclone Amphan & COVID-19 in Kolkata Metropolitan Area (KMA)**
 - Duration - 1-Jun-21 to 31-Jul-22
 - Project investigator (s) - Dr.Indrajit Pal
 - Sponsor -RIMES
 - Total Contracted amount – 285,464
- ◎ **Innovative Climate Risk Financing for the Agriculture Sector in ASEAN**
 - Duration - 11-Jun-21 to 31-Oct-21
 - Project Investigator(s): Prof.Kyoko Kusakabe
 - Sponsor – German Development Cooperation (GIZ)
 - Total contracted amount- 200,000
- ◎ **Climate Risk Financing for the Agriculture Sector in ASEAN**
 - Duration - 7-Jun-21 to 31-Dec-21
 - Project Investigator(s): Dr.Thi PhuocLai Nguyen, Dr.Ekbordin Winijkul
 - Sponsor – German Development Cooperation (GIZ)
 - Total contracted amount- 124,798.34
- ◎ **Climate Modelling Capacity Building for the Department of Climate Change in Lao PDR**
 - Duration - 8-Jun-21 to 31-Dec-21
 - Project Investigator(s): Dr.Kavinda Gunasekara
 - Sponsor – Global Green Growth Institute
 - Total contracted amount- 1,519,000
- ◎ **Countermeasure against Plastic Pollution in River Ecosystem in the Asia Pacific**
 - Duration - 1-Jun-21 to 31-Jan-22
 - Project Investigator(s): Prof. C. Visvanathan
 - Sponsor – United Nations Environment Programme(UNEP), Kenya
 - Total contracted amount- 420,500
- ◎ **Development of E-Learning materials on climate adaptation**
 - Duration - 1-Jul-21 to 31-May-22
 - Project Investigator(s): Phurba Lhendup
 - Sponsor – IGES
 - Total contracted amount- 1,625,000.00
- ◎ **Investigation of the impacts of intensifying salinity intrusion on agricultural land cover changes across the VMD**
 - Duration - 1-Aug-21 to 31-Jan-22
 - Project Investigator(s): Dr.Ha Thanh Dong
 - Sponsor - Faculty Support of the VPAA (Research Initiation Grant)
 - Total contracted amount – 50,000
- ◎ **Feasibility Study of Weather Index Insurance for Tajikistan**
 - Duration - 2-Aug-21 to 30-Apr-22
 - Project Investigator(s): Dr.Manzul K. Hazarika
 - Sponsor – United Nations Development Programme (UNDP)
 - Total contracted amount- 5,137,600

- **GHG emissions from artificial linear water features**

 - Duration - 1-Sep-21 to 28-Feb-23
 - Sponsor – AIT Research Initiation
 - Project Investigator(s): Dr.Simon Guerrero Cruz
 - Total contracted amount- 150,000
- **Development of Climate Smart WASH Technology Catalogue with Modeling**

 - Duration - 1-Sep-21 to 31-Jan-22
 - Project Investigator(s): Prof.Thammarat Koottatep
 - Sponsor -UNICEF
 - Total contracted amount- 3,064,655.70
- **Assessment of environmental inequalities of air pollution of vulnerable socioeconomic groups in the world of work in Bangkok city, Thailand**

 - Duration - 1-Oct-21 to 30-Jun-22
 - Project Investigator(s): Dr.Thi Phuoc Lai Nguyen, Dr.Ekbordin Winijkul;
 - Dr.Salvatore G.P.Virdis
 - Sponsor – GCRF-UKRI
 - Total contracted amount- 1,540,000
- **Capacity building for measuring multi-hazard livelihood security and resilience in the Lower Mekong Basin**

 - Duration - 1-Oct-21 to 31-Mar-23
 - Project Investigator(s): Dr.Indrajit Pal,
 - Prof.Joyashree Roy
 - Sponsor – Asia-Pacific Network for Global Change Research (APN)
 - Total contracted amount- 1,241,200
- **Drought assessment and identification of triggers for Cambodia and Lao PDR**

 - Duration - 1-Oct-21 to 31-Dec-22
 - Project Investigator(s): Dr.Indrajit Pal
 - Sponsor – RIMES
 - Total contracted amount- 450,000
- **RISK Governance Strategies for Improving Riverine Flood Resilience in Sindh Province**

 - Duration - 1-Oct-21 to 31-Dec-22
 - Project Investigator(s): Dr.Indrajit Pal
 - Sponsor – Sindh Resilience Project
 - Total contracted amount- 889,168.00
- **Scientific Capacity Building in Assessing the Coastal Dynamics (land-use, biodiversity & ecosystem services) including the influence of Climate Change in the Coastal Zone-towards a locally adapted MSP Framework**

 - Duration - 1-Oct-21 to 30-Dec-23
 - Project Investigator(s): Mr.MD.Anishur Rahman, Dr.Md.Zakir Hossain
 - Sponsor – Asia-Pacific Network for Global Change Research (APN)
 - Total contracted amount – 1,320,000
- **Technology Needs Assessment Project Phase 5**

 - Duration - 1-Nov-21 to 31-Aug-22
 - Project Investigator(s): Prof.Sivanappa Kumar, Prof.Rajendra Shrestha
 - Sponsor – UNEP DTU, Denmark
 - Total contracted amount- 740,250
- **Assessment of Soil Acid Deposition of the Pollutants from the Mae Moh Power Plant Number 4-7**

 - Duration - 1-Nov-21 to 30-Jul-24
 - Project Investigator(s): Dr. Ekbordin Winijkul, Prof.N.T. Kim Oanh(Co-PI)
 - Sponsor – Electricity Generating Authority of Thailand
 - Total contracted amount- 4,692,538
- **Uttarakhand Disaster Recovery Project-Additional Financing (UDRP-AF)**

 - Duration – 1-Dec-21 to 31-Mar-23
 - Project Investigator(s): Dr.Manzul K. Hazarika,
 - Sponsor – World Bank
 - Total contracted amount- 5,085,080.40
- **Applied Geospatial & Approaches Tools for Nature-Based Solutions (NBS) in Vietnam**

 - Duration- 10-Dec-21 to 30-Sep-22
 - Project Investigator(s): Dr.Manzul K. Hazarika, Prof.Rajendra P. Shrestha, Dr.Ho Huu Loc
 - Sponsor – Food & Agriculture Organization of the United Nations
 - Total contracted amount- 1,109,874
- **Promotion of Countermeasures against Marine Plastic Litter in Southeast Asia & India**

 - Duration - 1-Oct-19 to 1-Jul-20
 - Project Investigator(s): Dr.Kavinda Gunasekara
 - Sponsor – United Nations Environment Programme (UNEP)
 - Total contracted amount- 4,050,000.00

- ◎ **Countermeasures against Marine Plastic Litters in Southeast Asia & India**

 - Duration - 6-Dec-19 to 30-Jun-20
 - Project Investigator(s): Guilberto Borongan, Solomon Huno; Solomon Huno
 - Sponsor – United Nations Environment Programme (UNEP), Kenya
 - Total contracted amount- 2,730,759
- ◎ **Promoting Himalayan Development by Strengthening Teaching & Research on Sustainable Development Goals**

 - Duration - 1-Jan-22 to 31-Dec-25
 - Project Investigator(s): Shobhakar Dhakal
 - Sponsor - Potsdam Institute for Climate Impact Research (PIK) for DAAD, Germany
 - Total contracted amount- 875,000.00
- ◎ **Impact Assessment of the WFP's FFA/ DRR Interventions**

 - Duration - 15-Feb-22 to 22-Jun-22
 - Sponsor – Christian Aid, Bangladesh
 - Total contracted amount- 752,000.00
- ◎ **Towards a climate resilience society for all: Harnessing the transformative power of inclusive social media and digital platforms for climate adaptation and resilience building in Southeast Asia**

 - Duration - 1-Mar-22 to 31-Dec-22
 - Project Investigator(s): Dr.Ho Huu Loc
 - Sponsor – Stockholm Environment Institute (SEI)
 - Total contracted amount- 207,747
- ◎ **USAID Kathmandu Clean Air Program (Swachhha Hawa)**

 - Duration - 16-Feb-22 to 15-Aug-26
 - Project Investigator(s): Prof.Nguyen Thi Kim Oanh, Dr.R.L. Verma
 - Sponsor – USAID
 - Total contracted amount- 47,384,416
- ◎ **Promotion of action against marine plastic litter in Asia and the Pacific (Counter MEASURE II)**

 - Duration - 3-Mar-22 to 3-Feb-24
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – United Nations Environment Programme
 - Total contracted amount- 1,581,000.00
- ◎ **Collaborative Forest Management (CFM) for Sustainable Landscape Restoration**

 - Duration - 2-Apr-22 to 30-Dec-22
 - Project Investigator(s): Mr.Md. Anishur Rahman, Dr.Md.Zakir Hossain
 - Sponsor – Bangladesh Forest Department
 - Total contracted amount- 2,933,125
- ◎ **PISCES-Partnership to Prevent Plastic Pollution in Indonesia Societies**

 - Duration - 1-Apr-22 to 30-Apr-26
 - Project Investigator(s): Prof.Vilas Nitivattananon, Dr.Choen Krainara
 - Sponsor – Brunel University, United Kingdom
 - Total contracted amount- 8,341,720.00
- ◎ **Development of Near Real-time Provincial Emission Inventory System**

 - Duration - 3-May-22 to 31-Oct-23
 - Project Investigator(s): Dr.Mongkol Ekpanyapong; Dr.Ekbordin Winijkul
 - Sponsor – National Research Council of Thailand (NRCT)
 - Total contracted amount- 4,486,000
- ◎ **SEA Circular Regional Dialogue Series**

 - Duration - 15-Jun-22 to 13-Jun-23
 - Project Investigator(s): Christopher Joseph Garnier
 - Sponsor- UNEP, Thailand
 - Total contracted amount- 1,350,000
- ◎ **Thailand's Bio-Circular-Green Economy Model: Awareness Raising, Capacity Building and International Perspectives**

 - Duration - 25-Jul-22 to 31-May-23
 - Project Investigator(s): Wenchao Xue
 - Sponsor- Mahidol University
 - Total contracted amount- 420,000
- ◎ **National Adaptation Planning in the Asia-Pacific, and activities under flagship of Asia-Pacific Adapt**

 - Duration - 1-Jul-22 to 30-Jun-24
 - Project Investigator(s): Phurba Lhendup
 - Sponsor- Ministry of the Environment, Government of Japan (MOEJ)
 - Total contracted amount- 13,117,235.40

- ◎ **Thai Rice: Strengthening Climate-smart Rice Farming**
 - Project Duration - 29-Aug-22 to 30-Apr-23
 - Project Investigator(s): Kyoko Kusakabe
 - Sponsor- Deutsche Gesellschaft für International Zusammenarbeit (GIZ) GmbH, Bangkok
 - Total contracted amount- 402,000
- ◎ **Development of E-Learning videos on Climate Adaptation**
 - Duration - 18-Aug-22 to 30-Jun-23
 - Project Investigator(s): Naveed Anwar
 - Sponsor- Institute for Global Environmental Strategies (IGES)
 - Total contracted amount- 1,900,015.00
- ◎ **Strengthening collaboration network between Thailand and China in the field of environment and sustainable development**
 - Duration - 1-Aug-22 to 31-May-23
 - Project Investigator(s): Dr.Wenchao Xue
 - Sponsor - National Research Council of Thailand
 - Total contracted amount - 400,000
- ◎ **Promoting disaster preparedness and resilience by co-developing stakeholder support tools for managing the systemic risk of compounding disasters**
 - Duration - 1-Oct-22 to 31-Dec-26
 - Project Investigator(s): Dr. Naveed Anwar
 - Sponsor- European Research Executive Agency (REA)
 - Total contracted amount- 3,009,825.00
- ◎ **Promoting Technology Innovation in Climate Change Resilience**
 - Duration - 1-Sep-22 to 23-Apr-23
 - Project Investigator(s): Dr. Naveed Anwar
 - Sponsor- Oak Foundation Ltd., Switzerland
 - Total contracted amount- 725,600
- ◎ **Regional-CES National Workshop in Thailand - Promoting Regional Circular and Ecological Sphere (Regional -CES)**
 - Duration - 1-Oct-22 to 31-Mar-23
 - Project Investigator(s): Indrajit Pal
 - Total contracted amount- 356,376.00
- ◎ **Water Security and Climate Change Conference (WSCC2022): Adaptation for Sustainable and Resilient Development**
 - Duration - 1-Oct-22 to 30-Sep-23
 - Project Investigator(s): Mukand S. Babel
 - Sponsor- DAAD through Technical University Braunschweig (TUB)
 - Total contracted amount- 3,240,000
- ◎ **Ocean Plastic Turned into an Opportunity in Circular Economy**
 - Duration - 1-Nov-22 to 30-Jun-23
 - Project Investigator(s): Thammarat Koottatep
 - Sponsor- SINTEF Community, Norway
 - Total contracted amount- 151,814.00
- ◎ **Bangchak Refinery and Oil Trading Business Pathway to Net Zero**
 - Duration - 29-Nov-22 to 28-Nov-23
 - Project Investigator(s): Ekbordin Winijkul
 - Sponsor- Bangchak Corporation Public Company Limited
 - Total contracted amount- 2,000,000
- ◎ **International Conference on Climate Change**
 - Duration - 9-Nov-22 to 8-Nov-24
 - Project Investigator(s): Avishek Datta, Sushil Kumar Himanshu, Dr.Farhad Zulfiquir
 - Sponsor- Sebelas Maret University, Indonesia
 - Total contracted amount- 371,700

SMART COMMUNITIES



Due to rapid urbanization, urban rural disparity, growing environmental footprint and inequality, the communities are facing economic, environmental, and social challenges. However, they are also trying to leap-frog through grasping the new opportunities presented by the smart technologies, the digital revolution and the policy innovation that are rapidly emerging. Especially, experiences of smart urban and rural communities are supported by a wide range of information and communication technology (ICT) systems that provide advanced and innovative services that

span all sectors. AIT's research focuses on transition to smart communities by leveraging the innovative technologies and practices for the community. Within the changing context of smart communities from infrastructure & supply-oriented to improving citizens' quality of life, the research is conducted in multi- and interdisciplinary way—integrating the different dimensions of development such as technology, environment, socio-economic, and the governance.

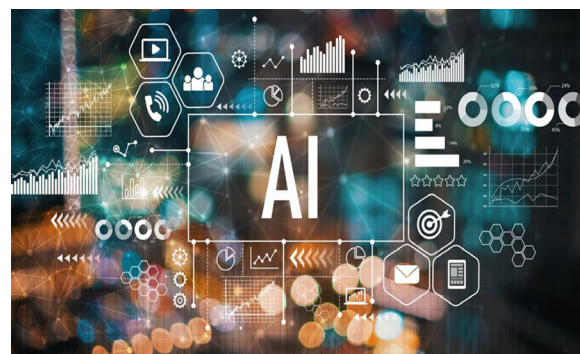
Sub-themes

1. Emerging Technologies for Inclusive Development of Rural and Urban communities
2. Ecosystem-based Environmental Solutions for Communities
3. Digital Transformation for Economy and Businesses

Emerging Technologies for Inclusive Development of Rural and Urban Communities

As the technology becomes more prevalent, the technological infrastructure serves as an enabling platform providing essential services for the benefits of the community. Digital technologies bring the great benefits to the communities through innovative services and solutions to the challenges facing the fast-growing cities and communities – such as climate change, urbanization, issues of mobility, food, and water security.

It is important to note that smart communities concept application is considered not only in the urban area and its development, but also enabling each community's requirements to be identified and addressed to raise the standard



of living for all. While the technology continues to advance, society needs to be properly prepared for using their functionalities to effectively use the opportunities related to the

development of modern technologies. This sub-theme recognizes the social implications along with the development of smart communities including digital divide; disparities among different communities in access and use of technology, geography (rural and urban areas), gender, and economic status.

AIT's research examines a wide variety of socio-technical aspects that bring the interconnected view of technology and the human systems that operate and interact with it. It encompasses the areas including community applications of different emerging technologies (artificial intelligence, Internet of Things, block chain, 5G, machine learning); tools and smart devices that affect the human activities and capacities. Research also explores the social implications

of digital communities and the analysis of policies and regulations for communities that promote the innovation and investment through technologies. The topics include, among others, ICTs application in delivering better education, health care, traffic management, real-time monitoring and management including air, water quality, renewable energy performance, and solid waste measurements (smart waste solutions); AI/IoT application in Geo-Engineering; telecommunication services; digital traceability in value chain; data protection and privacy; accessibility gap between urban and remote areas; and the factors that foster the digital inclusion.

Ecosystem-based Environmental Solutions for Communities

While the 'smart communities' uses information and communication technologies (ICTs) to provide innovative and efficient services for the communities, it is important to step up the efforts in reducing the human impact on the environment and promote the sustainability. The growth of urbanization and human settlements, coupled with limited planning are adversely affecting the natural resources and puts cities and communities at risk from climate change. These challenges have highlighted the critical need to respond to sustainability issues by incorporating environmental sustainability as one of the key important aspects to urban and rural planning. Realizing the increasing negative impact of urbanization on wider ecological systems, the research promotes nature-based solutions in dealing with increasing complexity of environmental burdens in both urban and rural contexts. It explores the options to meet socio-ecological system needs in ways that promote healthy ecosystems, human well-being, and viable economies.



Under this sub-theme, AIT's research promotes the socio-ecological systems approach to address a range of environmental issues related to energy, water security, land use, waste – such as sustainable land use planning and management, environmental systems analysis and sustainability assessment, adaptation approaches to disaster risks and climate change (nature-based flood management), waste management and circular economy, sustainable metropolitan development, green and inclusive buildings with a focus around ecosystems.

Digital Transformation for Economy and Businesses

While the technology continues to bring changes in our daily lives, it has the substantial impact on the economy from several aspects of policies, innovation, productivity, growth, and employment. While the use of digital technology can solve business problems and make business processes more efficient and effective, it is also necessary to understand the impact of emerging technologies on economies from political and social aspects to ensure a sustainable and equitable economic growth. AIT's research seeks to understand the process of digital transformation of businesses that drives the transformative change in economic efficiency, policy, and competitiveness including the adoption of digital financial services. The financial and social implications in response to technological advancement such as AI and IoT are further key issues addressed under this sub-theme. The areas covered include, for example,



the impact analysis of AI/IoT on economic policies, technological applications in production, operation, management, and marketing; communities' digital transaction; data-driven organizational management and business development; digital marketing and skills for the digital workplace; innovations and entrepreneurship in Agribusinesses including digital precision farming; marketing and traceability tool.

HIGHLIGHTED PROJECTS UNDER SMART COMMUNITIES

The following lists some examples of projects that highlight AIT's global, regional, and country development experience under "Smart Communities" thematic area during 2020, 2021, and 2022.

Development of a TV-Image Conversion to Haptics-Display System for Vision Disability Person

Project budget- 3.4 million THB

Project duration- April-22 to Mar-28

Donor- Broadcasting and Telecommunication Research and Development Fund for Public Interest, NBCT

The project aims to develop at TV-image conversion to haptics display system for vision disability person; to improve life quality of vision disability person in getting better feeling and more information from TV. It also increases the TV audients by inclusion of vision disability person, and increase efficiency, fairness, and covering of the communication from the government to its people.



AI system for automatic truck detection and classification

Project budget- 1 million THB

Donor- C.M.S. Control System Co.,Ltd.

Project duration- August 22 to July 23

The project supports developing a directory of trucks entering or existing the industrial area, as well as reviewing surveillance footage in accordance with the company's basic requirements and discipline. Furthermore, the financial institute requires this information to know the number of trucks, the quantity and type of goods on the trucks outgoing and incoming in the factory, and these information and data of trucks will help in the term of Credit Risk Analysis, to support the decision to approve the loan to the client in the industrial groups. Aside from that, Thailand's Department of Highways, Expressway Authority, and Department of Rural Roads expressed strong interest in using the Trucks classification



application to analyze traffic volume in their authorized areas. This intelligent Traffic and Vehicle data will benefit in the reduction of emission, improvement of road safety, reduction of traffic volume, and optimization of traffic flow, all of which will have an environmental impact by reducing time and energy spent on the road, resulting in much less air pollution in the city.

The digital divide within ASEAN under the 4th industrial revolution focusing on Mekong countries

Project budget- 2 million THB

Donor- National Research Foundation of Korea (NRFK), through Hankuk University of Foreign Studies (HUFS)

Project duration- July 20 to June 23

The study aims to examine the structural, behavioral and performance characteristics of the digital divide in 5 Mekong riverside countries of ASEAN (Thailand, Vietnam, Myanmar, Cambodia, and Laos) in the era of the 4th industrial revolution at the macro level. It also aims to identify the business behavior and performance characteristics of information gap in industries of the Mekong countries at the meso-level. And the last objective is to characterize the structure and utilization behavior of manufacturing and service technologies for mitigating the digital divide of the Mekong countries at the micro level. Through these three research objectives, the ultimate goal is to alleviate the digital divide of the Mekong countries and to create opportunities for information and communication industry of Korea companies. Through the study, the differential characteristics of information gaps in the ASEAN region focusing 5 Mekong countries will empirically be examined through comparative analysis with other region such as the EU and



Northeast Asia. That will provide several implications for international policy measures and Korea's role in resolving the digital divide of 5 Mekong countries in the ASEAN regional and for revitalizing the economy. Secondly, it can be used as benchmarking case through in-depth case analysis of strategies for the 4th industrial revolution of 5 Mekong countries such as in relation to digital divide. Third, the detailed analysis of the technology gap in manufacturing and service technology related to digital divide in the ASEAN region can be used to capture information policy and business opportunities of 5 Mekong countries. Lastly, it is expected to expand the theoretical research through the redefinition of the concept of digital divide according to the progress of the 4th industrial revolution.

PROJECTS INITIATED UNDER SMART COMMUNITIES

Below is the list of research, consultancy and capacity development projects initiated under “Smart Communities” by various Institute wide outreach centers and departments during 2020, 2021 and 2022.

- ◎ **Development of Video Analytics for Customer Profile for Smart Signage with AI technology**

 - Duration - 15-Mar-20 to 14-May-21
 - Project Investigator(s): Dr. Mongkol Ekpanyapong
 - Sponsor – CMS control system Co., Ltd./ The Innovation & technical assistance program
 - Total contracted amount- 829,785.00
- ◎ **Database linking system for Air Pollution Management**

 - Duration - 3-Apr-20 to 3-Apr-21
 - Project Investigator(s): Prof.Nguyen Thi Kim Oanh, Dr.Mongkol Ekpanyapong
 - Sponsor – Pineapple Vision System Co.,Ltd.
 - Total contracted amount- 800,000
- ◎ **The digital divide within ASEAN under the 4th industrial revolution focusing on Mekong countries**

 - Duration - 1-Jul-20 to 30-Jun-23
 - Project Investigator(s): Dr. Yuosre F.M. Badir
 - Sponsor – National Research Foundation of Korea (NRFK), through Hankuk University of Foreign Studies (HUFS)
 - Total contracted amount- 2,049,696.00
- ◎ **Development of Geographic Information System with Remote Sensing Information for 3D Model Estimation from UAV**

 - Duration - 115-Jul-20 to 14-Jul-21
 - Project Investigator(s): Dr. Mongkol Ekpanyapong, Dr.Salvatore G.P. Viridis
 - Sponsor – The Innovation & technical assistance program “ITAP” together with Pineapple Vision Systems Co., Ltd. “PVS”
 - Total contracted amount- 808,481.3
- ◎ **Development & installation of automatic speed camera (Point-to-Point Speed Camera) to control speeding behavior for safe driving**

 - Duration - 30-Sep-20 to 31-Jul-21
 - Project Investigator(s): Prof unnawee Kanitpong, Dr. Mongkol Ekpanyapong
 - Sponsor – Department of Land Transport
 - Total contracted amount- 4,585,000
- ◎ **Automatic Suspect Tracking using Multi-Camera System**

 - Duration - 5-Oct-20 to 5-Dec-22
 - Project Investigator(s): Dr.Mongkol Ekpanyapong, Dr.Matthew N. Dailey.
 - Sponsor – National Broadcasting & Telecommunications Commission (NBTC)
 - Total contracted amount- 7,792,810
- ◎ **Design & development of community digital transactions for villages (Baengpun II)**

 - Duration - 1-Nov-20 to 31-Oct-21
 - Project Investigator(s): Dr.Adisorn Lertsinsrubtavee,
 - Sponsor – Faculty of Economics, Chiang Mai University
 - Total contracted amount- 1,972,520
- ◎ **SAM AI Workshop**

 - Duration - 5-Feb-20 to 31-Mar-200
 - Project Investigator(s): Dr.Mongkol Ekpanyapong
 - Sponsor - Sukkhumvit Asset Management Co.,Ltd.
 - Total contracted amount - 105,000
- ◎ **Erasmus+ Capacity Building in Reinforcing Non-University Sector at the Tertiary Level in Engineering & Technology to Support Thailand Sustainable Smart Industry**

 - Duration - 15-Nov-20 to 14-Nov-23
 - Project Investigator(s): Dr. Pisut Koomsap
 - Sponsor – European Commission ERASMUS+ Programme
 - Total contracted amount- 34,992,540.80
- ◎ **Innovation Educamp**

 - Duration - 1-Nov-20 to 31-Dec-22
 - Project Investigator(s): Prof. Nitin Kumar Tripathi
 - Sponsor – Siam University Thailand & Other Universities
 - Total contracted amount- 400,000

- **The development of IoT platform for Forest Fire & Air Pollution Monitoring using LoRa Technology**

 - Duration - 25-Dec-20 to 24-Dec-22
 - Project Investigator(s): Dr.Adisorn Lertsinsrutavee
 - Sponsor – Broadcasting & Telecommunications Research & Development Fund for Public Interest
 - Total contracted amount- 5,705,710.8
- **Development & Trial Study of Traffic Flow Management with Data-Centric Approaches: Bangkok Rama 4 Model**

 - Duration - 1-Nov-20 to 30-Apr-22
 - Project Investigator(s): Dr Mongkol Ekpanyapong
 - Sponsor – Chula Unisearch, Chulalongkorn University
 - Total contracted amount- 744,000
- **intERLab IT Services 2021**

 - Duration 1-Jan-21 to 31-Dec-21
 - Project Investigator(s): Mr.Viraphan Samadi, Prof.Kanchana Kanchanasut
 - Sponsor – Asian Institute of Technology
 - Total contracted amount - 8,300,000.00
- **Development of a Sensor Signal Processing & Control Unit for Laser Guided Vehicle for Industrial Application**

 - Duration -1-Apr-21 to 31-Mar-26
 - Project Investigator(s): Dr. Manukid Parnichkun
 - Sponsor – National Science & Technology Development Agency (NSTDA)
 - Total contracted amount- 2,552,000
- **Professional Master's in Business Analytics and Digital Transformation, October 2021**

 - Duration - 1-Oct-21 to 30-Sep-23
 - Project Investigator(s): Dr.Sundar Venkatesh
 - Sponsor -Organizations in the Region
 - Total contracted amount- 9,216,000.00
- **CenInspect-AI Defect Detection for Building Inspection**

 - Duration - 10-Feb-21 to 31-Jul-21
 - Project Investigator(s): Prof.Matthew N.Dailey
 - Sponsor – Centrovision Co., Ltd. / National Innovation Agency
 - Total contracted amount- 170,000.00
- **Vehicle Theft Search with Police Lost Car Department**

 - Duration - 1-Jun-21 to 1-Sep-22
 - Project Investigator(s): Dr.Mongkol Ekpanyapong
 - Sponsor – National Research Council of Thailand (NRCT)
 - Total contracted amount- 2,764,000
- **Traffic Analytic System Project**

 - Duration - 12-Jul-21 to 11-Jan-23
 - Project Investigator(s): Dr.Mongkol Ekpanyapong, Prof.Matthew N.Dailey
 - Sponsor – Pineapple Vision System Company Limited (PVS)
 - Total contracted amount- 7,490,000
- **Platform Development for Analytic Wave Shape Faults on COMTRADE File Format (IEEE Sta C37.111) (COMTRADE Intelligent Data Clustering and Anomaly Analysis Platform (CIDCAAP))**

 - Duration - 23-Sep-21 to 30-Nov-22
 - Project Investigator(s): Prof.Matthew N. Dailey, Dr.Mongkol Ekpanyapong
 - Sponsor – Provincial Electricity Authority (PEA)
 - Total contracted amount- 4,827,503
- **KYC spoof detection & Touchless human interface technology Project**

 - Duration - 1-Sep-21 to 30-Apr-22
 - Project Investigator(s): Prof.Matthew N. Dailey, Dr.Mongkol Ekpanyapong
 - Sponsor – Kasikorn Labs(K-Labs-KBTG)
 - Total contracted amount- 594,060
- **intERLab IoT Development 2021**

 - Duration 1-Oct-21 to 30-Sep-22
 - Project Investigator(s): Dr.Adisorn Lertsinsrutavee, Prof. Kanchana Kanchanasut; Mr.Viraphan Samadi
 - Sponsor – AIT
 - Total contracted amount- 1,000,000
- **National Consultant for developing the citizen participation software**

 - Duration - 6-Dec-21 to 30-Apr-22
 - Project Investigator(s): Dr.Mongkol Ekpanyapong
 - Sponsor – UNDP
 - Total contracted amount- 480,000

- **Rural Sustainability Programme-APAC Initiative for Regional Impact**

 - Duration - 1-Dec-21 to 31-Dec-24
 - Project Investigator(s): Dr.Thi Phuoc Lai Nguyen, Dr.Mokbul Ahmad
 - Sponsor – The University of Hong Kong (HKU)/ The Hongkong and Shanghai Banking Corporation Limited (HSBC)
 - Total contracted amount- 4,883,865.01
- **Artificial Intelligence Technology Expert**

 - Duration - 1-Nov-21 to 31-Dec-22
 - Project Investigator(s): Dr.Mongkol Ekpanyapong
 - Sponsor- Betagro Public Company Limited
 - Total contracted amount- 120,375
- **Polycentric Approaches to the Management of Urban Water Resources in South-East Asia-A Localization of the Sustainability Goals of Agenda 2030 and the New Urban Agenda at the City/ Municipality Level**

 - Duration - 1-Dec-21 to 28-Feb-25
 - Project Investigator(s): Prof.Thammarat Koottatep
 - Sponsor – BORDA
 - Total contracted amount- 2,980,202
- **Development of Machine Learning Algorithms for Spatial Downscaling of Satellite Precipitation Data Over Thailand to help Farmers Achieve Agricultural Sustainability**

 - Duration - 9-Nov-21 to 31-Dec-23
 - Project Investigator(s): Dr.Sushi Kumar Himanshu
 - Sponsor –AIT Research Initiation Grant
 - Total contracted amount- 150,000
- **Automatic Helmet Viol Automatic Helmet Violation Data Collection**

 - Duration - 30-Sep-21 to 31-Aug-22
 - Project Investigator(s): Dr.Mongkol Ekpanyapong
 - Sponsor – Thai Roads Foundation and Road Safety Group Thailand (Thairoads)
 - Total contracted amount- 1,111,000
- **AIT Internal Development and Maintenance 2022**

 - Duration - 1-Jan-22 to 31-Dec-22
 - Project Investigator(s): Mr.Viraphan Samadi, Prof.Kanchana Kanchanasut, Dr.Adisorn Lertsinrubtavee
 - Sponsor – Asian Institute of Technology
 - Total contracted amount- 2,000,000.00
- **intERLab IT Services 2022**

 - Duration - 1-Jan-22 to 31-Dec-22
 - Project Investigator(s): Mr.Viraphan Samadi, Prof.Kanchana Kanchanasut
 - Sponsor – Asian Institution of Technology
 - Total contracted amount- 9,101,542
- **Asian Internet Engineering Conference 2022**

 - Duration - 1-Jan-22 to 31-Dec-22
 - Project Investigator(s): Dr.Sundar Venkatesh, Dr.Adisorn Lertsinrubtavee
 - Sponsor – Researchers/engineers interested in Internet Technologies
 - Total contracted amount- 1,000,000.00
- **Digital Agriculture and AI Driven Precision Farming**

 - Duration - 14-Feb-22 to 22-Jun-22
 - Project Investigator(s): Mr.MD.Anishur Rahman, Dr.Md.Zakir Hossain
 - Sponsor – Ministry of Human Resources (MoHR), Malaysia
 - Total contracted amount- 203,125
- **Development of a TV-Image Conversion to Haptics-Display System for Vision Disability Person**

 - Duration - 1-Apr-22 to 31-Mar-28
 - Project Investigator(s): Dr. Manukid Parnichkun
 - Sponsor – National Broadcasting and Telecommunications Commission
 - Total contracted amount- 3,371,730.50
- **AI system for environment evaluation**

 - Duration - 28-May-22 to 29-May-23
 - Project Investigator(s): Dr.Mongkol Ekpanyapong, Dr.Matthew N. Dailey
 - Sponsor - Raydant International Co., Ltd.
 - Total contracted amount - 859,210.00
- **Web and Mobile Application for Air Quality Information**

 - Duration 26-May-22 to 31-Dec-24
 - Project Investigator(s): Dr.Mongkol Ekpanyapong
 - Sponsor – Sithiporn Associates Company Limited
 - Total contracted amount- 8,592,100

◎ **AI Center Investment Fund in collaborative project with a Multi-Funding Agency**

- Duration - 1-Apr-22 to 31-Mar-24
- Project Investigator(s): Dr.Mongkol Ekpanyapong, Dr.Matthew N. Dailey
- Sponsor - Multi Donor
- Total contracted amount- 16,806,487.20

◎ **AI system for automatic truck detection and classification**

- Duration - 1-Aug-22 to 31-Jul-23
- Project Investigator(s): Mongkol Ekpanyapong
- Sponsor – C.M.S. Control System Co., Ltd.
- Total contracted amount- 847,440

◎ **intERLab IoT Development 2022**

- Duration - 1-Sep-22 to 31-Dec-23
- Project Investigator(s): Adisorn Lertsinsrubtavee
- Sponsor – Asian Institute of Technology
- Total contracted amount - 1,000,000

◎ **Truck Mobility Data Analysis for Reducing Carbon Emission**

- Duration - 17-Oct-22 to 18-Oct-23
- Project Investigator(s): Thammarat Koottatep, Sarawut Ninsawat, Kavinda Gunasekara
- Sponsor – Bangchak Corporation Public Company Limited
- Total contracted amount- 4,711,500

INFRASTRUCTURE



Infrastructure systems play a critical role in social and economic activities, and function as critical lifelines for connecting communities, industries, markets, goods, and services as well as for efficient governance. Infrastructure forms the backbone of any social and political development of communities and countries. Hence, investments in infrastructure are increasing rapidly, especially in developing countries to meet the increasing demand for reliable and efficient transportation, power, tele-communication, and water, often termed as the basic services essential for human and social well-being. However, across the world, millions of people are still facing severe absence and shortages of such systems. Unreliable power grids, inadequate water supply and sanitation systems, poor transportation networks are still a key bottleneck in many developing nations. The improvement and resilience of infrastructure systems and services

have become vital in the path towards sustainable development and for resilient and prosperous societies. In responding to the future trends and challenges with the rapidly growing communities, it is essential to ensure that infrastructure system and facilities are designed in sustainable, resilient, and inclusive approach. With technology expanding at the fast rate, it is now, infrastructures need to be flexible to adapt to technological improvements and incorporate better solutions as they become available. AIT's infrastructure theme represents the physical components of interrelated systems providing commodities and services essential to enable, sustain, or enhance societal living conditions. That includes transportation systems and networks including roads, bridges, and mass transit; housings, buildings, and facilities; electrical grids, ICTs networks including telecommunications.

Sub-themes

1. Planning and Management
2. Water Infrastructure
3. Digital (ICTs) Infrastructure

Planning and Management

Economic growth and prosperity of the countries largely depend on the sustainable and resilient infrastructure and services which facilitate the daily social and economic activities to be more productive and efficient. Effective planning and management is therefore crucial in creating a resilient and sustainable infrastructure facilities which are the primary prerequisite for development. Well-planned infrastructure system strengthens the sustainability and livability of our cities and communities while moving towards a greener, equitable future. AIT's research focuses on the processes necessary for the planning and development of new infrastructure in a cost-effective manner, and on maintaining and operating mature infrastructure for sustainability while integrating economic, social, environmental and policy aspects along these processes. It addresses the issues related to city systems and network, transportation, environmental and social aspects, financing and investment, logistic and supply chain management, construction engineering & management including sustainable construction, quality and safety improvement, bridge engineering, maintenance management. Specific topics addressed in relation to planning and management include the effective strategies for infrastructure development and project management; climate resilient, earthquake resistant urban infrastructure; appropriate costing methods of



climate change adaptation in infrastructure development (roads); safety, and security measures for public/private schools and hospitals; traffic engineering such as traffic and road safety; highways and pavements designs; infrastructure financing options; financial and risk management in infrastructure development; operation and maintenance of facilities; geo-engineering aspects in civil engineering issues; the rural-urban interconnected infrastructure and the infrastructure sustainability. Recently completed infrastructure resilience projects are related to coastal critical infrastructure resilience index in Thailand and implementing pilot demonstration project "Climate Resilient Infrastructure for Social Transformation and Adaptation (CRISTA)" providing solution to the pressing gaps in infrastructure resilience towards climatic hazards in Nepal and Bangladesh.

Water Infrastructure

Water system is an essential infrastructure providing the basic services to growing populations. But rapid population growth, urbanization and economic development are increasing the demand for water bringing enormous pressure on water resources and supply. With this growing pressure on the water sector, investing in building resilience of water infrastructures to the adverse effects of climate change and emerging global health issues (pandemic) requires a comprehensive approach and a long-term outlook that contributes to economic productivity and environmental sustainability. AIT's research on water related infrastructure addresses the issues related to



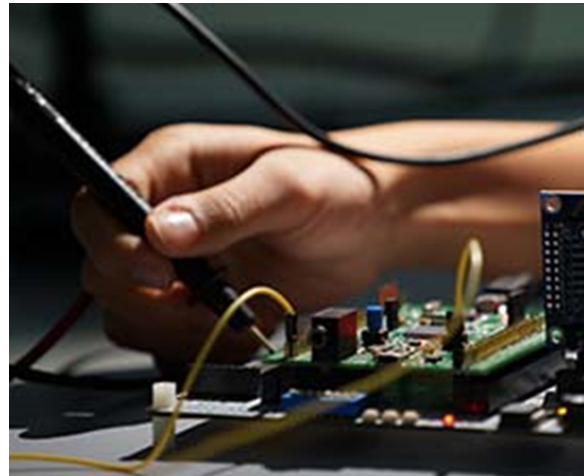
planning, design, implementation, operation, and maintenance of water infrastructures – critically exploring the technology solutions and policy options to improve the water use efficiency, productivity, and security in context of changing environmental conditions. A wide variety of topics are explored under sub-theme such as water supply and distribution infrastructure in urban and rural areas; sanitation system services; wastewater treatment and disposal systems; impact of COVID-19 on waste water management,

irrigation and drainage system; real-time hydrological information systems for urban flooding and drainage; innovative approaches for resilient water infrastructure including innovative water conservation technologies, climate smart WASH technology, climate friendly wastewater treatment, nature based solutions and transformative adaptation for water security; and analysis of the policies and business models applied to improve the water resource infrastructure planning and management.

Digital (ICTs) Infrastructure

The development of Information and Communication, Technology (ICT) infrastructure has brought significant changes and impacts to our everyday lives from many aspects. The ICTs has become the part of every individual's life as the essential infrastructure to connect the people, share the information through a wide range of digital applications, services and solutions on which society and businesses rely.

Recognizing the ICTs as a key enabler to the social and economic development, AIT's research seeks to ensure that the application, services, and investments of ICT based systems and processes are efficient and sustainable for businesses, industries, communities, and the governments. Key areas of the research include - telecommunications, information systems and management, mobile phone applications, and ICTs applications for information society. The topics covered under sub-theme, include, among others, telecom market dynamics including service quality control and resource management; data modelling and management; data-driven organizational systems and management, data-driven approaches in methods in environmental research and urban issues, ICTs application in built environment and transport network system including road and traffic control management.



HIGHLIGHTED PROJECTS UNDER INFRASTRUCTURE

Following lists some examples of projects that highlight AIT's global, regional, and country development experience under "Infrastructure" thematic area during 2020, 2021, and 2022.

Southeast Asia Urban Services Facility (Indonesia: Support for Emergency Assistance on Rehabilitation and Reconstruction in Central Sulawesi) - Consulting Firm for Output 2: Monitoring and Evaluation of Reconstruction Efforts - Indonesia

Project budget- 15.5 million THB

Project duration- October-20 to October-22

Donor- Asian Development Bank

The project aims at developing a geospatial Monitoring and Evaluation (M&E) platform to provide information on critical infrastructure reconstruction, building, ground movements, and other information needed for reconstruction monitoring.



Climate Resilient Infrastructure for Social Transformation and Adaptation (CRISTA)

Project budget- 3.7 million THB

Donor- Asian Disaster Preparedness Center

Project duration- December 21 to January 23

CRISTA is Climate Innovation Project supported by FCDO (UK), the World Bank and ADPC. The project is implemented by Asian Institute of Technology (AIT) in coordination with Action Nepal, FEED Pvt. Ltd, and Science Connect Ltd. in Nepal and Bangladesh. The project aims to support the decision makers in addressing the risk by informing the near real-time status of critical infrastructure and improved the community level climate resilience through risk sensitization.



Thailand-China High Speed Railway Project

Project budget- 2 million THB

Donor- China State Construction Engineering (Thailand) Company Limited

Project duration- August 22 to July 25

The AIT and China State Construction Engineering (Thailand) Co., Ltd (CSC ECTH) signed a Memorandum of Agreement to establish collaborations in joint research and executive training program focusing on the "Thailand-China High-Speed Railway project" from 2022 to 2024. The collaboration program covers an executive training program, a joint



research project, and a long-term coordination & collaboration scheme between the two parties. AIT Belt and Road Research Center will lead this initiative in association with AIT Extension and the Department. sensitization.

PROJECTS INITIATED UNDER INFRASTRUCTURE

Below is the list of research, consultancy, and capacity development projects initiated under "Infrastructure" by various Institute wide outreach centers and departments during 2020, 2021 and 2022.

- ① **Seismic Evaluation of One Mc Kinley Place Building**

 - Duration - 14-Feb-20 to 14-Jan-23
 - Project Investigator(s): Mr. Thaung Htut Aung
 - Sponsor – Quadstruct Inc., Philippines
 - Total contracted amount 938,100.00
- ② **Structural Design Review of Ribbon Truss-Bridgetowne Bridge Design**

 - Duration - 17-Feb-20 to 17-Feb-23
 - Project Investigator(s): Mr. Thaung Htut Aung
 - Sponsor – SY 2&associated, Inc.
 - Total contracted amount - 62,660
- ③ **Wind Engineering Study-EMAAR Tower**

 - Duration - 17-Feb-20 to 17-Feb-23
 - Project Investigator(s): Mr. Thaung Htut Aung
 - Sponsor – mushtaq and bilal consulting engineers
 - Total contracted amount - 783,250
- ④ **Generate 3D Model & 2D Drawing of Precast House**

 - Duration - 24-Feb-20 to 30-Jun-20
 - Project Investigator(s): Prof. BHW Hadikusumo
 - Sponsor – Precast House
 - Total contracted amount - 60,000
- ⑤ **Project Planning and Management**

 - Duration - 19-Jan-20 to 30-Jul-20
 - Project Investigator(s): Dr.Md. Zakir Hossain
 - Sponsor – University of Veterinary & Animal Sciences (UVAS)
 - Total contracted amount - 633,780
- ⑥ **Structural peer review of Oriana**

 - Duration - 25-Mar-20 to 25-Feb-23
 - Project Investigator(s): Mr. Thaung Htut Aung
 - Sponsor – DMCI Project Development Inc.
 - Total contracted amount - 5,927,400
- ⑦ **JBE Rack Template Design Software**

 - Duration - 8-Apr-20 to 8-Mar-23
 - Project Investigator(s): Mr. Thaung Htut Aung
 - Sponsor – King Mongkut's University of Technology, Thonburi
 - Total contracted amount - 800,000
- ⑧ **Performance Based Design of CLI-Acacia**

 - Duration - 2-Apr-20 to 2-Mar-23
 - Project Investigator(s): Mr. Thaung Htut Aung
 - Sponsor – SY 2&associated, Inc.
 - Total contracted amount - 369,600

- ◎ **Code based design review of Coho Gen San the Fortino project**
 - Duration - 20-May-20 to 20-Apr-22
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – Quadstruct Inc.
 - Total contracted amount - 256,240
- ◎ **Crack Investigation at Rasa Building**
 - Duration- 22-Jun-20 to 22-May-22
 - Project Investigator(s): Mr.Thaug Htut Aung Sponsor – SCB Engineering
 - Total contracted amount - 200,000
- ◎ **Building Housing Solutions Post Covid 19**
 - Duration- 20-Jul-20 to 7-Jun-22
 - Project Investigator(s): Mr.Thaug Htut Aung Sponsor – National Housing Authority (NHA)
 - Total contracted amount - 13,731,976.30
- ◎ **Fecal Sludge Analysis Proficiency Center**
 - Duration- 15-Jul-20 to 30-Jun-23
 - Project Investigator(s): Prof.Thammarat Koottatep
 - Sponsor – Bill & Melinda Gates Foundation
 - Total contracted amount - 27,200,000
- ◎ **Southeast Asia Urban Services Facility (Indonesia: Support for Emergency Assistance on Rehabilitation & Reconstruction in Central Sulawesi)**
 - Duration - 1-Oct-20 to 31-Oct-22
 - Project Investigator(s): Dr,Manzul K. Hazarika
 - Sponsor – Asian Development Bank (ADB)
 - Total contracted amount - 15,478,920
- ◎ **Structural System Development & Code Based Design Review of 7 Senmar Buildings**
 - Duration - 9-Oct-20 to 9-Sep-23
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – Sanmar Properties Ltd.
 - Total contracted amount - 1,353,991
- ◎ **Software testing for NLTHA using ETABS & Perform 3D**
 - Duration - 27-Nov-20 to 27-Oct-23
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – CSI, USA
 - Total contracted amount - 1,217,200
- ◎ **PBD of Malate**
 - Duration - 17-Sep-20 to 17-Aug-23
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – SY^2 + Associates, Inc.)
 - Total contracted amount - 2,251,440
- ◎ **PBD of Cebu Business Park (CBP)**
 - Duration - 24-Sep-20 to 24-Aug-22
 - Project Investigator(s): Mr.Thaug Htut Aung Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount - 792,500
- ◎ **PBD of Paseo De Roxas Makati**
 - Duration - 24-Sep-20 to 24-Aug-22
 - Project Investigator(s): Mr.Thaug Htut Aung Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount - 792,500
- ◎ **MRTA Orange Line Research Project**
 - Duration - 2-Nov-20 to 30-Nov-24
 - Project Investigator(s): Dr.Kuo Chieh Chao
 - Sponsor – Sanshin Construction (Thailand)Company Limited
 - Total contracted amount - 900,000
- ◎ **Retaining Wall at the Daikyo Factory Building, Samut Prakan Province**
 - Duration - 2-Nov-20 to 30-Nov-22
 - Project Investigator(s): Dr.Kuo Chieh Chao Sponsor – Tokura (Thailand) Company Limited
 - Total contracted amount - 400,000
- ◎ **Structural System Development & Code Based Design Review of 7 Senmar Buildings**
 - Duration - 9-Oct-20 to 9-Sep-23
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – Sanmar Properties Ltd.
 - Total contracted amount - 1,353,991
- ◎ **NATS LAB Fecal Sludge Analysis Laboratory**
 - Duration- 1-Oct-20 to 30-Sep-23
 - Project Investigator(s): Prof.Thammarat Koottatep
 - Sponsor – Laboratory Analysis Fee from both Internal & External Customers (Multiple Donors)
 - Total contracted amount - 875,160

- ◎ **Performance Based Design on Bravo (South Tower)**
 - Duration- 28-Aug-20 to 28-Jul-22
 - Project Investigator(s): Mr.Thaug Htut Aung Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount - 628,600
- ◎ **Performance Based Design of Sonora**
 - Duration- 31-Aug-20 to 31-Jul-23
 - Project Investigator(s): Mr.Thaug Htut Aung Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount - 2,499,200
- ◎ **Structural peer review of Maxen**
 - Duration- 28-Aug-20 to 28-Jul-22
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount - 658,560
- ◎ **PBD of Bristol 2 Terraces**
 - Duration- 17-Sep-20 to 17-Aug-23
 - Project Investigator(s): Mr.Thaug Htut Aung Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount - 1,407,150
- ◎ **Preparation of an Inventory Indus Embankment and Breaching Sections, to Document their Structural Code Based Design Review of K-Bank Auditorium**
 - Duration - 14-Feb-20 to 14-Jan-23
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – Kasikorn Bank Public Company Limited
 - Total contracted amount - 481,500
- ◎ **Toyota Passenger-Car Accident Analysis: Year 2020**
 - Duration - 30-Sep-20 to 31-Mar-21
 - Project Investigator(s): Dr. Kunnawee Kantipong
 - Sponsor – Toyota Daihatsu Engineering & Manufacturing Co., Ltd.
 - Total contracted amount - 579,983
- ◎ **Third Runway, Taxiway D Exterision & Perimeter Taxiway for Suvarnabhumi Airport**
 - Duration - 6-Nov-20 to 30-Nov-22
 - Project Investigator(s): Dr.Kuo Chieh Chao Sponsor – CeTeau (Thailand) Company Limited
 - Total contracted amount - 3,236,492
- ◎ **Training Course on Rock Mechanics**
 - Duration - 1-Dec-20 to 31-Dec-22
 - Project Investigator(s): Mr.Thaug Htut Aung Sponsor – Electricity Generating Authority of Thailand (EGAT)
 - Total contracted amount - 45,000
- ◎ **Motorcycle Accident Investigation 2021**
 - Duration - 1-Oct-20 to 31-Dec-21
 - Project Investigator(s): Prof. Kunnawee Kanitpong
 - Sponsor – Thai Health Promotion Foundation
 - Total contracted amount - 9,513,900
- ◎ **Professional Master Project Management in Yangon, Myanmar, August 2020**
 - Duration - 1-Sep-20 to 31-Aug-22
 - Project Investigator(s): Prof. BHW Hadikusumo
 - Sponsor - Ministry of Conctruction, Myanmar
 - Total contracted amount- 156,145
- ◎ **Truss Tra Chang Phase 3**
 - Duration - 14-Dec-20 to 14-Nov-23
 - Project Investigator(s): Mr.Thaug Htut Aung Sponsor – SCG Cement-Building Materials Co., Ltd.
 - Total contracted amount - 1,800,000
- ◎ **Provide technical assistance to the Division of Vector-Borne Disease (DVBD) to address information technology (IT) needs to support strengthening its malaria information system (MIS)**
 - Duration - 17-frv-20 to 17-Nov-22
 - Project Investigator(s): Mr.Thaug Htut Aung Sponsor – Research Triangle Institute
 - Total contracted amount - 520,000
- ◎ **Professional Master Project Management in Mandalay, Myanmar, July 2020**
 - Duration- 1-Jul-20 to 31-Dec-22
 - Project Investigator(s): Dr. BHW Hadikusumo
 - Sponsor – The Myanmar Engineering Society (MES)
 - Total contracted amount - 170,340

- **Development of Online Course on Data Analytics**

 - Duration- 22-May-20 to 22-Apr-22
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – SCB Academy Ltd. Co. & DEPA Manpower Fund
 - Total contracted amount - 881,500
- **Structural Code Based Analysis & Design of Interchange Bridges**

 - Duration- 29-May-20 to 29-Apr-22
 - Sponsor – Advanced Engineering Consultants Co., Ltd.
 - Total contracted amount - 640,000
- **Generate 3D Model & 2D Drawing of Low-Cost Building**

 - Duration - 1-Mar-21 to 30-Jun-21
 - Project Investigator(s): Prof. BHW Hadikusumo
 - Sponsor – Eastern Summit Construction Co., Ltd.
 - Total contracted amount – 100,000
- **Hydraulic Model Tests of Pre-Construction Works for Luang Prabang Hydroelectric Power Project, Lao PDR**

 - Duration - 1-Mar-21 to 31-Dec-21
 - Project Investigator(s): Mr. Arturo G. Roa
 - Sponsor – Ch. Kamchang(Lao) Co.,Ltd
 - Total contracted amount- 1,340,000
- **Physical Hydraulic Model Tests of Baffled Drop Shaft for Nam E-Moun Hydroelectric Power Project, Lao PDR**

 - Duration - 15-Mar-21 to 30-Jun-22
 - Project Investigator(s): Mr. Arturo G. Roa
 - Sponsor – Chaleun Sekong Energy Co., Ltd.
 - Total contracted amount- 5,373,720
- **Design review of elevated highway, Sri Lanka**

 - Duration- 6-Jan-21 to 6-Dec-23
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – Road Development Authority of Sri Lanka
 - Total contracted amount – 2,735,151
- **X-SEA Project Phase 2**

 - Duration - 3-Feb-21 to 3-Jan-23
 - Project Investigator(s): Mr.Thaug Htut AungSponsor – XFINASIT Co., Ltd
 - Total contracted amount – 557,405
- **Geotechnical Forensic Investigation & Structural Engineering Review-HCTC Building**

 - Duration- 12-Feb-21 to 12-Jan-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – The Tak Border Child Assistance Foundation
 - Total contracted amount – 440,000
- **Survey for structural damage building, Anuban Pathumthani School**

 - Duration - 25-Mar-21 to 31-May-22
 - Project Investigator(s): Dr. Anawat Chotesuwan
 - Sponsor- SCB Engineering Co., Ltd.
 - Total contracted project- 225,000
- **PBD of Land Pacific Building**

 - Duration - 4-Feb-21 to 4-Jan-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount – 542,700
- **PBD of Asia Plaza**

 - Duration- 5-Feb-21 to 5-Jan-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount – 1,814,400
- **Structural peer review of Ortol residences**

 - Duration - 3-Feb-21 to 3-Jan-23
 - Project Investigator(s): Mr.Thaug Htut AungSponsor – SY^2 + Associates, Inc.
 - Total contracted amount - 751,250
- **Structural peer review of Circulo Verde Phase 2 Tower 1**

 - Duration - 23-Mar-21 to 23-Mar-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – OCLP Holdings Inc
 - Total contracted amount - 1,476,370
- **Wind tunnel testing of Museum of Architecture**

 - Duration - 21-Apr-21 to 21-Jun-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – Multi Development and Construction Corp
 - Total contracted amount - 786,000
- **Wind tunnel testing of One Kalinisan Project**

 - Duration - 26-Apr-21 to 26-Jun-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – Aidea, Inc.
 - Total contracted amount - 817,440

- ◎ **Wind tunnel testing of Villas Project**
 - Duration - 27-Apr-21 to 27-Mar-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – Manosa & Company
 - Total contracted amount - 316,200
- ◎ **Wind tunnel testing of Cardea Terraces**
 - Duration - 27-Apr-21 to 27-Jun-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – DMCI
 - Total contracted amount - 853,740
- ◎ **Wind tunnel testing of Lyre Garden Residences**
 - Duration - 6-May-21 to 6-May-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – DMCI
 - Total contracted amount - 853,740
- ◎ **PBD of One Kalinisan**
 - Duration - 10-May-21 to 10-Apr-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Inc.
 - Total contracted amount - 2,529,600
- ◎ **PBD of Pinatubo**
 - Duration - 26-May-21 to 26-Apr-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount - 822,120
- ◎ **Multi-hazard Risk Indexing of Coastal Critical Infrastructure: A Case Study of Thailand**
 - Duration - 1-Jun-21 to 31-Dec-22
 - Project Investigator(s): Dr.Indrajit Pal
 - Sponsor – Coalition for Disaster Resilient Infrastructure (CDRI)
 - Total contracted amount - 310,720
- ◎ **Seismic evaluation & retrofit design of Campus One Bridgetowne East**
 - Duration - 24-Aug-21 to 24-Jul-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – Quadstruct, Inc.
 - Total contracted amount – 790,500
- ◎ **PBD of La Vida**
 - Duration - 24-Aug-21 to 24-Jul-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount - 1,581,000
- ◎ **Technical Assistance to Support River Basin Planning in Priority River Basins of Lao PDR**
 - Duration - 1-Mar-21 to 27-Aug-22
 - Project Investigator(s): Mr.Chatuphol Pholwan, Dr.Md.Zakir Hossain
 - Sponsor – Ministry of Natural Resource & Environment, Lao PDR
 - Total contracted amount – 1,800,000
- ◎ **Website Development of Housing Knowledge Center**
 - Duration – 21-Jun-21 to 21-May-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – National Housing Authority (NHA)
 - Total contracted amount- 1,950,000
- ◎ **PBD of SM Light 3 (2 towers)**
 - Duration - 17-Jun-21 to 17-May-24
 - Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount - 2,516,000
- ◎ **Wind tunnel testing of Lisseo Residences**
 - Duration - 27-May-21 to 27-Apr-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – DMCI
 - Total contracted amount - 817,700
- ◎ **Structural peer review of Green Hills Tower3**
 - Duration- 20-Oct-21 to 20-Nov-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - OCLP Holdings, Inc.
 - Total contracted amount- 1,106,700
- ◎ **PBD of Menarco Tower 2**
 - Duration - 25-Oct-21 to 25-Sep-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Inc.
 - Total contracted amount- 758,880
- ◎ **Wind tunnel testing of Calinea Tower**
 - Duration - 26-Oct-21 to 26-Sep-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - DMCI Homes
 - Total contracted amount- 853,740
- ◎ **Professional Master Project Management in Nay Pyi Taw Myanmar, September 2021**
 - Duration - 1-Sep-21 to 31-Dec-23
 - Project Investigator(s): Prof.BHW Hadikusumo
 - Sponsor - Ministry of Construction, Myanmar
 - Total contracted amount- 198,730

- **Professional Master Project Management in Yangon, Myanmar, September 2021**

 - Duration - 1-Sep-21 to 31-Dec-23
 - Project Investigator(s): Prof.BHW Hadikusumo
 - Sponsor - Ministry of Construction, Myanmar
 - Total contracted amount- 127,755
- **PBD of Mace**

 - Duration – 2-Nov-21 to 2-Oct-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Philippines
 - Total contracted amount- 1,106,700
- **PBD of Mergent Phase 2 Residences Tower 2 and 3**

 - Duration – 3-Nov-21 to 2-Oct-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Philippines
 - Total contracted amount- 1,581,000.00
- **PBD of Delta**

 - Duration – 3-Nov-21 to 2-Oct-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Philippines
 - Total contracted amount- 1,897,200
- **PBD of Sage for additional floors**

 - Duration – 3-Nov-21 to 2-Oct-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Philippines
 - Total contracted amount- 379,440
- **PBD of Uptown Global Residences**

 - Duration – 30-Nov-21 to 30-Oct-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Philippines
 - Total contracted amount- 1,422,900
- **PBD of Acqua Private residences**

 - Duration - 7-Sep-21 to 7-Aug-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Inc.
 - Total contracted amount- 948,600.00
- **Survey & Create a Community Database for the Thung Song Hong Community Rehabilitation Project**

 - Duration – 2-Sep-21 to 2-Aug-24
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor - National Housing Authority
 - Total contracted amount- 1,180,000
- **PBD of Museum of Architecture**

 - Duration – 30-Sep-21 to 30-Aug-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Inc.
 - Total contracted amount- 252,960
- **PBD of Dhalia**

 - Duration – 30-Sep-21 to 30-Aug-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Inc.
 - Total contracted amount- 2,055,300
- **PBD of Rockwell Polytechnique**

 - Duration – 29-Sep-21 to 29-Aug-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Inc.
 - Total contracted amount- 948,600
- **PBD of SM Chrome**

 - Duration – 1-Nov-21 to 1-Oct-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Philippines
 - Total contracted amount- 1,897,200
- **PBD of Two Torre**

 - Duration - 3-Feb-21 to 3-Jan-23
 - Project Investigator(s): Mr. Thaug Htut
 - Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount – 301,300
- **Wind tunnel testing of Emaar**

 - Duration - 26-May-21 to 26-Apr-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – Mushtaq & Bilal Consulting Engineers
 - Total contracted amount - 1,359,660
- **Management of Training Center**

 - Duration- 22-Nov-21 to 5-Jun-22
 - Project Investigator(s): Ms.Narumon Wangnai
 - Sponsor - Multi-Donor
 - Total contracted amount- 123,990
- **Appropriate costing methods of climate change adaptation in infrastructure development: experimental studies for road and related infrastructure projects in Cambodia**

 - Duration - 1-May-21 to 31-Dec-23
 - Project Investigator(s): Dr.Vilas Nitivattananon, Dr.Choen Krainara
 - Sponsor - Royal University of Phnom Penh (RUPP)
 - Total contracted amount- 934,725

- **PBD of Avida Centralis**

 - Duration - 3-Feb-21 to 3-Jan-23
 - Project Investigator(s): Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount – 662,860.00
- **PBD of Valero Premium Office**

 - Duration - 4-Feb-21 to 4-Jan-24
 - Project Investigator(s): Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount – 1,296,450
- **Redoing PBD of Pinatubo for architectural changes**

 - Duration - 30-Nov-21 to 17-Oct-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Philippines
 - Total contracted amount- 664,020
- **Structural engineering training program**

 - Duration - 1-Oct-21 to 1-Sep-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - Multiple Donors
 - Total contracted amount- 205,530
- **Housing Development & Community Management for Low- & Medium-Income People During the COVID-19 Pandemic**

 - Duration – 27-Aug-21 to 27-Jul-21
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – National Housing Authority
 - Total contracted amount- 485000
- **Generate 3D Model & 2D Drawing of Building**

 - Duration – 1-Oct-21 to 30-Mar-22
 - Project Investigator(s): Prof. BHW Hadikusumo
 - Sponsor - The Real Trust Technical Co., Ltd.
 - Total contracted amount- 100,000
- **Wind tunnel testing of Lugus bridge**

 - Duration 4-Feb-21 to 4-Jan-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – Ruel B. Ramirez & Associates
 - Total contracted amount – 1,115,550
- **Review of coastline protection**

 - Duration- 5-Feb-21 to 5-Jan-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – Reinforced Earth India Pvt. Ltd.
 - Total contracted amount – 423,360
- **Internet Infrastructure Research 2021**

 - Duration- 1-Jan-21 to 31-Dec-21
 - Project Investigator(s): Prof. Kanchana Kanchanasut, Mr.Viraphan Samadi
 - Sponsor – THNIC Foundation
 - Total contracted amount - 1,000,000.00
- **AIT Internal Development & Maintenance 2021**

 - Duration- 1-Jan-21 to 31-Dec-21
 - Project Investigator(s): Mr.Viraphan Samadi, Prof.Kanchana Kanchanasut, Dr. Adisorn Lertsinrubtavee
 - Sponsor – AIT
 - Total contracted amount - 3,500,000
- **Southeast Asia Urban Services Facility (Indonesia: Support for Emergency Assistance on Rehabilitation & Reconstruction in Central Sulawesi)**

 - Duration - 1-Oct-20 to 31-Oct-22
 - Project Investigator(s): Dr,Manzul K. Hazarika
 - Sponsor – Asian Development Bank (ADB)
 - Total contracted amount - 15,478,920
- **Wind tunnel testing of Asia Plaza**

 - Duration 5-Feb-21 to 5-Jan-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount – 816,480
- **Climate Resilient Infrastructure for Social Transformation and Adaptation (CRISTA)**

 - Duration - 20-Dec-21 to 31-Jan-23
 - Project Investigator(s): Dr.Indrajit Pal
 - Sponsor - Asian Disaster Preparedness Center
 - Total contracted amount- 3,723,600
- **Internet Infrastructure Research 2021**

 - Duration- 1-Jan-21 to 31-Dec-21
 - Project Investigator(s): Prof. Kanchana Kanchanasut, Mr.Viraphan Samadi
 - Sponsor – THNIC Foundation
 - Total contracted amount - 1,000,000
- **AIT Internal Development & Maintenance 2021**

 - Duration- 1-Jan-21 to 31-Dec-21
 - Project Investigator(s): Mr.Viraphan Samadi, Prof.Kanchana Kanchanasut, Dr. Adisorn Lertsinrubtavee
 - Sponsor – AIT
 - Total contracted amount - 3,500,000

- ◎ **Wind tunnel testing of Asia Plaza**
 - Duration 5-Feb-21 to 5-Jan-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor – SY^2 + Associates, Inc.
 - Total contracted amount – 816,480
- ◎ **PBD of SPI Bridgetowne**
 - Duration – 1-Nov-21 to 1-Oct-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Philippines
 - Total contracted amount- 2,371,500
- ◎ **Toyota Passenger-Car Accident Analysis: Year 2021**
 - Duration – 1-Jul-21 to 31-Jan-22
 - Project Investigator(s): Prof. Kunnawee Kanitpong
 - Sponsor - Toyota Daihatsu Engineering & Manufacturing Co., Ltd.
 - Total contracted amount- 540,291
- ◎ **Multi-Hazard Resilience of Higher Educational Institutions in Asia Pacific**
 - Duration - 1-Jan-22 to 31-Mar-23
 - Project Investigator(s): Dr. Indrajit Pal
 - Sponsor – International Centre for Integrated Mountain Development- ICIMOD
 - Total contracted amount- 506,250
- ◎ **TMD design (Part 1) of Emaar RP-04 North Tower**
 - Duration - 6-Jan-22 to 6-Dec-25
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor Mushtaq and Bilal Consulting Engineers
 - Total contracted amount- 1,138,320
- ◎ **PBD of Banyan Tree Manila**
 - Duration - 21-Jan-22 to 13-Dec-25
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - SY^2 + Associates, Philippines
 - Total contracted amount- 4,173,840
- ◎ **Advisory services for PBD of Hines Artrium Place**
 - Duration - 26-Jan-22 to 26-Dec-23
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - Optimal Consultancy Services Pvt.Ltd.
 - Total contracted amount- 569,160
- ◎ **Enhancement of Software for Structural Template Modeling and Analysis Results of KM Rack**
 - Duration - 22-Feb-22 to 22-Jan-24
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor - King Mongkut's University of Technology, Thonburi
 - Total contracted amount- 400,000
- ◎ **Structural peer review of Bench Tower**
 - Duration - 8-Feb-22 to 8-Jan-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - Quadstruct, Inc.
 - Total contracted amount 948,600
- ◎ **Code-based design review of Mulberry Place 2**
 - Duration - 9-Feb-22 to 9-Jan-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - DMCI, Philippines
 - Total contracted amount - 790,500
- ◎ **Circular Economy and Sustainable Infrastructure**
 - Duration - 24-Mar-22 to 31-Aug-22
 - Project Investigator(s): Narumon Wangnai, Voravate Chonlasin
 - Sponsor – UNEP
 - Total contracted amount - 1,080,000
- ◎ **Operation, Maintenance and Troubleshooting of GRID Sub-Stations Equipment**
 - Duration - 18-Mar-22 to 22-Jun-22
 - Project Investigator(s): Mr.Fazle Karim
 - Sponsor - Dhaka Power Distribution Company
 - Total contracted amount - 1,114,300
- ◎ **Wind Engineering Study of Marina Golden Bay Victoria**
 - Duration - 1-Mar-22 to 1-Mar-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - Marina Golden Bay Victoria
 - Total contracted amount - 500,000
- ◎ **Wind Engineering Study of Truss Structure**
 - Duration - 16-Mar-22 to 16-Feb-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - Port and Marine Corporation
 - Total contracted amount - 750,000

- ◎ **Structural peer review of Galeries Tower Manila**

 - Duration - 15-Mar-22 to 15-Feb-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - Grand Taipan Land Development Inc.
 - Total contracted amount - 474,300
- ◎ **Laem Chabang Port Development Project Phase 3 (Part 1)**

 - Duration - 1-Apr-22 to 9-Sep-26
 - Project Investigator(s): Kuo Chieh Chao
 - Sponsor – Beta Enterprise Company Limited
 - Total contracted amount- 1,400,000
- ◎ **Development of a catastrophe model for evaluating seismic losses and impacts in Chiang Mai and Chiang Rai**

 - Duration - 1-Apr-22 to 31-Mar-23
 - Project Investigator(s): Prof.Pennung Warnitchai
 - Sponsor - National Research Council of Thailand
 - Total contracted amount - 4,212,000
- ◎ **Capacity building for engineers in Ministry of Construction**

 - Duration - 29-Mar-22 to 29-Feb-24
 - Project Investigator(s): Mr. Thaug Htut
 - Sponsor - Ministry of Construction Myanmar
 - Total contracted amount- 284,580
- ◎ **Experimental Seismic Fragility of Gypsum Partition Walls**

 - Duration - 12-Apr-22 to 12-Mar-25
 - Sponsor - Knauf R&D Center Co.,Ltd.
 - Total contracted amount- 1,500,000
- ◎ **Design Review of Truss Structure**

 - Duration - 15-Apr-22 to 15-Mar-24
 - Project Investigator(s): Mr.Thaug Htut
 - Sponsor - Port and Marine Corporation (P.A.M.) Co., Ltd. Thailand
 - Total contracted amount- 950,000
- ◎ **Reconducting wind tunnel testing of Museum of Architecture**

 - Duration - 13-May-22 to 13-Apr-24
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – Clipp Machenson Holdings. INC
 - Total contracted amount- 871,250
- ◎ **Regional Conference on Resilient Community Irrigation Management in Context of Climate Change and Multifunctional Rural-Urban Water Use competition in Asia**

 - Duration - 1-Jun-22 to 31-Jul-22
 - Project Investigator(s): Prof.Genesh Shivakoti, Prof.Rajendra Shrestha
 - Sponsor - University of Hong Kong (HKU)
 - Total contracted amount - 660,000
- ◎ **In-depth Motorcycle Accident Investigation Training Program 2022**

 - Duration - 22-Jun-22 to 31-Oct-22
 - Project Investigator(s): Prof.Kunnawee Kanitpong
 - Sponsor – Asian Honda Motor Co., Ltd.
 - Total contracted amount - 147,125
- ◎ **Software plug-in development for ETABS, SAP2000 and SAFE**

 - Duration - 18-Apr-22 to 15-Mar-25
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor - OTTE International PTE LTD
 - Total contracted amount - 2,153,580
- ◎ **Automatic Quality Control for Water Pipe Installation with AI Technology**

 - Duration - 9-Apr-22 to 31-Dec-23
 - Project Investigator(s): Prof.Matthew N. Dailey, Dr.Mongkol Ekpanyapong
 - Sponsor - The Metropolitan Waterworks Authority (MWA)
 - Total contracted amount - 3,347,800
- ◎ **Structural peer review of Rich residences**

 - Duration - 5-May-22 to 5-Apr-25
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor - SY^2 + Associates, Philippines
 - Total contracted amount - 1,879,350
- ◎ **Structural peer review of SM Aca**

 - Duration - 5-May-22 to 5-Apr-25
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor - SY^2 + Associates, Philippines
 - Total contracted amount - 1,195,950

- ◎ **PBD of Erin Heights**
 - Duration - 5-May-22 to 5-Apr-25
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor - SY^2 + Associates, Philippines
 - Total contracted amount - 2,391,900
 - Duration - 13-May-22- 13-Apr-24
 - Sponsor - CLIPP MACHENSON HOLDINGS. INC
 - Total contracted amount - 871,250
- ◎ **China-Thailand High Speed Railway Collaboration Project between AIT and CSCECTH**
 - Duration - 1-Jul-22 to 30-Jun-25
 - Project Investigator(s): Dr.Wenchao Xue
 - Sponsor – CSCECTH-China State Construction Engineering (Thailand) Co., Lec.
 - Total contracted amount- 6,118,125
- ◎ **Motorcycle Accident Investigation 2022**
 - Duration - 1-Jun-22 to 30-Jun-23
 - Project Investigator(s): Prof. Kunnawee Kanitpong
 - Sponsor – Thai Health Promotion Foundation
 - Total contracted amount - 9,269,400
- ◎ **PBD Training for engineers from DMCI**
 - Duration - 9-Jun-22 to 8-Jun-24
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – DMCI
 - Total contracted amount - 728,700
- ◎ **Testing of the Rama IX Bridge(35th-year) Project**
 - Duration - 13-Jun-22 to 31-Dec-23
 - Project Investigator(s): Dr. Anawat Chotesuwan
 - Sponsor – Resolution Engineering Co., Ltd.
 - Total contracted amount - 5,062,500
- ◎ **Contract Management and FIDIC guidelines**
 - Duration - 18-Jul-22 to 22-Jan-23
 - Project Investigator(s): Ms.Parichad Nuntavong, Dr.Faiz Shah
 - Sponsor- World Bank, WAPDA
 - Total contracted amount - 2,784,000
- ◎ **PBD of Lisseo Residences**
 - Duration - 28-Jun-22 to 27-Jun-25
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – Lt SY^2 + Associates, Philippines
 - Total contracted amount - 4,436,250
- ◎ **PBD of Calinea residences**
 - Duration - 28-Jun-22 to 27-Jun-25
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – SY^2 + Associates, Philippines
 - Total contracted amount - 5,571,930
- ◎ **Forensic Investigation for Subsidence of the Road, Bridge and Third-Party Buildings**
 - Duration - 1-May-22 to 31-May-24
 - Project Investigator(s): Dr.Kuo Chieh Chao
 - Sponsor – McLarens (Thailand) Limited
 - Total contracted amount - 1,565,850
- ◎ **Rock Mechanics and Physics Training Course for Subsurface Testing**
 - Duration - 1-Jul-22 to 30-Jun-25
 - Project Investigator(s): Asst.Prof.Avirut Puttiwongrak
 - Sponsor – PTTEP Project
 - Total contracted amount - 137,100
- ◎ **Current Conditions and for Infor1ned Disaster Risk & Hazard**
 - Duration - 22-Jul-22 to 31-Dec-24
 - Project Investigator(s): Dr.Christopher J. Gamier, Mr.Furqan Ali Shaikh
 - Sponsor – Sindh Resilience Project (Irrigation Component)-The World Bank
 - Total contracted amount - 52,705,302.10
- ◎ **Project Monitoring and Impact Evaluation**
 - Duration - 1-Aug-22 to 8-Feb-23
 - Project Investigator(s): Narumon Wangnai
 - Sponsor – PRMP Pakistan
 - Total contracted amount - 1,805,400
- ◎ **EDSMAT3-C12_FIDIC Contract Management**
 - Duration - 17-Aug-22 to 31-Dec-22
 - Project Investigator(s): Ms.Parichad Nuntavong, Dr.Faiz Shah
 - Sponsor – World Bank
 - Total contracted amount - 3,050,000

- ◎ **Software Development for Structural Analysis of Storage Rack (KM Rack) Phase 2**
 - Duration - 15-Jun-22 to 14-Jun-24
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – King Mongkut’s University of Technology, Thonburi
 - Total contracted amount - 400,000
- ◎ **PBD of Shang Bayoran**
 - Duration - 3-Oct-22 to 2-Oct-25
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – SY^2 + Associates, Philippines
 - Total contracted amount- 4,680,000
- ◎ **Structural system development Vaishnavi Bupara**
 - Duration - 29-Sep-22 to 28-Sep-24
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – A.S.A Consultants, India
 - Total contracted amount- 540,000
- ◎ **Finite element modeling and design of transfer floor of Everest Project**
 - Duration - 7-Oct-22 to 6-Oct-24
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – SMR Holdings Pvt. Ltd, India
 - Total contracted amount- 695,780
- ◎ **Performance-based Seismic Design Peer Review of Project G**
 - Duration - 7-Oct-22 to 6-Oct-25
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – Ortigas Land Corporation
 - Total contracted amount- 1,245,080
- ◎ **Thailand-China High Speed Railway Project**
 - Duration - 1-Aug-22 to 31-Jul-25
 - Project Investigator(s): Kuo Chieh Chao
 - Sponsor – China State Construction Engineering (Thailand) Company Limited
 - Total contracted amount- 2,000,000
- ◎ **Hydropower Project Management**
 - Duration - 17-Aug-22 to 31-Dec-22
 - Project Investigator(s): Ms.Parichad Nuntavong, Dr.Faiz Shah
 - Sponsor- World Bank
 - Total contracted project- 3,275,000
- ◎ **Road Assessment Program inLao_135**
 - Duration - 1-Jul-22 to 31-Dec-22
 - Project Investigator(s): Kunnawee Kanitpong
 - Sponsor – LEA Associated South Asia Pvt.Ltd.
 - Total contracted amount- 830,230
- ◎ **Road Assessment Program inLao_13N**
 - Duration - 1-Jul-22 to 31-Dec-22
 - Sponsor – JV Dongsung Engineer Co., Ltd.
 - Total contracted amount- 344,900
- ◎ **FIDIC Course**
 - Duration - 17-Sep-22 to 30-Apr-23
 - Project Investigator(s): Christopher Joseph Garnier
 - Sponsor – CSCETH-China State Construction Engineering (Thailand) Company Limited
 - Total contracted amount- 753,750.00
- ◎ **Root Cause & Failure Analysis B1 & B2**
 - Duration - 26-Sep-22 to 29-Mar-23
 - Project Investigator(s): Christopher Joseph Garnier
 - Sponsor – NTPC, Lao PDR
 - Total contracted amount- 510,000
- ◎ **Wind tunnel testing Grand Solaire**
 - Duration - 25-Aug-22 to 24-Aug-25
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – S.L.R.Development Co.,Ltd. Thailand
 - Total contracted amount- 750,000.00
- ◎ **Root Cause and Failure Analysis B3 & B4**
 - Duration - 17-Oct-22 to 19-Apr-23
 - Project Investigator(s): Chistopher Joseph Garnier, Voravate Chonlasin
 - Sponsor – NTPC, Lao PDR
 - Total contracted amount- 512,000
- ◎ **PBD of Veleron**
 - Duration - 3-Oct-22 to 2-Oct-25
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – SY^2 + Associates, Philippines
 - Total contracted amount- 3,600,000
- ◎ **PBD of Avida Feliz**
 - Duration - 3-Oct-22 to 2-Oct-25
 - Project Investigator(s): Mr.Thaug Htut Aung Sponsor – SY^2 + Associates, Philippines
 - Total contracted amount- 1,440,000

- ◎ **EDSMAT3-C-16-Dam Safety and Disaster Prevention**
 - Duration - 7-Nov-22 to 31-Dec-24
 - Project Investigator(s): Faiz Hassan Shah
 - Sponsor – World Bank, Pakistan Water and Power Development Authority (WAPDA)
 - Total contracted amount- 3,530,000
- ◎ **EDSMAT3-C-14: Construction Management and Quality Control for Hydel Projects**
 - Duration - 7-Nov-22 to 31-Dec-24
 - Project Investigator(s): Faiz Hassan Shah
 - Sponsor – The World Bank
 - Total contracted amount- 3,530,000
- ◎ **EDSMAT3-C-15 Engineering Design, Operation, Maintenance & Protection of Dam Structures**
 - Duration - 7-Nov-22 to 31-Dec-24
 - Project Investigator(s): Faiz Hassan Shah
 - Sponsor – World Bank, Pakistan Water and Power Development Authority (WAPDA)
 - Total contracted amount- 3,530,000
- ◎ **EDSMAT3-D-17 Materials and Procurement Management**
 - Duration - 21-Nov-22 to 31-Dec-24
 - Project Investigator(s): Faiz Hassan Shah
 - Sponsor – World Bank, WAPDA
 - Total contracted amount- 3,530,000.00
- ◎ **Strategic Research Plan for DBAR ICoE- Bangkok, 2023-2024**
 - Duration - 1-Nov-22 to 31-Dec-23
 - Project Investigator(s): Wenchao Xue
 - Sponsor – Digital Belt and Road International Center of Excellence- Bangkok, National Research Council of Thailand
 - Total contracted amount- 827,000
- ◎ **EDSMAT3-D-19-Grid Station Operation Management**
 - Duration - 21-Nov-22 to 31-Dec-24
 - Project Investigator(s): Faiz Hassan Shah
 - Sponsor – World Bank, Pakistan Water and Power Development Authority (WAPDA)
 - Total contracted amount- 3,530,000
- ◎ **Structural Peer Review of Project Jade**
 - Duration - 1-Dec-22 to 30-Nov-25
 - Project Investigator(s): Mr.Thaug Htut Aung
 - Sponsor – Ortigas Land Corporation
 - Total contracted amount- 1,268,280

TECHNOLOGY, POLICY, AND SOCIETY



The future of economic prosperity and inclusive societal transformation depends on how we address the key societal issues benefiting from emerging innovative technologies and policies. The application of digital technologies, bioprocess technologies, environmental technologies, energy technologies, and nanotechnologies holds the greatest potential for competitiveness and sustainable growth of the countries if can be used appropriately. Despite the major technological advancements, the complexity of technologies and the implications they have for many aspects of social life still needs to be fully understood and issues of disparity, divide and inequality remain. The understanding of the ongoing digital transformation and consequences of these new and emerging technologies is important to improve the individual and societal outcomes, particularly in the face of increasing societal pressures.

AIT's Technology-Policy-Society research theme is focused on the technology development and application, policy innovation, and development and societal issues including the nexus between them. The theme recognizes the growing need of bridging the gap between technology and policymaking that requires the understanding of the policy tools required for modern society and the modern technologies. In view of this, the research explores how social science and technology interact with everything from environmental issues to public policies, and better understanding on the impacts of emerging technologies (artificial intelligence, internet of things, big data, etc.) from societal and policy dimensions while moving forward to inclusive and sustainable development.

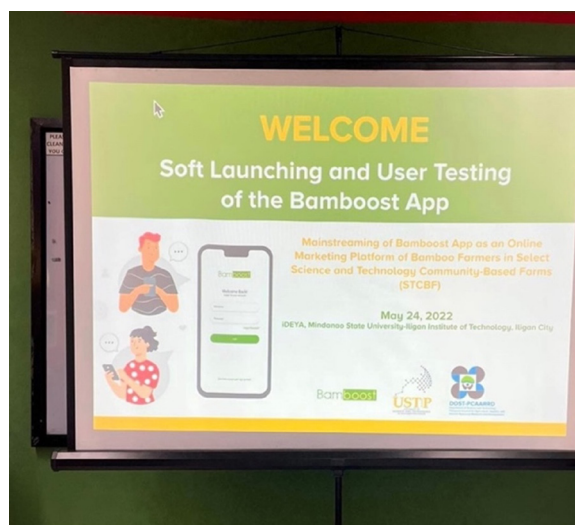
Sub-themes

1. Digital Technology Solutions and Societal Transformation
2. Innovative Policies for Coping with Rapid Transformation taking place in the Region
3. Information, Communication Technologies (ICTs) and the Environmental Management
4. Equitable Societal Change and Inclusive Development
5. Gender and Forced Displacement

Digital Technology Solutions and Societal Transformation

Modern digital technologies, information, and communication technologies (ICTs) services are fundamental in all areas of society today, and extremely important for social development. The technological advancements have brought major changes to our daily lives – changing the way we work, communicate, and do businesses. Artificial Intelligence (AI) is set to play an even more important role in every aspect of our daily lives in the future. It is thus important to look more closely at how these new and emerging technologies will affect the social equity, in particular gender dynamics and power relations. It is important to understand the potential opportunities and risks associated with these technologies and recognize their potential to make positive changes in societies, for example challenging oppressive gender norms. It is necessary for the societies to be able to adapt to the social changes that technology will continue to bring in future.

AIT research under this sub-theme addresses the societal consequences of new and emerging technologies from the multidisciplinary approach. It provides a landscape for critical inquiries about technology and its intersections with socio-economic drivers. Research covers a wide range of areas including information systems and management for health care, education, and



transport, businesses sectors; nanotechnology focusing on application of nano particles (e.g., nanostructured anti-reflective coating for solar panels); application of AI and big data for agricultural productivity including aquaculture value chain; natural resources management using conventional and modern temporal and geospatial technologies; digital inclusion such as inclusive AI development; technological impacts on cultural and social aspects such as fake news, depression; digital policies and governance.

Innovative Policies for Coping with Rapid Transformation Taking Place in the Region

Recent decades have seen the increasing role of innovative policies in the areas of development and emerging technologies to generate solutions for the challenges such as climate change, and other emerging societal issues. While these rapid changes with emerging technologies present a significant opportunity to achieve the sustainable development, they also raise a major ethical, legal, economic, policy and social issues especially inequality - posing new challenges for policymakers to meet the goals of sustainable development. The focus of policies



has broadened significantly not only for the economic growth or sectors, but also to addressing the challenges of inter-connected issues and synergies between environmental sustainability and sustainable development. Such shifting policymaking environment highlights a critical need for policymakers to use the multiple policy framings in dealing with the complex challenges and adapting to shifting social realities. Just as technology and innovations are central elements of modern societies, it is equally important to recognize the role of innovative policies with government initiatives by integrating the scientific and technological knowledge into public policies to foster the strategic growth.

The sub-theme seeks to understand the policy approaches, which will help guide the direction of future policies and facilitate the transformative change. AIT's research examines the question of how governance structures and their policies deal with the emerging challenges related to social, environmental, developmental, and technological aspects, and how they can have far-reaching impacts. It focuses on understanding the effectiveness of policy approaches, policy evaluation and impact analysis with a particular emphasis given on approaches that benefit low-income and other

Information, Communication Technologies (ICTs) and the Environmental Management

While the increasingly widespread use of ICTs enables the socio-economic development, ICTs are also a growing enabler for effectively addressing climate change and environmental issues, and transition to circular economy.

Focusing on the ICTs and its impacts on the environmental sustainability, AIT's research focuses on how ICT development with the frontier technologies, systems and applications can be harnessed for tackling environmental challenges including climate change. Specific topics addressed are, for example, the data-driven natural resource management (water resources, air quality, land use); emerging technologies and tools (AI, IoTs, big data, machine learning) applied for climate and environmental monitoring and management such as climate information system, early-



marginalized communities. The research focus areas in relation to innovative policies include science, technology, and data; gender and development, poverty reduction,

business, and regulations, social development; environment and energy sustainability; resilient cities and communities; agricultural development policies and strategies. The topics include, among other, evidence-based policies for the sustainable use of energy resources in the Asia Pacific Region; Labor migration & human trafficking laws, regulations & policies; Mainstreaming ecosystem services in national policies for sustainable management of freshwater ecosystems in South & Southeast Asia; and Strengthening ASEAN Member State Policies with Environmental Health Data on Costs of Inaction and Co-Benefits.



warning, disaster relief communications and AI based energy management including microgrid platforms; GIS and remote sensing applications in agriculture and natural resource management.

Equitable Societal Change and Inclusive Development



Social equity and inclusion across all our communities is driven by the several factors of change including access to and control over resources, gender, education, technology, and the policies. Achieving social justice and equality requires long term and sustainable action to close the inequity gap among demographic and socio-economic segmentations. For instance, the digital literacy gap is present between women and men, in addition to the unique barriers of women and girls in accessing to and use of digital tools and services.

In wake of growing recognition on importance of social equity to sustainable development, research under this sub-theme, addresses the drivers that determine equity and social inclusion – examining how they have shaped our identity, communities, and the role they play in promoting the inclusive sustainable development. This systematic understanding of drivers will support the development of policy priorities, decisions, and development

programming to accelerate the poverty reduction and achieve the sustainable development. AIT's research focuses on behavioral, social, and physical barriers and opportunities for equity including policy options to ensure that individuals, groups, and communities participate fully in meaningful ways in society. Moving towards the achievement of the inclusive development, AIT research addresses the issues from several aspects of social, cultural, economic, political dimensions. The areas covered under sub-theme include, among others, gender relations in the issues of migration, forced displacement, labour, agriculture, fisheries; cultural influence, human resource, and leadership development; women and political participation, influencing factors on entrepreneurship, social capital in sustainable agriculture, equitable access to resources and technologies, policy interventions, the role of media and public perception on equitable social change.

Gender and Forced Displacement

Asia is witness to both on-going and emerging pressures that drive forced displacement in contexts where political systems range from unstable democracies to full-blown dictatorships. The Region is also one of the most vulnerable to disasters and the impact of climate change; and continues to undergo rapid infrastructure development including dams, roads, ports, and Special Economic Zones that displace populations. Existing research and responses remain surprisingly gender blind, which in turn, results in poor policy and programmatic responses. In addition, gender is often understood in limited terms, focusing on impacts, or on women as victims in forced displacement. This



hides many gender dimensions of forced displacement. For instance, the focus on impacts fails to highlight how drivers of displacements have strong gender dimensions, including policies designed by male-dominated political systems or conflict and gender-based violence being a cause of displacement or overlapping drivers. Or that a discourse of women as victims, reinforces stereotypes which negate women's agency and participation and contribute to less effective responses. Narrow understanding of gender obscures gender patterns where men can be victims, e.g., where men and boys have been forced into combat, or targeted as civilians; or hides potential where men can engage and contribute as agents of change and solidarity. Finally, our understanding with regards to sexual orientation and gender identity and

expression (SOGIE) in forced displacement is extremely limited, making diverse SOGIE groups invisible in research and policy processes. AIT hosts the IDRC funded Center on Gender and Forced Displacement. The Center and affiliated

research activities bring attention to the ongoing imperative to center gender issues globally. The research under sub-theme addresses the gap between important drivers of forced displacement in the region with needed knowledge and policy responses when it comes to gender dimensions of forced displacement. It examines the drivers of forced displacement influenced by gender dynamics and the gender dimensions in experiences of forced displacement; and analyze the policy responses and the gaps in addressing the gender dimensions of forced displacement in the region at these different levels. Under this sub-theme, the areas focused include, among others, strengthening knowledge, evidence use and leadership on forced displacement; the impact of political trends, climate change and investments on drivers of forced displacement and their gender dynamics; displaced people and their vulnerabilities in various stage of displacement, and the effort in addressing gender needs in forced displacement.

HIGHLIGHTED PROJECTS UNDER TECHNOLOGY, POLICY, AND SOCIETY

The following lists some examples of projects that highlight AIT's global, regional, and country development experience under "Technology, Policy, and Society" thematic area during 2020, 2021 and 2022.

SWITCH-Asia Regional Policy Advocacy Component (RPAC)

Project budget- 5.3 million THB

Project duration- August 21 to December-22

Donor- United Nations Environment Programme (UNEP)

The EU SWITCH-Asia Regional Policy Advocacy Component (RPAC), implemented by UNEP, is designed to strengthen the dialogue at regional, sub-regional and national policies on sustainable consumption and production (SCP), contributing to green growth and reduction of poverty in Asian countries. SWITCH-Asia, supported by the European Union (EU), the AIT, and UNEP joined forces to launch an online series of Policy Dialogues on Sustainable Lifestyles in Asia and offline courses on the Circular Economy (CE). Designed and implemented in partnership with the AIT, the courses on Circular Economy and



Sustainable Lifestyle include knowledge and case studies on SCP and Circular Economy, consolidated from the wide range of experts from Asia and Europe that have been involved in activities, workshops, policy dialogues and fora organized by RPAC throughout the SWITCH-Asia programme.

Technological Solutions for Harmonizing Existing Systems to Enhance Traceability of Timber in Thailand

Project budget- 5.7 million THB

Project duration- August 20 to August 21

Donor- Food and Agriculture Organization of the United Nations (FAO)

The project aims to support the Royal Forest Department in enhancing timber traceability and reducing processing time for timber verification through development of appropriate technological solutions. Projects outputs include (1) the Feasibility Study for identifying appropriate technological solutions to enhance timber traceability conducted; (2) Web/Mobile application to support Thailand's Royal Forestry Department (RFD) officials for inspections/



verifications of timber legality developed; (3) Advocacy/communication materials are developed for project visibility and training materials are prepared to train RFD officials on web/mobile application; (4) Recommendations for appropriate technological solutions and their deployment presented to stakeholders.

Strengthening knowledge, evidence use and leadership in the global south on forced displacement-focus on South-East Asia

Project budget- 13.2 million THB

Project duration- December 21 to February 27

Donor- International Development Research Center (IDRC), Canada

The project seeks to overcome the deficit in local knowledge, use of evidence and leadership by establishing inter-disciplinary research chair on forced displacement in AIT with regional outreach. AIT joins forces with the large community of international donors and civil society in Thailand, a major regional host of displaced populations, to promote greater gender equality and better solutions for displaced populations. The project will support research on the livelihoods of forcibly displaced peoples, in particular those at the Thai Myanmar border and those displaced due to land grabbing and



climate change in other parts of the Mekong region (Cambodia, Lao People's Democratic Republic and Vietnam). It will also produce gender research on displacement in neighboring Bangladesh and the Mekong region while mentoring a new cohort of young Asian graduate students seeking to advance gender equality in the region.

PROJECTS INITIATED UNDER TECHNOLOGY, POLICY, SOCIETY

Below is the list of research, consultancy and capacity development projects initiated under "Technology, Policy, and Society" by various Institute wide outreach centers and departments during 2020, 2021 and 2022.

- ① **Strengthening Capacity for Marine Debris reduction in ASEAN Region Through formulation of National Action plans for ASEAN Member States & Integrated land-To-SEA**

 - Duration - 7-Aug-19 to 31-Dec-20
 - Project Investigator(s): Guilberto Borongan
 - Sponsor – IDEA Consultants Inc.
 - Total contracted amount- 322,857.33
- ② **The Data Collection Survey on Sustainable Human Resource Development & Contribution to Free & Open Indo-Pacific (FOIP)**

 - Duration - 25-Dec-19 to 31-Mar-20
 - Project Investigator(s): Dr.Matthew N. Dailey, Dr.Mongkol Ekpanyapong
 - Sponsor - IC NET Asia Co., Ltd.
 - Total contracted amount - 440,000
- ③ **Master Training on FRAME-Fundraising Management & Social Business**

 - Duration - 4-Apr-13 to 31-Dec-21
 - Project Investigator(s): Rowena C.Alcoba, Mathew Kuruvila
 - Sponsor – Multi-International
 - Total contracted amount- 6,375,000
- ④ **PIPIP-International HEIS Program**

 - Duration - 9-Jan-17 to 31-Dec-21
 - Project Investigator(s): Rowena C.Alcoba
 - Sponsor – Agriculture Department, Government of the Punjab
 - Total contracted amount- 55,999,997
- ⑤ **Social Business Day**

 - Duration - 28-Jun-19 to 31-Dec-21
 - Project Investigator(s): Panchica Koonchaimang
 - Sponsor – Multi-International
 - Total contracted amount- 4,000,023
- ⑥ **Professional Masters in Banking & Finance, October 2019(PMBF Batch 7)**

 - Duration - 30-Oct-19 to 31-Jan-22
 - Project Investigator(s): Dr. Sundar Venkatesh
 - Sponsor – Bangladesh Bank (Central Bank of Bangladesh)
 - Total contracted amount - 12,816,000
- ⑦ **Professional Masters in Banking & Finance, October 2019(PMBF Batch 7)**

 - Duration - 30-Oct-19 to 1-Oct-21
 - Project Investigator(s): Dr. Sundar Venkatesh
 - Sponsor – Bangladesh Bank (Central Bank of Bangladesh)
 - Total contracted amount - 12,816,000
- ⑧ **International week-Ace-IBS**

 - Duration - 1-Jan-20 to 31-Jan-20 D
 - Project Investigator (s)- Roger Levermore
 - Sponsor - Ace-International Business School, Kathmandu, Nepal.
 - Total contracted amount - 91,400.00
- ⑨ **Technology Enabled Active Learning 2.0 (TEAL 2.0)**

 - Duration - 1-Jan-20 to 1-Dec-22
 - Project Investigator(s): Dr.PAbdul Salam, Prof.Matthew N. Daily, Prof.Manukid P.;Dr. Chutiporn A.; Dr.Vatcharaporn E.
 - Sponsor – The Erasmus+Programme of the European Union
 - Total contracted amount 2,997,995
- ⑩ **Hult Prize Regional Summit Bangkok**

 - Duration - 5-Jan-20 to 31-Dec-20
 - Project Investigator (s)- Dr.Dieter Trau
 - Sponsor - Computer & Structures Inc (CSI) & Dtac
 - Total contracted amount - 700,000
- ⑪ **Acid Deposit Monitoring Network 2020**

 - Duration - 31-Jan-20 to 31-May-21
 - Project Investigator(s): Dr.Ram Lal Verna, Mrs.Charina May Lepiten
 - Sponsor – UNEP ROAP
 - Total contracted amount- 5,844,572.50
- ⑫ **Education Project Management, Monitoring & Evaluation**

 - Duration - 8-Jan-20 to 27-Jul-20
 - Project Investigator(s): Chatchata Prasongsuk
 - Sponsor - World Bank
 - Total contracted amount - 833,400

- **Unconventional Resources-Techniques and Challenges in Advanced Drilling**
 - Duration - 20-Jan-20 to 27-Jul-20
 - Project Investigator(s): Mr. Omar Farouk
 - Sponsor – PETROBANGLA
 - Total contracted amount - 745,000.00
- **Management & Technology Challenges for Fourth Industrial Revolution**
 - Duration - 7-Feb-20 to 31-Aug-20
 - Project Investigator(s): Dr.Pradeep Kumar Dash, Ms.Kanlaya Muangsan
 - Sponsor – Bangladesh Institute of Management (BIM)
 - Total contracted amount - 1,075,500
- **Empowering New Generation Leaders in Marine Plastic Abatement**
 - Duration - 1-Mar-20 to 31-Dec-21
 - Project Investigator(s): Prof.Thammarat Koottatep
 - Sponsor – The Government of Japan
 - Total contracted amount - 91,500,000
- **5th International Forum on Sustainable Future in Asia/5th NIES International Forum^{''}**
 - Duration - 1-Dec-19 to 30-Jun-20
 - Project Investigator(s): Kristine Perez
 - Sponsor – The National Institute for Environmental Studies (NIES), Japan
 - Total contracted amount - 284,394
- **Development of GIS related data & scripts for processing mobility data on the large-scale platform (WEBMOBI)**
 - Duration - 1-Feb-20 to 31-Jan-21
 - Project Investigator(s): Dr.Apichon Witayangkurn, Dr.Sanit Arunplod
 - Sponsor – LocationMind,Japan)
 - Total contracted amount - 1,530,837.50
- **Labor Migration & Human Trafficking Laws, regulations & Policies Project**
 - Duration - 1-May-20 to 30-Nov-20
 - Project Investigator(s): Dr. Kyoko Kusakabe
 - Sponsor – Gruppo di Volontariato Civile (GVC)
 - Total contracted amount - 173,000
- **Integrated Assessment of SDGs Using Big Earth Data for Bangkok Metropolitan Region**
 - Duration - 1-May-20 to 31-Oct-21
 - Project Investigator(s): Dr. Vilas Nitivattananon, Dr.Wenchao Xue, Dr. Ekbordin Winijkul; Dr.Salvatore Viridis; Dr. Indrajit Pal; Dr.Chutiporn Anutariya
- Sponsor – NRCT-National Research Council of Thailand
- Total contracted amount- 2,195,000
- **Gender Mainstreaming in the Crop Sector of ASEAN**
 - Duration - 1-Jun-20 to 30-Sep-20
 - Project Investigator(s): Prof.Kyoko Kusakabe
 - Sponsor – Gender Mainstreaming in the Crop Sector of ASEAN
 - Total contracted amount- 135,872.00
- **SMART Surveillance & DSS for Cane Monitoring & Management-Phase II**
 - Duration - 1-Jun-20 to 31-Dec-21
 - Project Investigator(s): Dr.Sarawut Ninsawat
 - Sponsor – Mitphol Innovation & Research Center
 - Total contracted amount - 900,000
- **The international conference on active learning in engineering education**
 - Duration - 25-Jul-20 to 30-Sep-20
 - Project Investigator(s): Dr. Pisut Koomsap
 - Sponsor – Western Digital & Faculty of Engineering, Khon Kaen University
 - Total contracted amount- 150,000
- **Executive Master in Development Policies and Practices (DPP)**
 - Duration 20-Jul-20 to 21-Dec-21
 - Project Investigator(s): Dr.Faiz Shah, Ms. Panchica Koochaimang
 - Sponsor – The Graduate Institute of International & Development Studies, Geneva, Switzerland
 - Total contracted amount- 2,065,536.00
- **Mines & Minerals Professional Development Program**
 - Duration- 15-Apr-13 to 31-Dec-21
 - Project Investigator(s): Faisal Alih
 - Sponsor – Punjab Mines & Minerals Department
 - Total contracted amount- 3,110,775
- **Technological Solutions for Harmonizing Existing Systems to Enhance Traceability of Timber in Thailand**
 - Duration - 13-Aug-20 to 13-Sep-21
 - Project Investigator(s): Dr.Matthew N. Dailey, Dr.Mongkol Ekpanyapong
 - Sponsor – The Food & Agriculture Organization of the United Nations (FAO)
 - Total contracted amount- 2,800,000

- **Gender Mainstreaming Guidelines for Regional Plastic Management**

 - Duration - 1-Sep-20 to 28-Feb-21
 - Project Investigator(s): Prof.Kyoko Kusakabe, Dr.Joyee Chatterjee
 - Sponsor – World Bank Group
 - Total contracted amount- 2,307,300
- **Industrial/municipal face-lifting real-world demonstration for two innovative 3R biotechnologies: green 3R walls & 3R freshwater mangroves**

 - Duration - 4-Nov-20 to 3-Nov-21
 - Project Investigator(s): Dr.Oleg Shipin
 - Sponsor – Thai Pipe Industry Co., Ltd.
 - Total contracted amount- 1,530,000
- **Advancing CE Roadmaps for ASEAN countries**

 - Duration - 30-Sep-20 to 30-Sep-21
 - Project Investigator(s): Prof. C. Visvanathan
 - Sponsor – Economic Research Institute for ASEAN & East Asia (ERIA), Indonesia
 - Total contracted amount- 280,350
- **Mekong Sustainable Manufacturing Alliance (The Alliance)**

 - Duration- 1-Oct-20 to 29-Mar-24
 - Project Investigator(s): Dr. Faiz Shah, Ms. Panchica Koonchaimang, Sponsor – Institute for Sustainable Communities
 - Total contracted amount- 9,280,000
- **Machine Shop Service**

 - Duration - 1-Oct-20 to 30-Sep-21
 - Project Investigator(s): Dr. Mongkol Ekpanyapong
 - Sponsor – AIT
 - Total contracted amount- 100,000
- **Hybrid SSVEP-P300 BCI Speller for Thai Language**

 - Duration - 16-Oct-20 to 15-Oct-21
 - Project Investigator(s): Dr.Chaklam Silpasuwanchai
 - Sponsor – The Office of National Higher Education Science Research & Innovation Policy Council (NXPO)
 - Total contracted amount- 124,750
- **Male” Declaration on Control & Prevention of Air Pollution & its Likely Transboundary Effects for South Asia**

 - Duration - 1-Nov-20 to 31-Dec-22
 - Project Investigator(s): Mrs.Charina May Lepiten
 - Sponsor – Governments from South Asia
- Total contracted amount- 7,077,747.68
- **Women & men in small-scale fisheries & aquaculture in Asia: Barriers constraints & opportunities towards equality & secure livelihoods**

 - Duration - 10-Nov-20 to 31-Oct-21
 - Project Investigator(s): Prof.Kyoko Kusakabe
 - Sponsor – FAO
 - Total contracted amount- 1,257,800
- **Sustainable UN**

 - Duration - 1-Dec-20 to 31-Jan-21
 - Project Investigator(s): Mrs.Charina May Lepiten,
 - Sponsor – UNEP IET
 - Total contracted amount- 1,301,087.60
- **Digital Ubiquitous Mobile Broadband OLSR XI**

 - Duration - 1-Jan-21 to 31-Dec-21
 - Project Investigator(s): Prof. Kanchana Kanchanasut, Dr.Adisorn Letsinsrubtavee
 - Sponsor – THNIC Foundation
 - Total contracted amount- 1,000,000
- **Thyroid Nodules Assessment in Ultrasound Images Project**

 - Duration - 5-Jan-21 to 31-May-23
 - Project Investigator(s): Prof.Matthew N. Dailey, Dr. Mongkol Ekpanyapong
 - Sponsor – Ramkhamhaeng University
 - Total contracted amount- 2724000
- **Acid Deposit Monitoring Network in East Asia 2021**

 - Duration - 15-Feb-21 to 31-Dec-21
 - Project Investigator(s): Dr.Ram Lal Verna
 - Sponsor – UNEP ROAP
 - Total contracted amount- 4,304,300
- **Acid Deposit Monitoring Network in East Asia 2021**

 - Duration - 15-Feb-21 to 31-Dec-21
 - Project Investigator(s): Dr.Ram Lal Verna
 - Sponsor – UNEP ROAP
 - Total contracted amount- 4,304,300
- **Development of e-learning capacity building module & contents on the use of NEXSTEP tool for SDG7 Roadmaps & SDG7 implementation/localization**

 - Duration - 3-Feb-21 to 21-Sep-21
 - Project Investigator(s): Mr.Md.Anishur Rahman, Dr.Md.Zakir Hossain
 - Sponsor – United Nations Economic & Social Commission for Asia & the Pacific
 - Total contracted amount- 1,272,925

- **Incubation Service**
 - Duration - 1-Feb-21 to 1-Feb-22
 - Project Investigator(s): Prof. Dieter Trau
 - Sponsor – Tip Biosystems Pte Ltd.
 - Total contracted amount- 250,000.00
- **Redefining Age-Friendly & Resilient Cities: Lessons from Swiss & ASEAN cities' responses to COVID-19**
 - Duration - 1-Mar-21 to 31-Dec-21
 - Project Investigator(s): Joyee S. Chatterjee
 - Sponsor – University of Bern (Project Sponsor: ETH Swiss Federal Institute of Technology)
 - Total contracted amount- 347,790
- **SOM's Executive Development Programs**
 - Duration - 1-Mar-21 to 31-Mar-23
 - Project Investigator(s): Dr. Sundar Venkatesh
 - Sponsor – Public and Private Organization in the Region
 - Total contracted amount- 3,000,000
- **Application of Big Earth Data in Support of the Sustainable Development Goals in Thailand**
 - Duration - 20-May-21 to 31-Dec-22
 - Project Investigator(s): Dr.Ekbordin Winijkul,
 - Dr.Wenchao Xue, Dr.Thi Phouc Lai Nguyen, Dr.Salvatore G.P. Viridis
 - Sponsor – National Research Council of Thailand (NRCT)
 - Total contracted amount- 4,295,980
- **Capacity building on human resources development on utilization of big earth data for SDGs implementation & monitoring**
 - Duration 25-May-21 to 30-Nov-21
 - Project Investigator(s): Dr.Wenchao Xue
 - Sponsor – Mahidol University
 - Total contracted amount- 360,000.00
- **Connect Learning with Monitoring and Evaluation**
 - Duration - 10-May-21 to 26-Jan-22
 - Project Investigator(s): Ms.Worwan Sumroetrum, Ms.Narumon Wangnai
 - Sponsor – Multi-Donor
 - Total contracted amount- 255,000.00
- **Strategic Human Resource Management & Business Leadership**
 - Duration - 25-Jun-21 to 18-May-22
 - Project Investigator(s): Ms.Kanlaya Muangsan, Dr.Pradeep Kumar Dash
 - Sponsor – Multi-Donor
- Total contracted amount- 642,000
- **Developing advanced adsorptive media from coffee grounds and waste residues for treating the sugar factory and other industrial effluent under the concept of Zero Liquid Discharge**
 - Duration - 15-Jun-21 to 8-Aug-22
 - Project Investigator(s): Prof.Thammarat Koottatep
 - Sponsor – National Research Council of Thailand (NRCT)
 - Total contracted amount- 3,054,000
- **Scratch Thai+: A Conversational Agent with Automatic Assessment for Computational Thinking as Problem Solving**
 - Duration - 10-Jun-21 to 9-Jun-23
 - Project Investigator(s): Dr.Chutiporn Anutariya
 - Sponsor – The National Research Council of Thailand (NRCT)
 - Total contracted amount- 263,000
- **Advancing Higher Education for Aghanistan's Development (AHEAD)**
 - Duration - 15-Jun-21 to 31-Dec-22
 - Project Investigator(s): Dr.Christopher J. Garnier
 - Sponsor - FHI 360, Afghanistan
 - Total contracted amount - 911,020.32
- **Project for promoting Minamata Convention on Mercury**
 - Duration - 30-Jun-21 to 31-Oct-22
 - Project Investigator(s): Guilberto Borongan
 - Sponsor – UNEP ROAP
 - Total contracted amount- 5,337,125.20
- **Investigate the use of electroencephalography the use of speller & image reconstruction**
 - Duration - 1-Jun-21 to 1-Dec-21
 - Project Investigator(s): Dr.Chaklam Silpasuwanchai
 - Sponsor – Research Initiation Grant (RIG)
 - Total contracted amount- 50,000
- **Design and Development of Teaching Package on Applied STEMs Skills in Elementary and Primary Education**
 - Duration - 12-Jul-21 to 16-Apr-22
 - Project Investigator(s): Mr.Voravate Chonlasin, Ms.Narumon Wangnai
 - Sponsor – iGroup/STEEMS
 - Total contracted amount- 500,000

- ◎ **SWITCH-Asia Regional Policy Advocacy Component (RPAC) funded by EU**
 - Duration - 18-Aug-21 to 31-Dec-22
 - Project Investigator(s): Dr.Naveed Anwar
 - Sponsor – United Nations Environment Programme
 - Total contracted amount- 5,299,130
- ◎ **Towards mainstreaming ecosystem services in national policies for sustainable management of freshwater ecosystems in South & Southeast Asia**
 - Duration - 1-Aug-21 to 28-Feb-22
 - Project Investigator(s): Dr.Ho Huu Loc, Prof.Sangam Shrestha
 - Sponsor – Stockholm Environment Institute
 - Total contracted amount- 1,734,630
- ◎ **Emission Inventory and Air Quality Modeling for Emission and Air Quality Prediction in Mae Moh and Lampang Province Using an Automated Near Real-time Data Collection**
 - Duration - 20-Sep-21 to 30-Jul-24
 - Project investigator (s) – Prof.Matthew N.Dailey, Dr.Mongkol Ekpanyapong
 - Sponsor - Electricity Generating Authority of Thailand (EGAT)
 - Total contracted amount - 4,909,250
- ◎ **Decision Support System Integration and Technical Training (Under the “River Morphological Study, Flood Hazard Mapping and Establishment of Decision Support System for Sindh Province” Project)**
 - Duration - 1-Sep-21 to 30-Sep-22
 - Project Investigator(s): Prof.Matthew N. Dailey, Dr.Mongkol Ekpanyapong,
 - Sponsor – AIT Extension (AITEK)
 - Total contracted amount- 895,000.00
- ◎ **Multi-National Validation and Expansion of the “Deliberated Intuition Model” in stock Price forecasting**
 - Duration - 1-Sep-21 to 31-Dec-22
 - Project Investigator(s): Dr.Tobias Endress
 - Sponsor – AIT Research Initiation
 - Total contracted amount- 150,000
- ◎ **EPIC Model “Educational Partnerships for Innovation in Communities”**
 - Duration - 15-Sep-21 to 14-Aug-22
 - Project Investigator(s): Mr.Chatuphol Pholwan, Dr.Md.Zakir Hossain
 - Sponsor – START International, Inc., USA
 - Total contracted amount- 66,000.00
- ◎ **Novel bio-material catalysts prepared via mild & green conditions**
 - Duration - 1-Oct-21 to 31-Mar-23
 - Project Investigator(s): Dr.Raffaele Ricco
 - Sponsor – AIT Research Initiation Project
 - Total contracted amount- 150,000
- ◎ **Machine Shop Service (Phase III)**
 - Duration - 1-Oct-21 to 31-Dec-22
 - Project Investigator(s): Dr. Mongkol Ekpanyapong
 - Sponsor – AIT
 - Total contracted amount- 100,000
- ◎ **Training Needs Assessment and Curriculum Development Process for Higher Education Institutions**
 - Duration - 28-Nov-21 to 22-Jun-22
 - Project Investigator(s): Ms.Nalinee Kongkerd, Dr.Pradeep Kumar Dash
 - Sponsor – Bangladesh Institute of Management (BIM), Bangladesh
 - Total contracted amount- 2,430,000
- ◎ **Strengthening knowledge, evidence use and leadership in the global south on forced displacement-focus on South-East Asia**
 - Duration -1-Dec-21 to 28-Feb-27
 - Project Investigator(s): Dr.Joyee Chatterjee, Prof.Kyoko Kusakabe
 - Sponsor – IDRC, Canada
 - Total contracted amount- 13,170,000
- ◎ **Root Cause and Failure Analysis**
 - Duration - 1-Dec-21 to 7-Jun-22
 - Project Investigator(s): Ms.Worwan Sumroetrum, Mr.Voravate Chonlasin
 - Sponsor – Nam Theun Power Company
 - Total contracted amount- 225,000
- ◎ **Professional Master’s in Banking and Finance, January 2022 Intake**
 - Duration - 18-Jan-22 to 17-Jan-24
 - Project Investigator(s): Dr.Sundar Venkatesh
 - Sponsor- Banking and Finance Institutions in the Region
 - Total contracted amount - 5,152,840
- ◎ **Online training on Strategic Human Resource Management and Business Leadership**
 - Duration 10-Jan-22 to 31-Dec-22
 - Project Investigator(s): Ms.Thaniya Jirasathitpornpong
 - Sponsor – SUFIA, USAID
 - Total contracted amount- 83,700

- **AITX Strategic Investment 2022**

 - Duration - 1-Jan-22 to 29-Jun-23
 - Project Investigator(s): Dr.Christopher J. Gamier
 - Sponsor – Multi Donor
 - Total contracted amount- 20,659,200
- **Acid Deposit Monitoring Network in East Asia 2022**

 - Duration - 1-Mar-22 to 31-Dec-22
 - Project Investigator(s): Dr.Ram Lal Verna
 - Sponsor – UNEP ROAP
 - Total contracted amount- 4,304,300.00
- **Hybrid SSVEP-P300 BCI Speller for Thai Language**

 - Duration - 24-Feb-22 to 23-Feb-24
 - Project Investigator(s): Dr.Chaklam Silpasuwanchai
 - Sponsor – The Ministry of Higher Education, Science, Research, and Innovation
 - Total contracted amount- 595,000.00
- **Promoting Human Rights and Community Based Rehabilitation of Women and Girls with Disabilities (WWDs)**

 - Duration - 1-Jan-22 to 31-Dec-22
 - Project investigator (s) – Dr. Julaikha Bente Hossain
 - Sponsor - Development Design Consultants Limited (DDCL)
 - Total contracted amount - 930,000
- **AP* Retreats 2022**

 - Duration - 1-Jan-22 to 31-Dec-22
 - Project Investigator(s): Prof. Kanchana Kanchanasut
 - Sponsor – The Community of Asia Pacific Internet Organizations
 - Total contracted amount – 390,000
- **ERIA Research Project 2022**

 - Duration – 14-Feb-22 to 30-Nov-23
 - Project Investigator(s): Mr.Guilberto Borongan
 - Sponsor – Economic Research Institute for ASEAN and East Asia (ERIA)
 - Total contracted amount - 8,561,101.50
- **Environmental Health Data on Costs of Inaction and Co-Benefits**

 - Duration - 24-Feb-22 to 30-Oct-23
 - Project Investigator(s): Dr.Ekbordin Winijkul,
 - Sponsor - UNEP-United Nations Environment Programme
 - Total contracted amount- 1,152,000
- **Training Workshop and Study Visit on Livelihood Resilience, Public Service Management, Town Planning, and Agriculture in Thailand 14-23 March 2022**

 - Duration - 10-Mar-22 to 31-Dec-22
 - Project Investigator(s): Dr. Indrajit Pal
 - Sponsor Republic of Kenya
 - Total contracted amount- 1,188,936
- **International Training Program on Development Administration (Batch 1)**

 - Duration - 18-Apr-22 to 13-Nov-22
 - Project Investigator(s): Voravate Chonlasin
 - Sponsor - MoPA, Bangladesh
 - Total contracted amount- 6,405,000
- **Strategic Human Resource Management and Innovations in Public Services**

 - Duration - 18-Apr-22 to 24-Oct-22
 - Project Investigator(s): Ms.Parichad Nuntavong, Dr.Faiz Shah
 - Sponsor - Bakhrrabad Gas Distribution Company Limited (BGDCL), Bangladesh
 - Total contracted amount - 1,006,500.00
- **Effective Anti-Corruption Policy, Strategy & Practice (Batch I)**

 - Duration - 10-May-22 to 22-Jun-22
 - Project Investigator(s): Ms.Thaniya Jirasathitpornpong
 - Sponsor - Anti-Corruption Commission, Bangladesh
 - Total contracted amount - 1,090,040
- **Effective Anti-Corruption Policy, Strategy & Practice (Batch II)**

 - Duration - 23-May-22 to 31-Oct-22
 - Project Investigator(s): Ms.Thaniya Jirasathitpornpong
 - Sponsor - Anti-Corruption Commission, Bangladesh
 - Total contracted amount - 1,105,040
- **The 30th ISTE International Conference on Transdisciplinary Engineering Project**

 - Duration - 1-Aug-22 to 31-Oct-24
 - Project Investigator(s): Pisut Koomsap
 - Sponsor – n/a
 - Total contracted amount - 1,800,000
- **Strategic Leadership & Management**

 - Duration - 18-Mar-22 to 22-Jun-22
 - Project Investigator(s): Mr.Fazle Karim
 - Sponsor- Dhaka Power Distribution Company (DPDC)
 - Total contracted amount- 582,300

- ◎ **EDSMAT3-E-20-Performance-Based Evaluation Systems**
 - Duration - 5-Dec-22 to 31-Dec-24
 - Project Investigator(s): Faiz Hassan Shah
 - Sponsor – World Bank, Pakistan Water and Power Development Authority (WAPDA)
 - Total contracted amount - 3,530,000
- ◎ **Epidemiological Investigation of Important Zoonotic Diseases**
 - Duration - 15-Apr-22 to 30-Dec-22
 - Project Investigator(s): Mr.MD.Anishur Rahman, Dr.Md.Zakir Hossain
 - Sponsor – Ministry of Fisheries and Livestock, Bangladesh
 - Total contracted amount- 292,500
- ◎ **Sentinel Asia and Capacity Building**
 - Duration - 20-May-22 to 19-May-27\
 - Project Investigator(s): Dr.Manzul K. Hazarika
 - Sponsor - Japan Aerospace Exploration Agency (JAXA) and others (Various Clients)
 - Total contracted amount - 9,000,000
- ◎ **(GTE & EE) _LGED_Certificate: Course for six months**
 - Duration - 23-May-22 to 31-Dec-23
 - Project Investigator(s): Mr.Fazle Karim
 - Sponsor – Local Government Engineering Department (LGED)
 - Total contracted amount- 4,139,190
- ◎ **(S&P) _LGED_Certificate Course for six months**
 - Duration - 23-May-22 to 31-Dec-23
 - Project Investigator(s): Mr.Fazle Karim
 - Sponsor – Local Government Engineering Department (LGED)
 - Total contracted amount- 2,998,908
- ◎ **(CEIM & CM) _LGED_Certificate: Course for six months**
 - Duration - 23-May-22 to 31-Dec-23
 - Project Investigator(s): Mr.Fazle Karim
 - Sponsor – Local Government Engineering Department (LGED)
 - Total contracted amount- 4,139,190
- ◎ **Development and dissemination of technical guidelines for plastics and resin pellets leakage prevention from factories and informal recycling sector in the ASEAN**
 - Duration - 22-May-22 to 30-Apr-23
 - Project Investigator(s): Prof.Vilas Nitivattananon, Dr.Choen Krainara
 - Sponsor – ERIA through RRCAP
 - Total contracted amount- 455,500
- ◎ **(TE)_LGED_Certificate: Course for six months**
 - Duration - 23-May-22 to 31-Dec-23
 - Project Investigator(s): Mr.Fazle Karim
 - Sponsor – Local Government Engineering Department (LGED)
 - Total contracted amount- 4,513,971
- ◎ **Sustainable Health Systems in a Rapidly Changing Environment**
 - Duration - 18-Apr-22 to 31-Oct-22
 - Project Investigator(s): Mr.Fazle Karim
 - Sponsor – Ministry of LGRD&C
 - Total contracted amount- 1,364,000
- ◎ **Stakeholder Engagement for Social Investment Project**
 - Duration - 18-Jul-22 to 22-Jan-23
 - Project Investigator(s): Worawan Sumroetrum, Voravate Chonlasin
 - Sponsor - Chevron, Bangladesh
 - Total contracted amount - 136,000
- ◎ **Supporting Development of National Plastic Action Plan in Myanmar**
 - Duration - 6-Jun-22 to 30-Jun-23
 - Project Investigator(s): Dr.Kavinda Gunasekara, Prof.Thammarat Koottatep
 - Sponsor - Institute for Global Environmental Strategies (IGES)
 - Total contracted amount - 700,000
- ◎ **Governance and Anti-Corruption: The Method and Tools behindan Effective Corruption-Eradication Strategy (Batch 2)**
 - Duration - 28-Jun-22 to 1-Jan-23
 - Project Investigator(s): Voravate Chonlasin, Worawan Sumroetrum
 - Sponsor - CIAA, Nepal
 - Total contracted amount - 1,131,600
- ◎ **SDG Open Hack Bangkok 2022**
 - Duration - 28-Jun-22 to 30-Oct-22
 - Project Investigator(s): Prof.Nophea Sasaki, Prof.Dieter Trau, Prof.Anil Anal, Prof.Vilas Nitivattananon, Prof.Matthew Dailey, Dr.Gopi Krishna
 - Sponsor - University of Geneva/SDC
 - Total contracted amount - 437,800

- ◎ **Python scripts for module 1, 2 and 3 of Global Agro-Ecological Zoning version 4 and 5 with related documentation (Phase I)**
 - Duration - 15-May-22 to 31-Mar-23
 - Project Investigator(s): Dr.Kavinda Gunasekara Sponsor - Food & Agriculture Organization of the United Nations (FAO)
 - Total contracted amount - 1,722,500
- ◎ **Curriculum Development, Accreditation and Regulation in Training Programs**
 - Duration - 13-Jun-22 to 31-Dec-22
 - Project Investigator(s): Dr.Christopher J. Garnier
 - Sponsor - MoEYS, Cambodia
 - Total contracted amount - 528,000
- ◎ **Governance and Anti-Corruption: The Method and Tools behindan Effective Corruption-Eradication Strategy (Batch 1)**
 - Duration - 14-Jun-22 to 18-Dec-22
 - Project Investigator(s): Voravate Chonlasin, Worawan Sumroetrum
 - Sponsor - CIAA, Nepal
 - Total contracted amount - 1,131,600
- ◎ **Promoting Minamata Convention on Mercury by making the most of Japan's knowledge and experiences**
 - Duration - 28-Jul-22 to 28-Feb-23
 - Project Investigator(s): Guilberto Borongan, Solomon Kofi Mensah Huno; Bayasgalan Sanduijav; Naharuethai Supakarn
 - Sponsor – UNEP ROAP
 - Total contracted amount - 3,066,000
- ◎ **Strengthening Collective Advocacy of Women Human Rights Defenders in Myanmar**
 - Duration - 20-Jul-22 to 30-Apr-23
 - Project Investigator(s): Prof.Kyoko Kusakabe, Dr.Philippe Doney, Dr.Joyee Chatterjee
 - Sponsor - UN Women, Thailand
 - Total contracted amount - 13,689,279
- ◎ **AI+Gender in Southeast Asia**
 - Duration - 7-Jun-22 to 31-Dec-22
 - Project Investigator(s): Dr.Mongkol Ekpanyapong, Dr.Matthew N. Dailey
 - Sponsor-United National University, Macau
 - Total contracted amount- 333,000
- ◎ **Effective Anti-Corruption Policy, Strategy & Practice (Batch III)**
 - Duration - 3-Jun-22 to 30-Nov-22
 - Project Investigator(s): Ms.Thaniya Jirasathitpornpong
 - Sponsor - Anti-Corruption Commission, Bangladesh
 - Total contracted amount - 1,105,040
- ◎ **Real-Time Edge Computing Network on Haze Monitoring and Forest Fire Detection**
 - Duration - 1-Jul-22 to 31-Dec-23
 - Project Investigator(s): Dr.Adisorn Lertsinsrubtavee
 - Sponsor - TEIN*CC & ThaiREN
 - Total contracted amount - 900,000
- ◎ **Leadership Development**
 - Duration - 21-Jul-22 to 31-Jan-23
 - Project Investigator(s): Chatuphol Pholwan
 - Sponsor - Metropolitan, Sri Lanka
 - Total contracted amount - 545,834.35
- ◎ **International Training Program on Development Administration (Batch 2)**
 - Duration - 28-Aug-22 to 22-Mar-23
 - Project Investigator(s): Worawan Sumroetrum, Voravate Chonlasin
 - Sponsor - MOPA, Bangladesh
 - Total contracted amount - 4,965,000
- ◎ **AIT-Hiroshima University 2023 International Conference on Peace & Sustainability**
 - Duration - 1-Aug-22 to 30-Mar-23
 - Project Investigator(s): Shobhakar Dhakal
 - Sponsor – Hiroshima University, Japan
 - Total contracted amount - 560,000
- ◎ **Student Development Program for United Group of Institutions**
 - Duration - 1-Sep-22 to 31-Dec-24
 - Project Investigator(s): Nitin Kumar Tripathi
 - Sponsor – United Group of Institutions, India
 - Total contracted amount - 522,652
- ◎ **Capacity development on frontier technologies in aquaculture**
 - Duration - 15-Sep-22 to 31-Dec-24
 - Project Investigator(s): Krishna R. Salin
 - Sponsor – ICAR (Indian Council for Agricultural Research), India
 - Total contracted amount - 4,068,525.
- ◎ **Toward gender and democratic justice: Support for capacity development of civil society and academia in Myanmar**
 - Duration - 1-Sep-22 to 30-Sep-25
 - Project Investigator(s): Kyoko Kusakabe, Joyee Chatterjee; Philippen Doney
 - Sponsor – IDRC-CRDI
 - Total contracted amount - 7,998,800

- ◎ **AIA Learning Management System**
 - Duration - 15-Sep-22 to 30-Jun-24
 - Project Investigator(s): Christopher Joseph Garnier
 - Sponsor – AIA Company Limited
 - Total contracted amount - 4,066,987.38
- ◎ **System integration and development of web-based applications**
 - Duration - 1-Oct-22 to 16-Sep-25
 - Project Investigator(s): Mongkol Ekpanyapong, Matthew N. Dailey
 - Sponsor – The National Broadcasting and Telcommunications commission (NBCT)
 - Total contracted amount - 5,451,789
- ◎ **AVECRIS Large Scale PCR Chamber**
 - Duration - 1-Nov-22- 28-Feb-23
 - Project Investigator(s): Dieter Wilhelm Trau
 - Sponsor – AVECRIS PTE LTD., Singapore
 - Total contracted amount - 150,000.00
- ◎ **Executive Development Program on Contemporary Banking**
 - Duration - 15-Oct-22 to 15-May-23
 - Project Investigator(s): Roger Levermore
 - Sponsor-Public & Commercial Banks from Nepal
 - Total contracted amount - 1,123,500
- ◎ **Training cum Exposure visit on Application of Innovative Technologies for Climate-smart Agricultural Production and Consumption**
 - Duration - 15-Oct-22 to 31-Dec-23
 - Project Investigator(s): Krishna R. Salin, Loc Thai Nguyen
 - Sponsor – AITCV, Vietnam
 - Total contracted amount - 930,750
- ◎ **Professional Development Courses for Tashi InfoComm Limited, Bhutan**
 - Duration - 18-Oct-22 to 31-Mar-23
 - Project Investigator(s): Christopher Joseph Garnier
 - Sponsor – Tashi InfoComm Limited, Bhutan
 - Total contracted amount - 237,050
- ◎ **Effective Skills Development for Professional Staff of Tashi InfoComm Limited**
 - Duration - 28-Nov-22 to 31-Mar-23
 - Project Investigator(s): Thaniya Jirasathipornpong
 - Sponsor – Tashi InfoComm Limited, Bhutan
- Total contracted amount - 326,400
- ◎ **EDSMAT3-E21-Implementing Selective ERP Applications**
 - Duration - 21-Nov-22 to 31-Dec-24
 - Project Investigator(s): Faiz Hassan Shah
 - Sponsor – World Bank, Pakistan Water and Power Development Authority (WAPDA)
 - Total contracted amount - 3,530,000
- ◎ **Negotiation for Development Financing and Alternative Resource Mobilization**
 - Duration - 21-Nov-22 to 31-Mar-23
 - Project Investigator(s): Fazle Karim, Thaniya Jirasathipornpong
 - Sponsor – UNDP, Bangladesh
 - Total contracted amount - 819,026
- ◎ **EDSMAT3-E-22-Institutional Development Gap Analysis and PDNA Project**
 - Duration - 5-Dec-22 to 31-Dec-24
 - Project Investigator(s): Faiz Hassan Shah
 - Sponsor – World Bank, Pakistan Water and Power Development Authority (WAPDA)
 - Total contracted amount - 3,530,000
- ◎ **Student Development Program for KL University**
 - Duration - 1-Dec-22 to 31-Dec-24
 - Project Investigator(s): Nitin Kumar Tripathi
 - Sponsor – KL University, India and other universities, India
 - Total contracted amount - 500,000

WATER - ENERGY- FOOD (WEF)

Water, Energy and Food are of vital and critically important to the human societies. They are inextricably interrelated to each other and with other societal goals. Global challenges of climate change, ecosystem degradation, intensive economic growth, population growth, and urbanization are increasingly threatening the security and services of WEF systems. With the growing demands of WEF resources driven by these challenges, the social and environmental implications are increasing with unpredictable impacts for livelihoods and the environment. In order to reduce the negative impacts of and to across WEF nexus, the effective solutions with integrated low carbon and multi-sectoral adaption strategies and policies are needed

urgently. To achieve the long-term water, energy and water security, there is also a need to step up the efforts dealing with technology development in addressing the main environmental issues. The AIT research encompasses the field of each domain of WEF resources, and the nexus approach considers all three different dimensions recognizing the interdependencies of different resource uses sustainably. The issues covered in relation to WEF sectors include efficiency, equity, resilience, and sustainability, as well as the key questions required to enhance adoption of technologies and policies to promote the strong synergies of food security, energy, and water investments.

Sub-themes

1. Food Security
2. Sustainable Energy
3. Water Management
4. Water- Energy-Food Nexus

Food Security



The agri-food systems of present time are undergoing a series of profound changes brought by climate change, biodiversity loss, emerging technologies, and innovations. With the growing population, the need of more food to be produced to feed the world population is on rise. A well-functioning agricultural sector is essential to ensure the food security, and agricultural livelihoods as the agriculture is the provider of food and feed to the world, and its products are a major source of income for the communities. It is thus crucial to improve production techniques and boost the resilience

and sustainability of agri-food system. With an emphasis given on different dimensions of food security such as availability, accessibility, utilization, and stability, AIT research addresses a wide range of aspects covering resilient food production, distribution, and consumption through environmental solutions, sustainable agricultural technologies, policy responses. AIT's research topics include, among others, sustainable agricultural development; climate smart agriculture; Agri-Food value chain management; technological innovations in Agribusiness such as tech-clinic for Agro-food

SMEs, AI driven precision agriculture; technological applications in soil, crop productivity, pests and disease management; food technology, food processing, food engineering; Food safety, and quality; biotransformation of Agro-industrial waste; market analysis; consumer behavior and practice; Nutrition, diet, and health; Aquaculture and aquatic

Sustainable Energy

Sustainable Development Goals (SDGs 7 and 13), and the ambitious Paris Agreement on Climate Change have called for accelerated universal energy access combined with energy efficiency and deep-decarbonization for the energy sector. But the world today is yet on fossil-fuel pathways despite improving cost and efficiency of renewable energy technologies and facing energy crisis with the rising prices of gas, oils and growing demand on energy infrastructure driven by energy shortage problems resulted from countries' mismanagement and a post-pandemic rebound in demand. With the global deepening energy crisis, it is important to make efforts to dramatically increase the use of renewable energy while reducing the environmental impacts. Energy efficiency brings several benefits from environmental, and economic perspective, including lower greenhouse gas emissions, decreased water uses and lower costs from daily utilities, and promoting job creation. Apart from the traditional energy sector, the transport sector is also converging onto the power sector via electrifying it for several reasons, so its potential and challenges need to be analyzed. The sustainable energy sector's transition phase needs societal change with new values, system thinking, technical and modeling skill, business, policy, and the governance.

AIT's research in relation to energy is conducted in an interdisciplinary approach - encompassing a wide range of areas such as clean energy transition technologies, energy policies and environmental management aspects. It addresses the issues related to the sustainable energy transition at the cities and national level

resource management. The impact of economic and social forces on food security including public policies, programmes and services are also examined such as impact of property tax on food security.



for delivering a reliable, clean, affordable energy supply compatible with sustainable development. The topics covered under this sub-theme include, among others, climate change mitigation from the energy sector, bioenergy and biofuel development, application of AI, big data and machine learning in energy efficiency and barriers, policies for renewable energy and storage integration to the grid, waste to energy technologies, techno-economic assessment of renewable energy technologies, evaluation of energy policies and stochastic analysis through energy and power sector modelling at smaller time scale, energy access and security assessments, regional electricity trade, barriers, and system integration; smart grids and microgrids, demand response. Moreover, a new dimension in the energy and transport sectors is emerging from integrating more intermittent renewable energy sources with the help of smart grid, demand response and energy storage, including hydrogen energy, to meeting the COP26 commitment by achieving carbon neutrality and net-zero GHG emissions goals .

Water Management

The impact of rapidly growing population, economic growth, and environmental changes have brought enormous pressure on the water security which is essential foundation to the peoples' lives and ecosystem services. The problems water sector faces today are daunting with the challenges in developing, conserving, and managing water resources, its safe and productive use, particularly with regards to sustainability and environmental impacts on both at supply and end-use sides. The increasing challenges and urgency to ensure the water security in our time of unprecedented changes and shocks, highlights the critical need for a transformation in thinking and approach. Moving forward, the adoption of new management capitalizing on innovative technologies in water sector is necessary to ensure the water security. Innovation and technology have a vital role to play in combating water scarcity, water efficiency, utility operations, wastewater management, monitoring and treatment and data and analytics. The risk management of water resources is also critical to prevent the damage and loss from natural disasters such as flooding and drought.

AIT's research seeks to understand and respond to the issues related to the complexity of water use and water resources management including the water related risks influenced by climate extremes and human activities. It explores the new models and technological innovations covering the focus areas of agricultural water; coastal water; urban water; water resources; wastewater; and extreme



events and risk management. Research projects include, among others, the data-driven approaches and nature-based solutions in water management; transformative adaptation for water security; water allocation planning; impacts of climate change and adaptation in water sector; integrated water resource management; water quality management; water recycling and resources recovery; groundwater governance and resilience; urban and rural water supply and distribution systems; irrigation and drainage system management; cropping systems; erosion and water quality problems; watershed management; social and environmental impact assessment of water resources. The extreme events and risk management including river flow analysis, flood control and mitigation, flood modeling and forecasting, flood plain development, and management, are also covered under this sub-theme.

Water-Energy-Food (WEF) Nexus

The complex interrelationships between the water, energy and food systems have clearly highlighted need to transform the way we think in managing the complex challenges. In this context, the "business as usual" approach cannot achieve the realization of long-term water, energy, and food security. A new approach with nexus perception is necessary to better understand and systematically analyze the interactions between the natural environment and human activities. This paradigm shift is vital to achieving the sustainability development goals in an environment of global climate and economic change.



AIT's research focuses on the interconnectedness of WEF systems including the tradeoffs and synergies between different resource uses; the dynamics of WEF nexus interactions with climate change and human intervention. Specific topics covered include, among others, food production with efficient use of water, energy, and other resources; innovative water

conservation technologies for agriculture/horticulture productivity; energy and carbon footprint of urban and national water system; wastewater to resources/energy; resources nexus approach in addressing issues related to climate and environment; and the policy response options towards a more coordinated management of resources.

HIGHLIGHTED PROJECTS UNDER WATER-ENERGY-FOOD

The following lists some examples of projects that highlight AIT's global, regional, and country development experience under "Water-Energy-Food" theme during 2020, 2021 and 2022.

Ecosystem-based Adaptations for Sustainable Groundwater Resources Management in the Transboundary Cambodia-Viet Nam Mekong Delta Aquifer, Lower Mekong Region

Project budget- 1.4 million THB

Project duration- May-22 to Apr-23

Donor- Stockholm Environment Institute

The project's study areas are Cambodia and Vietnam and is jointly conducted by the AIT, Thailand; Institute of Technology of Cambodia (ITC), Cambodia; Can Tho University (CTU), Vietnam; Center for Creative Initiatives in Health and Population (CCIHP), Vietnam and Nextblue, the Netherlands. The project addresses several key issues, including water insecurity related to the groundwater resources of the Transboundary Cambodia-Viet Nam Mekong

Delta Aquifer, Lower Mekong Region. The project creates the policy-relevant knowledge on



transboundary groundwater, strengthen the capacities of local stakeholders and develop viable and policy-relevant recommendations.

Adopting Circular Bioeconomy in Thailand Food Supply Chain Through Industry- Academia Collaboration



Project budget- 4.3 million THB

Project duration- June 2021 to May 2023

Donor - Newton Fund

This project aims to facilitate transformational change in Thai food supply chain from linear to circular using a holistic approach by enhancing safety, quality, and efficiency of the food supply chain and identify how to turn food waste to valuable resources through valorization. During the study period, the research will reveal the current state of Circular Economy (CE) in three food supply chains – seafood, fresh fruits and

vegetables, and poultry foods: and the effect of food security measures on CE adoption. Additionally, this will facilitate CE adoption within three farms and three food processors of the selected three supply chains. Finally, the research will create a CE knowledge hub based at the AIT facilitating CE adoption in Thailand through training businesses, policymakers, higher education institutions, and academic researchers, and conducting further research to strengthen cooperation between all beneficiaries, and to build a skilled workforce.

Energy Demand Changes Induced by Technological & Social innovations

Project budget- 3 million THB

Project duration - Dec-20 to Jun-22

Donor- Research institute of Innovative Technology for the Earth (RITE), Japan

The project was awarded to Bangabandhu Chair, AIT by the Research Institute of Innovative Technology for the Earth, Japan in December 2020. The main objective of the project is to create a research community with a focus on end-use, demand-side perspectives that further dialogue and cross-fertilization of research and policy analysis through data, concepts, and methodologies. The goal is also to develop service-oriented bottom-up demand model to help in providing inputs to climate policy analysis.



PROJECTS INITIATED UNDER WATER-ENERGY-FOOD

Below is the list of research, consultancy and capacity development projects initiated under “Water-Energy-Food” by various Institute wide outreach centers and departments during 2020, 2021 and 2022.

- ☉ **Polycentric Urban Water management**

 - Duration - 1-Dec-19 to 30-Jun-20
 - Project Investigator(s): Prof.Thammarat Koottatep
 - Sponsor – Bremen Overseas Research & Development Association (BORDA)
 - Total contracted amount – 403,192
- ☉ **Development of an Agro-Ecological Zoning (AEZ) modules & routines & support for capacity development**

 - Duration - 1-Aug-19 to 31-Dec-20
 - Project Investigator(s): Dr.Kavinda Gunasekara, Prof.Rajendra P. Shrestha
 - Sponsor – Food & Agriculture Organization of the United Nations (FAO)
 - Total contracted amount – 5,282,005.05
- ☉ **Twenty-eighth Session of the Asia & Pacific Commission on Agricultural Statistics (APCAS28)**

 - Duration - 10-Dec-19 to 31-Oct-20
 - Project Investigator(s): Dr.Kavinda Gunasekara
 - Sponsor – Food & Agriculture Organization of the United Nations (FAO)
 - Total contracted amount – 3,150,000
- ☉ **Sustainable groundwater management under socio-economic & climate change in Mekong Delta, Vietnam**

 - Duration - 1-Jan-20 to 31-Dec-20
 - Project Investigator(s): Dr.Sangam Shrestha, Dr.Mohana Sundaram Shanmugam
 - Sponsor – USAID
 - Total contracted amount – 643,036
- ☉ **Hydro Meteorological Assessment of the Sindh Province**

 - Duration - 1-Jan-20 to 29-Jun-21
 - Project Investigator(s): Furqan Ali Shaikh
 - Sponsor – World Bank
 - Total contracted amount – 12,953,000
- ☉ **Sun-Oxygen-System: Energy efficient fishpond aeration enhancing integrated small-scale farming in Cambodia**

 - Duration - 1-Jan-20 to 31-Dec-22
 - Project Investigator(s): Dr.Kavinda Gunasekara
 - Sponsor – ZHAW, Switzerland
 - Total contracted amount – 1,410,500
- ☉ **Internship & Training**

 - Duration - 1-Jan-20 to 31-Dec-21
 - Project Investigator(s): Prof.Anil Kumar Anal
 - Sponsor – Various
 - Total contracted amount – 70,000
- ☉ **Technology Clinic for Agro-Food Small & Medium-Sized Enterprises (SMEs) in Thailand**

 - Duration - 29-Jan-20 to 28-Jan-21
 - Project Investigator(s): Dr.Avishek Datta, Prof.Anil K. Anal; Dr.Takuji W. Tsusaka; Dr.Vimolwan Yukongdi
 - Sponsor – Climate Technology Centre & Network (CTCN)
 - Total contracted amount – 1,487,700
- ☉ **Support to Aquaculture Capacity Development & International Networking for Yangon University, Myanmar**

 - Duration - 1-Jan-20 to 30-Oct-21
 - Project Investigator(s): Dr.K.R.Salin
 - Sponsor – Deutsche Gesellschaft fur Internationale Zusammenarbeit(GIZ) GmbH
 - Total contracted amount – 3,550,261.00
- ☉ **Integrated Water Resources & River Basin Management**

 - Duration - 7-Feb-20 to 23-Sep-20
 - Project Investigator(s): Dr.Pradeep Kumar Dash, Ms.Kanlaya Muangsang
 - Sponsor – National Water Academy, Central Water Commission, Government of India
 - Total contracted amount – 1,008,750
- ☉ **Survey on the Development of Cassava Processing Industry in Thailand**

 - Duration - 1-Feb-20 to 30-Apr-20
 - Project Investigator(s): Takuji W Tsusaka
 - Sponsor – Institute of Development Economies (IDE) of Japan External Trade Organization (JETRO)
 - Total contracted amount – 423,375

- ⊙ **Assessment of Material Recycling Related to Used Beverage Cartons: A Focus on Formal & Informal Waste Sectors in Bangkok & Surrounding Cities of Thailand**

 - Duration - 1-Feb-20 to 31-Dec-20
 - Project Investigator(s): Dr.Vilas Nitivattananon
 - Sponsor – Tetra Park Co., Ltd
 - Total contracted amount – 936,000
- ⊙ **Flow Measurement Tools & Techniques**

 - Duration - 4-Feb-20 to 9-Aug-20
 - Project Investigator(s): Mr.Furqan Ali Shaikh, Mr.Fazle Karim
 - Sponsor – The World Bank (Sindh Barrages Improvement Project)
 - Total contracted amount – 568,800
- ⊙ **Aqua-Internship program for the students of College of Fisheries, Odisha University of Agriculture & Technology (OUAT)**

 - Duration - 1 1-Mar-20 to 31-Aug-20
 - Project Investigator(s): Dr.Ram C. Bhujel
 - Sponsor – College of Fisheries (COF); Odisha University of Agriculture & Technology (OUAT)
 - Total contracted amount – 1,553,111.08
- ⊙ **Atmospheric Deposition to large river basins & potential effects on the water environment**

 - Duration - 4-Mar-20 to 30-Mar-22
 - Project Investigator(s): Prof.Nguyen Thi Kim Oanh
 - Sponsor –Asia Stockholm Environment Institute
 - Total contracted amount – 3,095,000
- ⊙ **Development of Rice Quality Monitoring System**

 - Duration - 1-Mar-20 to 28-Feb-23
 - Project Investigator(s): Prof.Manukid Pamichkun
 - Sponsor – Siam Kubota Corporation Co., Ltd.
 - Total contracted amount – 975,840
- ⊙ **USAID Southeast Asia EDGE Hub**

 - Duration - 1-Apr-20 to 17-Nov-23
 - Project Investigator(s): Dr.Jai Govind Singh, Dr.P. Abdul Salam, Prof.Shobhakar Dhakal
 - Sponsor – USAID Southeast Asia EDGE Hub
 - Total contracted amount – 3,848,112.00
- ⊙ **Strengthening Groundwater Governance in Rapidly Urbanizing Areas of the Lower Mekong Region**

 - Duration - 1-Mar-20 to 31-Dec-22
 - Project Investigator(s): Prof.Sangam Shrestha, Dr.Thi Phuoc Lai Nguyen
 - Sponsor – Stockholm Environment Institute (SEI)
 - Total contracted amount – 6,355,000
- ⊙ **Strengthening Afghanistan Institute capacity for monitoring & analysing of agriculture systems & development of LRIMS**

 - Duration - 1-May-20 to 31-Jan-21
 - Project Investigator(s): Dr.Kavinda Gunasekara, Prof.Rajendra P. Shrestha
 - Sponsor – Food & Agriculture Organization of the United Nations (FAO)
 - Total contracted amount- 6,149,160
- ⊙ **Water Resource Management in the Mekong River Basin**

 - Duration - 1-Jul-20 to 30-Sep-21
 - Project Investigator(s): Prof.Sangam Shrestha
 - Sponsor – N/A
 - Total contracted amount – 3,923,718
- ⊙ **Review of Aquaculture Innovations in Asia**

 - Duration 1-Jun-20 to 31-Mar-21
 - Project Investigator(s): Dr.K.R.Salin
 - Sponsor – FAO
 - Total contracted amount – 907,480
- ⊙ **River Morphology Study, Flood Hazard Mapping & Establishment of Decision Support System of Sindh Province**

 - Duration - 1-Jun-20 to 29-Jun-22
 - Project Investigator(s): Furqan Ali Shaikh
 - Sponsor – The World Bank
 - Total contracted amount – 50,400,000
- ⊙ **Treatment of Wastewater using a Pilot-Scale Membrane Aerated Biofilm Reactor (MABR) for the Removal of Organic Matter & Total Nitrogen**

 - Duration - 7-Jul-20 to 30-Jun-21
 - Project Investigator(s): Prof. C. Visvanathan
 - Sponsor – Mitsubishi Chemical Co., Ltd.
 - Total contracted amount - 474,750

- ◎ **Youth Energy Academy 2020**
 - Duration - 1-Aug-20 to 11-Dec-20
 - Project Investigator(s): Jonathan Brenes
 - Sponsor- Konrad-Adenauer-Stiftung (KAS)
 - Total contracted amount - 863,831.38
- ◎ **Collaborative Research Support for a Case Study in Thailand**
 - Duration- 1-Aug-20 to 15-Mar-21
 - Project Investigator(s): Prof.Thammarat Koottatep
 - Sponsor – Water for Sustainable Development Institute for the Advance Study of Sustainability United Nations University
 - Total contracted amount - 1,181,472
- ◎ **Aquaculture Development through Private Sector in Nepal**
 - Duration - 1-Aug-20 to 31-Jul-23
 - Project Investigator(s): Dr.Ram C. Bhujel
 - Sponsor – Vaidya Group, Nepal
 - Total contracted amount - 1,716,130.00
- ◎ **Study of Carbon & energy balance of different sustainable crop residue management in Asia**
 - Duration - 1-Aug-20 to 30-Apr-21
 - Project Investigator(s): Furqan Ali Shaikh
 - Sponsor – Food & Agriculture Organization of the United Nations (FAO)
 - Total contracted amount – 672,000
- ◎ **Technical support to BRAC Fisheries (BRAC-Fish)**
 - Duration - 1-Aug-20 to 31-Jul-23
 - Project Investigator(s): Dr.Ram C. Bhujel
 - Sponsor – BRAC, Bangladesh
 - Total contracted amount - 804,954
- ◎ **Adaptation & Implementation of the Modern Molecular Biology Technologies in the agriculture & Wastewater Treatment of ASEAN countries & Russia**
 - Duration - 5-Aug-20 to 5-Aug-22
 - Project Investigator(s): Prof.Thammarat Koottatep
 - Sponsor – ASEAN-Russian Federation Dialogue Partnership Financial Fund (ARDPFF)
 - Total contracted amount - 4,310,566
- ◎ **Aqua-Agri Conference in New Normal**
 - Duration - 24-Sep-20 to 31-Dec-21
 - Project Investigator(s): Dr. Ram C. Bhujel,
 - Sponsor – Individual participants
 - Total contracted amount - 759,350
- ◎ **Comparative Risk Assessment of Hydrologic Hazards & Adaption Policy in Jiulong River & Chao Phraya River Basins- Phase 3**
 - Duration - 1-Oct-20 to 31-Jan-22
 - Project Investigator(s): Dr. Vilas Nitivattananon, Dr.Oleg Shipin
 - Sponsor – NRCT-National Research Council of Thailand
 - Total contracted amount - 1,775,000
- ◎ **Smart feeding solutions for growing the best shrimp & fish for Asia: GROBEST-AIT Research collaboration**
 - Duration - 1-Oct-20 to 31-Dec-23
 - Project Investigator(s): Dr.K.R.Salin
 - Sponsor – Grobest Group Holdings Limited, Hong Kong
 - Total contracted amount - 3,600,000
- ◎ **Building capacities for water security assessment in Asian cities**
 - Duration - 1-Nov-20 to 31-Oct-21
 - Project Investigator(s): Prof.Mukand S. Babel
 - Sponsor – APN, Japan
 - Total contracted amount – 1,192,000
- ◎ **The Co-Adapt project: Collaborative Adaptation Pathways for Water Management in Agriculture in Bhavani River Basin, India**
 - Duration - 1-Nov-20 to 31-Oct-21
 - Project Investigator(s): Prof.Mukand S. Babel
 - Sponsor – Timil Nadu Agricultural University, India
 - Total contracted amount - 830,398
- ◎ **The 2nd AIT-BNU Joint Virtual Workshop on Water, Health, & Ecosystems: Current Challenges & Opportunities**
 - Duration - 25-Nov-20 to 30-Aug-21
 - Project Investigator(s): Dr.Wenchao Xue, Prof.Sangam Shrestha
 - Sponsor – Beijing Normal University (BNU)
 - Total contracted amount – 459,000
- ◎ **Aflatoxins in tilapia feed**
 - Duration -15-Dec-20 to 31-Dec-21
 - Project Investigator(s): Dr.Ram C. Bhujel
 - Sponsor – Patent Co., Serbia
 - Total contracted amount- 709,946.75

- ☉ **Energy Demand Changes Induced by Technological & Social innovations (EDIT-AIT)**

 - Duration - 4-Dec-20 to 30-Jun-22
 - Project Investigator(s): Dr.Ha Thanh Dong
 - Sponsor – Research institute of Innovative Technology for the Earth (RITE), Japan
 - Total contracted amount- 2,916,900
- ☉ **Youth Energy Academy DevCom Event**

 - Duration - 1-Dec-20 to 15-Feb-21
 - Project Investigator(s): Jonathan Brenes
 - Sponsor- Konrad-Adenauer-Stiftung (KAS)
 - Total contracted amount - 132,473.88
- ☉ **Assessment of Groundwater Sustainability in the Special Economic Zone of Thailand for Operational Groundwater Management**

 - Duration - 23-Dec-20 to 31-Dec-22
 - Project Investigator(s): Prof.Sangam Shrestha, Dr.Thi Phuoc Lai Nguyen; Dr.Mohana Sundaram Shanmugam; Dr. Salvatore G.P. Viridis
 - Sponsor – Stockholm Environment Institute
 - Total contracted amount – 1,516,700
- ☉ **Project on Food Value Chains: empowering young women entrepreneurs for delivering intercommunity food security, peace, & prosperity in Thailand's Southern Border Provinces during Covid 19**

 - Duration - 15-Dec-20 to 12-Dec-21
 - Project Investigator(s): Dr.Faiz H. Shah, Ms.Parichad Nuntavong
 - Sponsor – UNDP Thailand
 - Total contracted amount- 1,482,275.09
- ☉ **Development of innovative capacity building tools for agro-ecological zoning in support to sustainable & resilient agriculture**

 - Duration - 15-Jan-21 to 30-Sep-21
 - Project Investigator(s): Dr.Kavinda Gunasekara, Prof.Rajendra P. Shrestha
 - Sponsor – Food & Agriculture Organization of the United Nations (FAO)
 - Total contracted amount – 1,065,045
- ☉ **Waste to Energy Ash Disposal & Utilization in Southeast Asia**

 - Duration - 1-Jan-21 to 31-Dec-21
 - Project Investigator(s): Dr.P.Abdul Salam
 - Sponsor – Valmet Technologies Oy, Finland
 - Total contracted amount- 577,500
- ☉ **Sustainable Energy Transition Program Publications Project 2021**

 - Duration - 1-Jan-21 to 31-Dec-25
 - Project Investigator(s): Dr.Jai Govind Singh, Dr.Weerakorn Ongsakul, Dr.P.Abdul Salam, Dr.Shobhakar Dhakal, Prof.S. Kumar, Prof.Joyashree Roy
 - Sponsor – Regional Energy Resources Information Center (RERIC)
 - Total contracted amount- 6,400,000
- ☉ **Capacity Development for Agricultural Cooperatives in the Asia-Pacific region: AIT-NEDAC partnership**

 - Duration - 1-Feb-21 to 31-Dec-22
 - Project Investigator(s): Dr.K.R.Salin
 - Sponsor – NEDAC (Network for the Development of Agricultural Cooperatives in Asia & the Pacific)
 - Total contracted amount- 1,350,000
- ☉ **Analysis of Grid Codes & Regulations to Support Transmission Stability & Reliability, Regional Power Trade & VRE Integration in Southeast Asia**

 - Duration - 10-Feb-21 to 31-Dec-22
 - Project Investigator(s): Dr. Jai Govind Singh
 - Sponsor – Abt Associates (main contractor of USAID/CPA)
 - Total contracted amount- 542,445
- ☉ **AI based Smart Micro grid Platform**

 - Duration - 5-Feb-21 to 5-Oct-22
 - Project Investigator(s): Dr.Mongkol Ekpanyapong, Prof.Matthew N.Dailey
 - Sponsor – Provincial Electricity Authority (PEA)
 - Total contracted amount- 10,836,290
- ☉ **Treatment of Wastewater using a Pilot-scale Membrane Aerated Biofilm Reactor (MABR)**

 - Duration - 1-Apr-22 to 30-Dec-22
 - Project Investigator(s): Prof. C. Visvanathan
 - Sponsor – Mitsubishi Chemical Co., Ltd.
 - Total contracted amount- 544,500

- **Hydrological Characterization of the Athabasca River Basin**

 - Duration - 1-May-21 to 30-Apr-22
 - Project Investigator(s): Prof. Mukand S. Babel
 - Sponsor- The Governors of the university of Calgary (Ucalgary), Canada
 - Total contracted amount- 999,180.46
- **Virtual Youth Energy Academy (V-YEA) 2021**

 - Duration - 1-Jun-21 to 31-Dec-21
 - Project Investigator(s): Jonathan Brenes
 - Sponsor – Konrad-Adenauer-Stiftung (KAS)
 - Total contracted amount- 1,258,031.39
- **Hydro-Metrological Hazard Assessment of Sindh Province**

 - Duration - 1-Jun-21 to 31-Jul-22
 - Project Investigator(s): Dr.Indrajit Pal
 - Sponsor – AIT Extension
 - Total contracted amount- 757,334
- **Treatment of Wastewater using a Pilot-scale Membrane Aerated Biofilm Reactor (MABR)**

 - Duration - 1-Jun-21 to 30-Sep-22
 - Project Investigator(s): Prof. C. Visvanathan
 - Sponsor – Mitsubishi Chemical Co., Ltd.
 - Total contracted amount- 428,956
- **Adopting Circular Bio economy in Thailand Food Supply Chain Through Industry-Academia Collaboration**

 - Duration -1-Jun-21 to 31-May-23
 - Project Investigator(s): Prof.Anil Kumar Anal, Dr.Vimolwan Yukongdi
 - Sponsor – The Newton Fund by British High Commission (BHC), UK and National Research Council (NRCT), Thailand
 - Total contracted amount- 4,300,000
- **Anti-reflective coating on Solar Panel**

 - Duration - 15-Jun-21 to 31-Oct-21
 - Project Investigator(s): Dr.Tanujsal Bora
 - Sponsor – NEON Infotech Southeast Asia Co., Ltd., Thailand
 - Total contracted amount- 60,300
- **Development of a Field Solar Power Station for a Weather Station & Camera**

 - Duration - 1-Jul-21 to 30-Jun-26
 - Project Investigator(s): Dr. Manukid Parnichkun
 - Sponsor – ListenField Co., Ltd
 - Total contracted amount- 130,000
- **Solar PV Development in Thailand**

 - Duration - 15-Aug-21 to 30-Dec-22
 - Project Investigator(s): Prof.Shobhakar Dhakal-VPAA
 - Sponsor – China Renewable Energy Engineering Institute (CREEI)
 - Total contracted amount- 255,920
- **Food Loss Pilot Project at Thai Union Frozen Products Factory**

 - Duration - 1-Oct-21 to 30-Sep-22
 - Project Investigator(s): Prof.Anil Kumar Anal
 - Sponsor – Thai Union Group PCL.
 - Total contracted amount- 90,000
- **Circular economy of sustainable packaging solutions of agribusinesses: cost efficiency and consumer preferences assessment**

 - Duration - 6-Sep-21 to 30-Dec-22
 - Project Investigator(s): Dr.Farhad Zulfiqar
 - Sponsor – AIT Research Initiation Grant
 - Total contracted amount- 150,000
- **Documentation on innovations & good practices on health management in aquaculture**

 - Duration - 1-Sep-21 to 30-Mar-22
 - Project Investigator(s): Dr.K.R.Salin, Dr.Ha Thanh Dong
 - Sponsor – FAO
 - Total contracted amount- 831,220
- **Testing of commercial feed additives of Lucta in Tilapia**

 - Duration - 1-Jun-21 to 31-May-22
 - Project Investigator(s): Dr.Ram C. Bhujel
 - Sponsor – Lucta, Spain
 - Total contracted amount- 1,350,000

- ◎ **ICUE 2022 on Energy, Environment & Climate Change**
 - Duration -1-Nov-21 to 31-Mar-23
 - Project Investigator(s): Dr. Wenchao Xue, Dr.Jai Govind Singh, Dr. P. Abdul Salam, Dr.Weerakorn Ongsakul, Prof. S. Kumar, Dr.Shobhakar Dhakal, Prof. Joyashree Roy, Prof. C. Visvanathan, Prof. Nguyen Thi Kim Oanh, Prof. Thammarat K., Dr. Ekbordin W., Dr.Simon G.C., Prof. Sangam S., Proj.Rajendra S., Dr.Indrajit Pal, Dr. Avishek D., Dr.Mokbul M.A.
 - Sponsor – Registration Revenues/ Sponsorships/ Grants
 - Total contracted amount- 1,999,990
- ◎ **Guidelines for the implementation of Climate Friendly Domestic Wastewater Treatment Systems in Thailand**
 - Duration - 18-Sep-21 to 18-Jan-22
 - Project Investigator(s): Prof.Thammarat Koottatep
 - Sponsor-Deutsch Gesellschaft fur Internationale Zusammenarbeit GmbH (GIZ)
 - Total contracted amount- 1,690,000
- ◎ **Development of monovalent & bivalent inactivated vaccines against Streptococcus agalactiae & Aeromonas veronii in Nile tilapia (Oreochromis niloticus)**
 - Duration - 1-Oct-21- 30-Sep-23
 - Project Investigator(s): Dr.Ha Thanh Dong
 - Sponsor – AIT Research Initiation project
 - Total contracted amount- 150,000
- ◎ **Documentation of digital technologies in aquaculture**
 - Duration - 1-Nov-21 to 31-Jul-22
 - Project Investigator(s): Dr.K.R.Salin
 - Sponsor – FAO
 - Total contracted amount- 1,016,400
- ◎ **Nutrient and Irrigation Water Management in Field and Horticultural Crops through Smart Agriculture Technologies**
 - Duration - 1-Nov-21 to 31-Oct-23
 - Project Investigator(s): Dr.Avishek Datta, Dr.Sushil Kumar Himanshu
 - Sponsor – Junagadh Agricultural University, India
 - Total contracted amount- 1,000,050
- ◎ **Strengthen technical capacity of national officials to use Earth Observation (EO) data to better collect and disseminate agriculture statistics**
 - Duration - 8-Dec-21 to 30-Sep-22
 - Project Investigator(s): Dr.Kavinda Gunasekara, Dr.Tran Thanh Dan
 - Sponsor – Food & Agriculture Organization of the United Nations (FAO)
 - Total contracted amount- 4,160,000
- ◎ **Growing Seafood in the Lab (GSIL)**
 - Duration - 1-Dec-21 to 30-Nov-26
 - Project Investigator(s): Dr.Ram C. Bhujel
 - Sponsor – Shiock Meats Pte, Ltd., Singapore
 - Total contracted amount- 11,950,000
- ◎ **Guidelines Ranges of Wastewater Generation Rate and Concentrations of Biochemical**
- ◎ **Oxygen Demand from Households in Thailand project**
 - Duration - 5-Jan-22 to 31-May-22
 - Project Investigator(s): Prof.Thammarat Koottatep
 - Sponsor- Faculty of Engineering, Chulalongkorn University
 - Total contracted amount – 1,238,880
- ◎ **Impact of COVID-19 on Wastewater Management in Developing Countries and UNEP's Support**
 - Duration - 1-Jan-22 to 30-May-22
 - Project Investigator(s): Dr.Naveed Anwar
 - Sponsor – Pollution-Free Ecosystems Unit, United Nations Environment Programme
 - Total contracted amount- 1,323,700
- ◎ **Create WASH Technology Catalog and Online Platform**
 - Duration- 24-Feb-22 to 28-Feb-23
 - Project Investigator(s): Thammarat Koottatep
 - Sponsor – UNICEF China
 - Total contracted amount - 586,068
- ◎ **Mariculture Training for Tanzania (MTT)**
 - Duration - 1-Mar-22 to 31-Dec-22
 - Project Investigator(s): Dr. Ram C. Bhujel
 - Sponsor – World Bank / Ministry of Livestock & Fisheries, Tanzania
 - Total contracted amount- 1,170,650

- **2022 USDA FFP Proposal-CSA Thailand Technical Advisor**

 - Duration 1-Mar-22 to 28-Feb-23
 - Project Investigator(s): Prof. Mukand S. Babel
 - Sponsor – USDA-United States Department of Agriculture
 - Total contracted amount - 900,000
- **Economic Viability of Technology Options for Provisioning Clean Water in the Thai Rural Contexts (Phase 1)**

 - Duration - 1-Apr-22 to 27-Sep-22
 - Project Investigator(s): Prof. Deepak Sharma, Dr. Suwin Sandhu
 - Sponsor – Department of Groundwater Resources
 - Total contracted amount- 5,492,640
- **Solar Panel Coating Device**

 - Duration - 3-May-22 to 31-Oct-22
 - Project Investigator(s): Prof. Dieter Trau, Dr. Tanujjal Bora
 - Sponsor – Neon Infotech Southeast Asia Co., Ltd.
 - Total contracted amount- 546,000
- **Ecosystem-based Adaptations for Sustainable Groundwater Resources Management in the Transboundary Cambodia-Viet Nam Mekong Delta Aquifer, Lower Mekong Region**

 - Duration - 1-May-22 to 30-Apr-23
 - Project Investigator(s): Dr. Ho Huu Loc, Prof. Sangam Shrestha
 - Sponsor – Stockholm Environment Institute (SEI)
 - Total contracted amount- 1,361,078
- **Smart Agricultural Technologies for Nutrients and Irrigation Water Management**

 - Duration - 1-May-22 to 30-Apr-24
 - Project Investigator(s): Dr. Sushi Kumar Himanshu, Dr. Avishek Datta, Dr. Farhad Zulfiqar
 - Sponsor – College of Agricultural Engineering and Post-harvest Technology, Central Agriculture University, Gangtok, India
 - Total contracted amount – 621,000
- **Capacity Building on Food Innovations and Sustainability**

 - Duration - 15-May-22 to 31-Dec-24
 - Project Investigator(s): Prof. Anil Kumar Anal
 - Sponsor – World Bank through ICAR-NAHEP, India
 - Total contracted amount- 372,6693.6
- **Advanced Training on Biochemical, Biotechnology, and Cytoplasmic Male Sterile/Resistance Breeding on Spices Crops**

 - Duration - 1-May-22 to 31-Dec-23
 - Project Investigator(s): Dr. Avishek Datta, Dr. Sushil Kumar Himanshu, Dr. Farhad Zulfiqar
 - Sponsor – Bangladesh Agricultural Research Institute, Ministry of Agriculture, Bangladesh
 - Total contracted amount- 420,000
- **Liquefied Natural Gas (LNG) Project Financial Management**

 - Duration - 19-May-22 to 31-Oct-22
 - Project Investigator(s): Mr. Fazle Karim
 - Sponsor – Petrobangla
 - Total contracted amount- 1,072,500
- **Evaluation of the Efficacy of Novel Feed Additives in Increasing Resistance to White Spot Syndrome Virus (WSSV) in Pacific White Shrimp Litopenaeus vannamei**

 - Duration - 20-Jun-22 to 30-Jun-24
 - Project Investigator(s): Dr. Ha Thanh Dong
 - Sponsor – Grobest Corporation Limited, Thailand
 - Total contracted amount- 2,194,950
- **Evaluating the Health Promoting Additives to Reduce the Severity of Bacterial Infection in Pangasius**

 - Duration - 1-Jun-22 to 31-Dec-22
 - Project Investigator(s): Dr. Ha Thanh Dong
 - Sponsor – Adisseo Company, France
 - Total contracted amount- 866,310
- **Sustainable Development of Agriculture and Livestock Management**

 - Duration - 29-Aug-22 to 1-Mar-23
 - Project Investigator(s): Dr. Faiz Shah, Dr. Pradeep Kumar Dash
 - Sponsor – ADB, Nepal
 - Total contracted amount- 504,000

- ◎ **Youth Energy Academy (YEA) 2022**
 - Duration - 1-Aug-22 to 31-Dec-22
 - Project Investigator(s): Jonathan Brenes Salazar
 - Sponsor- Konrad-Adenauer-Stiftung (KAS)
 - Total contracted amount – 1,306,241.7
- ◎ **Utilization of Sewage Sludge Novel Sludge Based Adsorptive Media for Treated Wastewater**
 - Duration- 1-Sep-22 to 31-Dec-23
 - Project Investigator(s): Thammarat Koottatep
 - Sponsor – Utility Business Alliance Public Company Limited
 - Total contracted amount - 2,000,000
- ◎ **Energy Demand changes Induced by Technological & Social Changes in South and Southeast Asia**
 - Duration- 1-Sep-22 to 30-Apr-26
 - Project Investigator(s): Joyashree Roy, Joyee S. Chatterjee
 - Sponsor – METI/RITE, Japan
 - Total contracted amount - 5,396,250
- ◎ **EDSMAT3-D-18-Health and Safety Standards for Hydropower Projects**
 - Duration- 31-Oct-22 to 31-Dec-24
 - Project Investigator(s): Faiz Hassan Shah
 - Sponsor – World Bank, Pakistan Water and Power Development Authority (WAPDA)
 - Total contracted amount - 3,530,000
- ◎ **EDSMAT3-F-23-Investment Analysis of Renewable Energy Projects**
 - Duration- 21-Nov-22 to 31-Dec-24
 - Project Investigator(s): Faiz Hassan Shah
 - Sponsor – World Bank, Pakistan Water and Power Development Authority (WAPDA)
 - Total contracted amount - 3,530,000
- ◎ **Global Water and Sanitation Center**
 - Duration- 26-Sep-22 to 31-Oct-25
 - Project Investigator(s): Sangam Shrestha
 - Sponsor – Bill & Melinda Gates Foundation
 - Total contracted amount - 283,362,310
- ◎ **Technical Assistance and Strengthening Research and Innovation Practices for Waste Management across the Maldives**
 - Duration- 1-Sep-22 to 28-Feb-23
 - Project Investigator(s): Thammarat Koottatep
 - Sponsor – The World Bank, USA
 - Total contracted amount - 3,637,180.00
- ◎ **Agricultural and Livestock Risk Mitigation Products**
 - Duration- 17-Oct-22 to 21-Apr-23
 - Project Investigator(s): Christopher Joseph Garnier
 - Sponsor – Palli Karma-Sahayak Foundation (PKSF)
 - Total contracted amount - 1,159,950
- ◎ **Asian region collaborative framework to operationalize utility-based wastewater monitoring and management**
 - Duration- 5-Sep-22 to 31-Dec-22
 - Project Investigator(s): Thammarat Koottatep
 - Sponsor – UNHABITAT, Kenya (United Nations Human Settlement Programme)
 - Total contracted amount - 1,575,000
- ◎ **Developing phage therapies for animal health in Thailand with a special focus on shrimp and chicken health**
 - Duration- 1-Oct-22 to 30-Sep-24
 - Project Investigator(s): Ha Thanh Dong, Krishna R. Salin
 - Sponsor – Phagos Company, France
 - Total contracted amount - 1,095,000
- ◎ **Training, Workshop, and promotion of tilapia in India**
 - Duration- 1-Nov-22 to 31-Oct-26
 - Project Investigator(s): Ram C. Bhujel
 - Sponsor – MM-Aqua Genetics Technology & Research Pvt Ltd., India
 - Total contracted amount - 1,800,000
- ◎ **Multi Country Electricity Transition Potential and Challenges**
 - Duration- 1-Nov-22 to 31-Mar-26
 - Project Investigator(s): Joyashree Roy
 - Sponsor – Environmental Defense Fund, Inc., USA
 - Total contracted amount - 1,500,000

◎ **Crop Nutrient and Irrigation Water Management using smart Agricultural Technology**

- Duration- 15-Nov-22 to 14-Nov-25
- Project Investigator(s): Avishek Datta, Sushil Kumar Himanshu; Farhad Zulfiqur
- Sponsor – Indian Council of Agricultural Research (ICAR)
- Total contracted amount - 1,575,000

◎ **EDSMAT3-F-25-Hydropower Financing and Risk Management**

- Duration- 5-Dec-22 to 31-Dec-24
- Project Investigator(s): Faiz Hassan Shah
- Sponsor – World Bank, Pakistan Water and Power Development Authority (WAPDA)
- Total contracted amount - 3,530,000

◎ **EDSMAT3-F-24-Financial and Economic Planning for Energy Projects**

- Duration- 5-Dec-22 to 31-Dec-24
- Project Investigator(s): Faiz Hassan Shah
- Sponsor – World Bank, Pakistan Water and Power Development Authority (WAPDA)
- Total contracted amount - 3,530,000

CHAPTER 3: RESEARCH PUBLICATIONS ASSOCIATED WITH AIT RESEARCH THEMES

The report presents the publications available from SCOPUS database for three years (2020, 2021, 2022). Grouping under five thematic research areas, this section lists the publications in all three years, reaching a total of more than

1,100. As the five research themes are interconnected, crossing their traditional boundaries, the publications are grouped based on their most relevant (single) research themes.

PUBLICATIONS (2020)

The following lists the total 325 publications available from SCOPUS database for 2020 that fall under five thematic research areas. Out of all publications in 2020, below is the list of publications that fall under "Climate Change".

CLIMATE CHANGE

- ① Ken S., Sasaki N., Entani T., Ma H.O., Thuch P., Tsusaka T.W. (2020) **Assessment of the local perceptions on the drivers of deforestation and forest degradation, agents of drivers, and appropriate activities in Cambodia. Sustainability (Switzerland), Volume. 12, Issue.23, Art. No.9987, pp.1-26.**
- ② Khamchiangta D., Dhakal S. (2020) **Time series analysis of land use and land cover changes related to urban heat island intensity: Case of Bangkok Metropolitan Area in Thailand. Journal of Urban Management, Volume. 9, Issue. 4, pp.383-395.**
- ③ Shrestha S., Sattar H., Khattak M.S., Wang G., Babur M. (2020) **Evaluation of adaptation options for reducing soil erosion due to climate change in the Swat River Basin of Pakistan. Ecological Engineering, Volume.158, Art. No.106017.**
- ④ Shah A.A., Gong Z., Pal I., Sun R., Ullah W., Wani G.F. (2020) **Disaster risk management insight on school emergency preparedness – A case study of Khyber Pakhtunkhwa, Pakistan. International Journal of Disaster Risk Reduction, Volume. 51, Art. No 101805.**
- ⑤ Lwin K.K., Pal I., Shrestha S., Warnitchai P. (2020) **Assessing social resilience of flood-vulnerable communities in Ayeyarwady Delta, Myanmar. International Journal of Disaster Risk Reduction, Volume. 51, Art. No.101745.**
- ⑥ Bhatta B., Shrestha S., Shrestha P.K., Talchabhadel R. (2020) **Modelling the impact of past and future climate scenarios on streamflow in a highly mountainous watershed: A case study in the West Seti River Basin, Nepal. Science of the Total Environment, Volume. 740, Art. No. 140156.**
- ⑦ Xie Z., Pontius R.G., Jr., Huang J., Nitivattananon V. (2020) **Enhanced intensity analysis to quantify categorical change and to identify suspicious land transitions: A case study of Nanchang, China. Remote Sensing, Volume.12, Issue.20, Art. No.3323, pp. 1-16.**
- ⑧ Roy J., Islam S.T., Pal I. (2020) **Energy, disaster, climate change: Sustainability and just transitions in Bangladesh. International Energy Journal, Volume. 20, pp. 373-380.**
- ⑨ Ariful Islam Md., Singh J.G. (2020) **Duck curve problem formulation and solving strategies by utilizing PVr, PEVs, load shifting and ANFIS for greening Bangladesh. International Energy Journal, Volume. 20, pp.453-470.**
- ⑩ Ullah F., Saqib S.E., Ahmad M.M., Fadlallah M.A. (2020) **Flood risk perception and its determinants among rural households in two communities in Khyber Pakhtunkhwa, Pakistan. Natural Hazards, Volume.104, Issue.1, pp. 225-247.**

- Udmale P., Ichikawa Y., Ning S., Shrestha S., Pal I. (2020) **A statistical approach towards defining national-scale meteorological droughts in India using crop data.** *Environmental Research Letters*, Volume. 15, Issue.9, Art. No. 94090.
- Jhong B.-C., Tachikawa Y., Tanaka T., Udmale P., Tung C.-P. (2020) **A generalized framework for assessing flood risk and suitable strategies under various vulnerability and adaptation scenarios: A case study for residents of Kyoto City in Japan.** *Water (Switzerland)*, Volume. 12, Issue. 9, Art. No.2508.
- Poudel A., Sasaki N., Abe I. (2020) **Assessment of carbon stocks in oak forests along the altitudinal gradient: A case study in the Panchase Conservation Area in Nepal.** *Global Ecology and Conservation*, Volume. 23, Art. No. e01171.
- Lestari P., Muthmainnah F., Permadi D.A. (2020) **Characterization of carbonaceous compounds emitted from Indonesian surface and sub surface peat burning.** *Atmospheric Pollution Research*, Volume.11, Issue.9, pp.1465-1472.
- Aslam R.A., Shrestha S., Pal I., Ninsawat S., Shanmugam M.S., Anwar S. (2020) **Projections of climatic extremes in a data poor transboundary river basin of India and Pakistan.** *International Journal of Climatology*, Volume.40, Issue.11, pp.4992-5010.
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- ◎ Roy J., Islam S.T., Pal I. (2020) **White paper on energy, disaster, climate change: Sustainability and just transitions in Bangladesh. *International Energy Journal*, Volume. 20, pp. 579- 580.**
- ◎ Dahal A., Sharma P., Hazarika M.K. (2020) **Implementation of integrated geospatial platform, database, and application for disaster risk management in Uttarakhand. *40th Asian Conference on Remote Sensing, ACRS 2019: Progress of Remote Sensing Technology for Smart Future.***
- ◎ Venkatappa M., Sasaki N., Anantsuksomsri S., Smith B. (2020) **Applications of the google earth engine and phenology-based threshold classification method for mapping forest cover and carbon stock changes in Siem Reap province, Cambodia. *Remote Sensing*, Volume 12, Issue 18, Art No 3110**

SMART COMMUNITIES

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- ◎ Danvirutai P., Ekpanyapong M., Tuantranont A., Bohez E., Anutrakulchai S., Wisitsoraat A., Srichan C. (2020) **Ultra-sensitive and label-free neutrophil gelatinase-associated lipocalin electrochemical sensor using gold nanoparticles decorated 3D Graphene foam towards acute kidney injury detection. *Sensing and Bio-Sensing Research*, Volume -30, Art No 100380.**
- ◎ Fang L., Huang J., Zhang Z., Nitivattananon V. (2020) **Data-driven framework for delineating urban population dynamic patterns: Case study on Xiamen Island, China. *Sustainable Cities and Society*, Volume 62, Art No 102365.**
- ◎ Seekhao P., Tungpimolrut K., Parnichkun M. (2020) **Development, and control of a bicycle robot based on steering and pendulum balancing. *Mechatronics*, Volume 69, Art No 102386.**
- ◎ Puckdeevongs A., Tripathi N.K., Witayangkurn A., Saengudomlert P. (2020) **Classroom attendance systems based on bluetooth low energy indoor positioning technology for smart campus. *Information (Switzerland)*. Volume 11, Issue 6, Art No 329.**

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- ⊙ Dost M., Badir Y.F., Sambasivan M., Umrani W.A.(2020) **Open-and-closed process innovation generation and adoption: Analyzing the effects of sources of knowledge. Technology in Society, Volume 62, Art No 101309.**
- ⊙ Watchaton A., Krairit D. (2020) **Exploring university perceptions of IS implementation and attributes of success: a case study of public universities in Thailand. Information Technology for Development, Volume 26, Issue 4, pp- 811-836.**
- ⊙ Sutyasadi P., Parnichkun M. (2020) **Push recovery control of quadruped robot using particle swarm optimization-based structure specified mixed sensitivity H2/H_∞ control. Industrial Robot, Volume 47, Issue 3, pp-423-434**
- ⊙ Tariq A., Badir Y.F., Safdar U., Tariq W., Badar K. (2020) **Linking firms' life cycle, capabilities, and green innovation. Journal of Manufacturing Technology Management, Volume 31, Issue 2, pp-284- 305.**
- ⊙ Kamal S.A., Shafiq M., Kakria P. (2020) **Investigating acceptance of telemedicine services through an extended technology acceptance model (TAM). Technology in Society, Volume-60, Art No- 101212.**
- ⊙ Surjandy, Meyliana, Oktriono K., Catherine M.M., Anutariya C., Fernando E. (2020) **Smartphone influence factor of university student's academic achievement. Advances in Science, Technology and Engineering Systems, Volume 5, Issue 5, pp- 692-697.**
- ⊙ Lim C., Lee J.H., Sonthikorn P, Vongbuyong S. (2020) **Frugal innovation and leapfrogging innovation approach to the industry 4.0 challenge for a developing country. Asian Journal of Technology Innovation, pp- 1-22.**
- ⊙ Jamil S., Yukongdi V. (2020) **Information systems workforce and innovative work behavior. The role of participatory management, affective trust and guanxi. International Journal on Semantic Web and Information Systems, Volume16, Issue 1, pp-146-165.**
- ⊙ Faysse N., Aguilhon L., Phiboon K., Purotaganon M. (2020) **Mainly farming ... but what's next? The future of irrigated farms in Thailand. Journal of Rural Studies, Volume73, pp- 68-76.**
- ⊙ Sriarunrasmee J., Anutariya C. (2020) **The Development of One Stop Service Online System based on User Experience Design and AGILE Method. ACM International Conference Proceeding Series, pp- 64-69**
- ⊙ Miah M.S., Bashar S.S., Karim A.H.M.Z., Hasan Z. (2020) **Heart Rate Extraction from Photoplethysmography Signal: A Multi Model Machine Learning Approach. IEEE International Conference on Artificial Intelligence in Engineering and Technology, IICAIET 2020, Art No 9257869.**
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- ⊙ Vemuri H., Singh J.G. (2020) **Smoothing the load profile by using a charging control strategy of plug-in electric vehicles. 2020 IEEE Students' Conference on Engineering and Systems, SCES 2020, Art No 9236701.**
- ⊙ Landicho J., Esichaikul V., Sasil R. (2020) **Predictive Modelling for Hospital Readmission Risk in the Philippines. IOP Conference Series: Materials Science and Engineering, Volume 864, Issue 1, Art No 12061.**
- ⊙ Vo A.T., Bui Q.T., Do V.A., Le H.Q., Nguyen Q.B., Huynh T.N., Nguyen L.N.V. (2020) **Remote data collecting for water meter (automatic meter reading) in high-rise building construction. IOP Conference Series: Materials Science and Engineering, Volume 869, Issue 2, Art No 22002.**
- ⊙ Paudel S., Abeykoon A.M.H.S., Senadeera S.D.A.P. (2020) **Sensor-Less Detection of Wheel Alignment Error for a Wheeled Mobile Robot using the Disturbance Observer. MERCon 2020 - 6th International Multidisciplinary Moratuwa Engineering Research Conference, Proceedings, Art No 9185394, pp- 572-577.**

- ◎ Selimi M., Navarro L., Braem B., Freitag F., Lertsinsrubtavee A. (2020) **Towards Information-Centric Edge Platform for Mesh Networks: The Case of CityLab Testbed. Proceedings - 2020 IEEE International Conference on Fog Computing, ICFC 2020, Art No 9103480, pp-50-55.**
- ◎ Chairat A., Dailey M.N., Limsoonthrakul S., Ekpanyapong M., Raj D.K.C. (2020) **Low cost, high performance automatic motorcycle helmet violation detection. Proceedings - 2020 IEEE Winter Conference on Applications of Computer Vision, WACV 2020, Art No 9093538, pp 3549-3557.**
- ◎ Shakal F.H., Zahir E., Saha S., Al Boshir O.H., Trisha J.J. (2020) **Design and Testing of a Mobile BPM and Peripheral Oxygen Saturation Monitoring for Patients in Bangladesh. Proceedings of International Conference on Research, Innovation, Knowledge Management and Technology Application for Business Sustainability, INBUSH 2020, Art No 9392170, pp- 161-166.**
- ◎ Siangsuebchart S., Ninsawat S., Witayangkurn A., Pravinvongvuth S. (2020) **Assessment of human mobility from taxi GPS probe data in Bangkok, Thailand. 40th Asian Conference on Remote Sensing, ACRS 2019: Progress of Remote Sensing Technology for Smart Future**
- ◎ Giao P.H., Ratnayake R. (2020) **Application of machine learning in well log analysis to estimate the porosity of a fractured granite basement reservoir. 3rd Asia Pacific Meeting on Near Surface Geoscience and Engineering**
- ◎ Htet N.L., Sukhobol S., Sandar S.L., Koomsap P. (2020) **Fully 3D printed spring powered car: A project-based learning experience. International Symposium on Project Approaches in Engineering Education, Volume 10, pp 245-252.**
- ◎ Benaragama Y.S.M., Koomsap P. (2020) **Development of automated guided vehicles for a smart factory: A project-based learning experience. International Symposium on Project Approaches in Engineering Education, Volume 10, pp 327-333.**
- ◎ Naduni Hansika Abeywardena B., Mendis C.L., Ayutthaya D.H.N., Lwin E.E., Benaragama Y.S., Wei S.-H., Tan C.-F. (2020) **A-cube way for research learning experience: View of students. International Symposium on Project Approaches in Engineering Education, Volume 10, pp 187-192.**
- ◎ Anutariya C., Bonsangue M., Abidin T.F., Dailey M., Fraidaki K., Gomes T., Hermans F., Korkua S., Monteiro J.L., Utama N.P., Pereira S., Pinidiyaarachchi A., Pinto S., van Rijn J.N., Sitompul O.S., Songpan W., Soomlek C., Takes F., Verberne S., Wickramarachchi C. (2020) **Building a needs-based curriculum in data science and artificial intelligence: Case studies in Indonesia, Sri Lanka, and Thailand. International Symposium on Project Approaches in Engineering Education, Volume 10, pp-97-104**
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- ◎ Luong H.T. (2020) **Helping students to avoid critical mistakes/misunderstands when using active learning/project-based learning approaches in teaching statistical analysis. International Symposium on Project Approaches in Engineering Education, Volume 10, pp41-46.**
- ◎ Nitkiewicz T., Ayutthaya D.H.N., Koszewska M., Wiszumirska K., Wojnarowska M., Koomsap P. (2020) **LOVE model-based assessment of teaching practices within industrial engineering master programs in Poland and Thailand. International Symposium on Project Approaches in Engineering Education, Volume 10, pp 165-173.**
- ◎ Sampa M.B., Hoque M.R., Islam R., Nishikitani M., Nakashima N., Yokota F., Kikuchi K., Rahman M.M., Shah F., Ahmed A. (2020) **Redesigning portable health clinic platform as a remote healthcare system to tackle COVID-19 pandemic situation in unreached communities. International Journal of Environmental Research and Public Health, Volume 17, Issue 13, Art No 4709, pp 1-14.**

- Ayutthaya D.H.N., Koomsap P. (2020) **Make product design and development beyond active learning with 'love'. International Symposium on Project Approaches in Engineering Education, Volume 10, pp47-55**
- Utamachant P., Anutariya C., Pongnumkul S., Sukvaree N. (2020) **Analyzing online learning behavior and effectiveness of blended learning using students' accessing timeline. International Symposium on Project Approaches in Engineering Education, Volume 10, pp-64-71**
- Thongkeaw K., Ratanawilai T., Rattanamanee W., Koomsap P., Ayutthaya D.H.N., Nakkiew W. (2020) **Collaborative manufacturing systems: Active learning from its name. International Symposium on Project Approaches in Engineering Education, Volume 10, pp-214-220.**
- Kaewkorn S., Joochim C., Keeratiwintakorn P., Kunapinun A. (2020) **Development of Pick and Place Delta Robot. Advances in Intelligent Systems and Computing, Volume 1135 AISC, pp 475-486.**
- Wongaptikaseree K., Yomaboot P., Katchapakirin K., Kaewpitakkun Y. (2020) **Social behavior analysis and Thai mental health questionnaire (TMHQ) optimization for depression detection system. IEICE Transactions on Information and Systems, Volume E103D, Issue 4, pp 771-778.**
- Nguyen T.P.L., Nguyen T.H., Tran T.K. (2020) **STEM education in secondary schools: Teachers' perspective towards sustainable development. Sustainability (Switzerland), Volume 12, Issue 21, Art No 8865, pp-1- 16**
- Khan H., Sukhotu V. (2020) **Influence of media exposure and Corporate Social Responsibility compliance on customer perception: The moderating role of Firm's reputation risk. Corporate Social Responsibility and Environmental Management, Volume 27, Issue5, pp- 2107-2121.**
- Kry S., Sasaki N., Datta A., Abe I., Ken S., Tsusaka T.W. (2020) **Assessment of the changing levels of livelihood assets in the Kampong Phluk community with implications for community-based ecotourism. Tourism Management Perspectives, Volume 34, Art No 100664.**
- Sharma Pandit S., Kuwornu J.K.M., Datta A., Yaseen M., Anal A.K. (2020) **Analysis of marketing information sources among smallholder vegetable farmers. International Journal of Vegetable Science, Volume 26, Issue 1, pp-96-105.**
- Yaseen A., Nazir M., Sabah A., Tayyaba S., Khan Z.A., Ashraf M.W., Ahmad M.O. (2020) **Dimensionality reduction for internet of things using the cuckoo search algorithm: Reduced implications of mesh sensor technologies. Wireless Communications and Mobile Computing, Volume 2020, Art No 8897026.**
- Landicho J.A., Esichaikul V., Sasil R.M. (2020) **Comparison of predictive models for hospital readmission of heart failure patients with cost-sensitive approach. International Journal of Healthcare Management, pp 1-6.**
- Apipoonyanon C., Szabo S., Kuwornu J.K.M., Ahmad M.M. (2020) **Local participation in community forest management using theory of planned behaviour. evidence from Udon Thani Province, Thailand. European Journal of Development Research, Volume 32, Issue 1, pp 1-27.**
- Rana I.A., Routray J.K., Younas Z.I. (2020) **Spatiotemporal dynamics of development inequalities in Lahore City Region, Pakistan. Cities, Volume 96, Art No 102418.**
- Bridi E., Schmitt J., Anderson R., de Andrade D.F., Paladini E.P. (2020) **Method to evaluate quality of service in the hotel industry in the age of the fourth industrial revolution. Key Challenges and Opportunities for Quality, Sustainability and Innovation in The Fourth Industrial Revolution: Quality and Service Management In The Fourth Industrial Revolution - Sustainability And Value Co-creation, pp 153- 176**
- Srinonil S., Nitivattananon V., Noithammaraj P., Nitorisavut R. (2020) **Tourism governance for coastal urbanization and environment with changing climate on Koh Chang Island, Thailand. GMSARN International Journal, Volume 14, Issue 2, pp 82-88**
- Wongpun S., Guha S. (2020) **Caregivers for the elderly in Thailand: development and evaluation of an online support system. Information Development, Volume 36, Issue 1, pp 112- 127.**

- Kongsilp S., Dailey M.N. (2020) **User behavior and the importance of stereo for depth perception in fish and virtual reality. Presence: Teleoperators and Virtual Environments, Volume 27, Issue 2, pp 206-225.**
- Arshad H.S.H., Routray J.K. (2020) **Multi-functional urban greening: A policy review assessing the integration of urban agriculture into the urban planning system of Punjab province, Pakistan. Advances in Science, Technology and Innovation, pp 103-111.**

INFRASTRUCTURE

From the publications available from SCOPUS database in 2020, below is the list of publications that fall under "Infrastructure".

- DiBiagio E., Myrvoll F., Balasubramaniam A.S., Jayasiri J.M.N.S., Aas G., Oh E. (2020) **Deliberate failure of slurry trench excavations in soft clay. Geotechnical Engineering, Volume 51, Issue 4, pp 209- 223**
- Rodsin K., Hussain Q., Joyklad P., Nawaz A., Fazliani H. (2020) **Seismic strengthening of nonductile bridge piers using low-cost glass fiber polymers. Bulletin of the Polish Academy of Sciences: Technical Sciences, Volume 68, Issue 6, pp 1457-1470**
- Bergado D.T., Chaiyaput S., Artidteang S., Nguyen T.N. (2020) **Microstructures within and outside the smear zones for soft clay improvement using PVD only, Vacuum-PVD, Thermo-PVD and Thermo-Vacuum-PVD. Geotextiles and Geomembranes, Volume 48, Issue 6, pp 828- 843.**
- Pookpant S., Ongsakul W., Madhu N. (2020) **A comprehensive techno-economic analysis for optimally placed wind farms. Electrical Engineering, Volume 102, Issue 4, pp 2161-2179**
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- Pandiselvam R., Kaavya R., Jayanath Y., Veenuttranon K., Lueprasitsakul P., Divya V., Kothakota A., Ramesh S.V. (2020) **Ozone as a novel emerging technology for the dissipation of pesticide residues in foods—a review. Trends in Food Science and Technology, Volume 97, pp 38- 54**
- Hussain T., Tan B., Murtaza G., Liu G., Rahu N., Saleem Kalhoro M., Hussain Kalhoro D., Adebowale T.O., Usman Mazhar M., Rehman Z.U., Martínez Y., Akber Khan S., Yin Y. (2020) **Flavonoids and type 2 diabetes: Evidence of efficacy in clinical and animal studies and delivery strategies to enhance their therapeutic efficacy. Pharmacological Research, Volume 152, Art No 104629**
- Szabo S., Nove A., Matthews Z., Bajracharya A., Dhillon I., Singh D.R., Saares A., Campbell J. (2020) **Health workforce demography: A framework to improve understanding of the health workforce and support achievement of the Sustainable Development Goals. Human Resources for Health, Volume 18, Issue 1, Art No 7**
- Hussain T., Murtaza G., Yang H., Kalhoro M.S., Kalhoro D.H. (2020) **Exploiting anti-inflammation effects of flavonoids in chronic inflammatory diseases. Current Pharmaceutical Design Volume 26, Issue 22, pp 2610- 2619**
- Samarasinghe S.M., Parnichkun M. (2020) **Pitch and Roll Control of an Active Omni-Wheeled Unicycle using LQR and Sliding Mode Controller. 2020 59th Annual Conference of the Society of Instrument and Control Engineers of Japan, SICE 2020, pp 1317- 1323**
- Singh G.D., Nallam N. (2020) **An RF Choke-Less Class e Power Amplifier. IEEE Transactions on Circuits and Systems II: Express Briefs, Volume 67, Issue 11, Art No 8957694, pp 2422- 2426**

WATER-ENERGY-FOOD

From the publications available from SCOPUS database in 2020, below is the list of publications that fall under "Water-Energy-Food".

- Ranjith S., Shivapur A.V., Shiva Keshava Kumar P., Hiremath C.G., Dhungana S. (2020) **Water quality assessment of River Tungabhadra, India. Nature Environment and Pollution Technology, Volume 19, Issue 5, pp 1957-1963**
- Le T.D., Phasupan P., Nguyen L.T. (2020) **Antimicrobial photodynamic efficacy of selected natural photosensitizers against food pathogens: Impacts and interrelationship of process parameters. Photodiagnosis and Photodynamic Therapy, Volume 32, Art No - 102024**
- Xue B., Wang G., Xiao J., Tan Q., Shrestha S., Sun W., Liu T.(2020) **Global evapotranspiration hiatus explained by vegetation structural and physiological controls. Ecological Engineering, Volume 158, Art 1No06046**
- Nayak P.K., Chandrasekar C.M., Sundarsingh A., Kesavan R.K. (2020) **Effect of in-vitro digestion on the bio active compounds and biological activities of fruit pomaces. Journal of Food Science and Technology, Volume 57, Issue 12, pp 4707- 4715**
- Khalili M.R., Asadi M.E., Torkashvand A.M., Pazira E. (2020) **Regression Analysis for Yield Comparison of Saffron as Affected by Physicochemical Properties of the Soil, Case Study in Northeast of Iran. Agricultural Research, Volume 9, Issue 4, pp 568- 576**
- Sahu M., Sar S.K., Dewangan R., Baghel T. (2020) **Health risk evaluation of uranium in groundwater of Bemetara district of Chhattisgarh state, India. Environment, Development and Sustainability, Volume 22, Issue 8, pp 7619- 7638**
- Punyakaew S., Parnichkun M. (2020) **Vibration energy harvesting for low frequency using auto-tuning parametric rolling pendulum under exogenous multi-frequency excitations. Theoretical and Applied Mechanics Letters, Volume 10, Issue 6, pp 448- 455**
- Ferdous Z., Ullah H., Datta A., Attia A., Rakshit A., Molla S.H. (2020) **Application of Biogas Slurry in Combination with Chemical Fertilizer Enhances Grain Yield and Profitability of Maize (Zea Mays L.) Communications in Soil Science and Plant Analysis, Volume 51, Issue 19, pp 2501- 2510**
- Mahmud H., Roy J. (2020) **Sustainable energy sector for fast growing economy like Bangladesh: How relevant are the past asian precedents? International Energy Journal, Volume 20, pp 381- 393**
- Roy J., Mahmud H., Assadi M., Iman N., Nikpey H. (2020) **Moving beyond gas: Can Bangladesh leapfrog and make the energy transition just by exploring the role of geothermal energy and gas infrastructure? International Energy Journal, Volume 20, pp- 395- 410**
- Rahman K.F., Pal I., Parven A. (2020) **Energy security and disaster risk governance in energy sector of Bangladesh. International Energy Journal, Volume 20, pp 523- 534**
- Udmale P., Pal I., Szabo S., Pramanik M., Large A. (2020) **Global food security in the context of COVID-19: A scenario-based exploratory analysis. Progress in Disaster Science, Volume 7, Art No 100120**
- Rahi M.L., Ferdusy T., Wali Ahmed S., Khan M.N., Aziz D., Salin K.R. (2020) **Impact of salinity changes on growth, oxygen consumption and expression pattern of selected candidate genes in the orange mud crab (Scylla olivacea). Aquaculture Research, Volume 51, Issue – 10, pp 4290- 4301**
- Alam A., Ullah H., Attia A., Datta A. (2020) **Effects of Salinity Stress on Growth, Mineral Nutrient Accumulation and Biochemical Parameters of Seedlings of Three Citrus Rootstocks. International Journal of Fruit Science, Volume20, Issue 4, pp 786- 804**

- Rodthong W., Kuwornu J.K.M., Datta A., Anal A.K., Tsusaka T.W. (2020) **Factors Influencing the Intensity of Adoption of the Roundtable on Sustainable Palm Oil Practices by Smallholder Farmers in Thailand. Environmental Management**, Volume-66, Issue 3, pp 377- 394
- Oechaiyaphum K., Ullah H., Shrestha R.P., Datta A. (2020) **Impact of long-term agricultural management practices on soil organic carbon and soil fertility of paddy fields in Northeastern Thailand. Geoderma Regional**, Volume 22, Art No- e00307
- Chaweewat P., Singh J.G. (2020) **An electricity price interval forecasting by using residual neural network. International Transactions on Electrical Energy Systems**, Volume30, Issue 9, Art No e12506
- Shrestha M., Manandhar S., Shrestha S. (2020) **Forecasting water demand under climate change using artificial neural network: A case study of Kathmandu Valley, Nepal. Water Science and Technology: Water Supply**, Volume 20, Issue 5, pp1823-1833
- Ali M., Khan S.J., Mehbub Malik S., Shahzad H.M.A., Visvanathan C. (2020) **Up-concentration of wastewater to maximize biogas potential: A step towards positive energy wastewater treatment. Journal of Water Process Engineering**, Volume 36, Art No 101246
- Kanagasingham S., Ekpanyapong M., Chaihan R. (2020) **Integrating machine vision-based row guidance with GPS and compass-based routing to achieve autonomous navigation for a rice field weeding robot. Precision Agriculture**, Volume 21, Issue 4, pp 831- 855
- Jinda K., Koottatep T., Chaiwong C., Polprasert C. (2020) **Performance evaluation of novel attached-growth high-rate algal pond system with additional artificial illumination for wastewater treatment and nutrient recovery. Water Science and Technology**, Volume 82, Issue 1, pp 97- 106
- Kunlasubpreedee P., Visvanathan C. (2020) **Performance Evaluation of Membrane-Aerated Biofilm Reactor for Acetonitrile Wastewater Treatment. Journal of Environmental Engineering (United States)**, Volume 146, Issue 7, Art No 04020055-1
- Singh D.R., Ghimire S., Jeffers E.M., Singh S., Nath D., Szabo S. (2020) **Food insecurity among senior citizens in high out-migration areas: Evidence from Western Nepal. BMC Nutrition**, Volume6, Issue 1, Art No -31
- Mohanasundaram S., Udmale P., Shrestha S., Baghel T., Doshi S.C., Narasimhan B., Suresh Kumar G. (2020) **A new trend function-based regression kriging for spatial modeling of groundwater hydraulic heads under the sparse distribution of measurement sites. Acta Geophysica**, Volume68, Issue 3, pp -751-772
- Kumar S.R., Sadiq M.B., Anal A.K (2020) **Comparative study of physicochemical and functional properties of pan and microwave cooked underutilized millets (proso and little). LWT**, Volume128, Art No 109465
- Adhikari R.K., Mohanasundaram S., Shrestha S. (2020) **Impacts of land-use changes on the groundwater recharge in the Ho Chi Minh city, Vietnam. Environmental Research**, Volume 185, Art No 109440
- Babel M.S., Shinde V.R., Sharma D., Dang N.M. (2020) **Measuring water security: A vital step for climate change adaptation. Environmental Research**, Volume 185, Art No - 109400
- Molnár V.É., Simon E., Tóthmérész B., Ninsawat S., Szabó S. (2020) **Air pollution induced vegetation stress – The Air Pollution Tolerance Index as a quick tool for city health evaluation. Ecological Indicators**, Volume 113, Art No-106234
- Sarker N.K., Salam P.A. (2020) **Design of batch algal cultivation systems and ranking of the design parameters. Energy, Ecology and Environment**, Volume 5, Issue 3, pp 196- 210
- Ullah H., Giri S., Attia A., Datta A. (2020) **Effects of establishment method and water management on yield and water productivity of tropical lowland rice. Experimental Agriculture**, Volume 56, Issue -3, pp – 331-346
- Li S., Chen X., Singh V.P., Qi X., Zhang L. (2020) **Tradeoff for water resources allocation based on updated probabilistic assessment of matching degree between water demand and water availability. Science of the Total Environment**, Volume 716, Art No 134923

- Bouzidi Z., Faysse N., Kuper M., Billaud J.-P. (2020) **Investigating the invisible roots of a prevailing narrative of farmers' failed collective action in Morocco.** *Journal of North African Studies*, Volume 25, Issue -3, pp 342- 362
- Dong Y., Chi Y., Xiong K. (2020) **Does grass-covered soil system guarantee better water retention in Southwest China during winter-to-spring? The observing evidence from lab.** *Fresenius Environmental Bulletin*, Volume 29, Issue 5, pp 3622-3632
- Chuenchart W., Logan M., Leelayouthayotin C., Visvanathan C. (2020) **Enhancement of food waste thermophilic anaerobic digestion through synergistic effect with chicken manure.** *Biomass and Bioenergy*, Volume 136, Art No-105541
- Raungrusmee S., Shrestha S., Sadiq M.B., Anal A.K. (2020) **Influence of resistant starch, xanthan gum, inulin and defatted rice bran on the physicochemical, functional and sensory properties of low glycemic gluten-free noodles.** *LWT*, Volume 126, Art No- 109279
- Santiago-Arenas R., Fanshuri B.A., Hadi S.N., Ullah H., Datta A. (2020) **Nitrogen fertiliser and establishment method affect growth, yield and nitrogen use efficiency of rice under alternate wetting and drying irrigation.** *Annals of Applied Biology*, Volume 176, Issue 3, pp 314-327
- Shrestha S., Neupane S., Mohanasundaram S., Pandey V.P. (2020) **Mapping groundwater resiliency under climate change scenarios: A case study of Kathmandu Valley, Nepal.** *Environmental Research*, Volume 183, Art No 109149
- Sahu M., Sar S.K., Baghel T., Dewangan R. (2020) **Seasonal and geochemical variation of uranium and major ions in groundwater at Kanker district of Chhattisgarh, central India.** *Groundwater for Sustainable Development*, Volume 10, Art No 100330
- Unni A.C., Ongsakul W., Madhu M. N. (2020) **Fuzzy-based novel risk and reward definition applied for optimal generation-mix estimation.** *Renewable Energy*, Volume 148, pp 665- 673
- Diwan V., Sar S.K., Biswas S., Baghel T., Dewangan R. (2020) **Occurrence of Uranium in Groundwater of Kabirdham, Central India.** *Radiochemistry*, Volume 62, Issue 3, pp 424- 431
- Hemker A.K., Nguyen L.T., Karwe M., Salvi D. (2020) **Effects of pressure-assisted enzymatic hydrolysis on functional and bioactive properties of tilapia (*Oreochromis niloticus*) by-product protein hydrolysates.** *LWT*, Volume 122, Art No 109003
- Hlaing S.A.A., Sadiq M.B., Anal A.K. (2020) **Enhanced yield of *Scenedesmus obliquus* biomacromolecules through medium optimization and development of microalgae based functional chocolate.** *Journal of Food Science and Technology*, Volume 57, Issue- 3m pp 1090- 1099
- Anal A.K., Perpetuini G., Petchkongkaew A., Tan R., Avallone S., Tofalo R., Nguyen H.V., Chu-Ky S., Ho P.H., Phan T.T., Waché Y. (2020) **Food safety risks in traditional fermented food from South-East Asia.** *Food Control*, Volume 109, Art No 106922
- Anal A.K., Waché Y., Louzier V., Laurent R., Mens F., Avallone S., Mahakarnchanakul W., Udompjitkul P., Tantikitti C., Nguyen T.B.T., Thao P.P., Nguyen T.M.T., Nguyen H.M.X., Thong K., Seingheng H., Schleining G., Linder L.F., Scippo M.-L., 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*, Volume 109, Art No 106913
- Chaudhary R., Tong Y.W., Dikshit A.K. (2020) **Kinetic study of nutrients removal from municipal wastewater by *Chlorella vulgaris* in photobioreactor supplied with CO₂-enriched air.** *Environmental Technology (United Kingdom)*, Volume 41, Issue 5, pp 617- 626
- Zhai Y., Xia X., Yang G., Lu H., Ma G., Wang G., Teng Y., Yuan W., Shrestha S. (2020) **Trend, seasonality and relationships of aquatic environmental quality indicators and implications: An experience from Songhua River, NE China.** *Ecological Engineering*, Volume- 145, Art No 105706

- ⊙ Babel M.S., Oo E., Shinde V.R., Kamalamma A.G., Haarstrick A. (2020) **Comparative study of water and energy use in selected automobile manufacturing industries.** *Journal of Cleaner Production*, Volume 246, Art No 118970
- ⊙ Haque H.M.E., Dhakal S., Mostafa S.M.G. (2020) **An assessment of opportunities and challenges for cross-border electricity trade for Bangladesh using SWOT-AHP approach.** *Energy Policy*, Volume 137, Art No 111118
- ⊙ Thapa S.P., Shrestha S., Anal A.K. (2020) **Addressing the antibiotic resistance and improving the food safety in food supply chain (farm-to-fork) in Southeast Asia.** *Food Control*, Volume 108, Art No 106809
- ⊙ Kyi S., Taparugssanagorn A. (2020) **Wireless sensing for a solar power system.** *Digital Communications and Networks*, Volume 6, Issue 1, pp 51-57
- ⊙ Han Q., Tong R., Sun W., Zhao Y., Yu J., Wang G., Shrestha S., Jin Y. (2020) **Anthropogenic influences on the water quality of the Baiyangdian Lake in North China over the last decade.** *Science of the Total Environment*, Volume 701, Art No 134929
- ⊙ Fang Q., Wang G., Liu T., Xue B., Sun W., Shrestha S. (2020) **Unraveling the sensitivity and nonlinear response of water use efficiency to the water–energy balance and underlying surface condition in a semiarid basin.** *Science of the Total Environment*, Volume 699, Art No 134405
- ⊙ Bhujel R.C., Jha D.K., Anal A.K. (2020) **Effects of probiotic doses on the survival and growth of hatchlings, fry, and advanced fry of Rohu (*Labeo rohita* Hamilton).** *Journal of Applied Aquaculture*, Volume 32, Issue 1, pp - 34- 52
- ⊙ Shrestha M., Shrestha S., Shrestha P.K. (2020) **Evaluation of land use change and its impact on water yield in Songkhram River basin, Thailand.** *International Journal of River Basin Management*, Volume 18, Issue 1, pp 23- 31
- ⊙ Boonyapakdee A., Bhujel R.C. (2020) **Determining the dose of dietary probiotic (*Bacillus licheniformis*) for the nursing of blue swimming crabs (*portunus pelagicus*, L., 1758).** *Turkish Journal of Fisheries and Aquatic Sciences*, Volume 20, Issue 12, pp 889- 899
- ⊙ Kuwornu J.K.M., Moreno M.L., Martey E. (2020) **Assessment of the factors influencing the export of coconut from the Philippines.** *International Journal of Value Chain Management*, Volume 11, Issue 4, pp 366 -388
- ⊙ Pussayanavin T., Koottatep T., Dinh L.M., Khamyai S., Sangchun W., Polprasert C. (2020) **Organic matter, solid and pathogen removals from black water in a pilot-scale solar septic tank 2020 Applied Environmental Research**, Volume 42, Issue 2, pp 74- 83
- ⊙ Kacan K., Tursun N., Ullah H., Datta A. Barnyardgrass (*Echinochloa crus-galli* (L.) P. Beauv.) (2020) **Resistance to acetolactate synthase-inhibiting and other herbicides in rice in Turkey.** *Plant, Soil and Environment*, Volume 66, Issue 7, pp 357-365
- ⊙ Sarker N.K. (2020) **Effect of concentration, circulation rate, stages, pressure, and temperature of pure glycols on natural gas dehydration performance and sales gas characteristics.** *Petroleum and Coal*, Volume 62, Issue -2, pp 477- 502
- ⊙ Arshad M., Nawaz R., Ahmad S., Shah G.A., Faiz F., Ahmad N., Irshad M.A., Ranamukhaarachchi S.L. (2020) **Growth, yield and nutritional performance of sweet sorghum and legumes in sole and intercropping influenced by type of legume, nitrogen level and air quality.** *Polish Journal of Environmental Studies*, Volume 29, Issue 1, pp 533- 543
- ⊙ Sun W., Jin Y., Yu J., Wang G., Xue B., Zhao Y., Fu Y., Shrestha S. (2020) **Integrating satellite observations and human water use data to estimate changes in key components of terrestrial water storage in a semi-arid region of North China.** *Science of the Total Environment*, Volume 698, Art No 134171
- ⊙ Khumsap T., Nguyen L.T. (2020) **Molecularly imprinted polymer composites for detecting toxic contaminants in agricultural products.** *Molecularly Imprinted Polymer Composites: Synthesis, Characterization and Applications*, pp 309- 344
- ⊙ Dasgupta S., Das N., Roy J. (2020) **Index decomposition analysis of energy use in India.** *Contemporary Issues in Sustainable Development: The Case of India*, pp 126- 145

- ⊙ Thu K.S., Ongsakul W. (2020) **Simulation of Blockchain based Power Trading with Solar Power Prediction in Prosumer Consortium Model. Proceedings of the 2020 International Conference and Utility Exhibition on Energy, Environment and Climate Change, ICUE 2020, Art No 9307086**
- ⊙ Pramanik M., Pal I., Szabo S., Udmale P., Rana M.J. (2020) **A Systematic Analysis of Vietnam's Province Level Household Energy Security Status and its Implication for Sustainable Development Goals. Proceedings of the 2020 International Conference and Utility Exhibition on Energy, Environment and Climate Change, ICUE 2020, Art No 9307112**
- ⊙ Tempa U., Singh J.G. (2020) **Assessment of Solar Energy Potential using GIS and AHP approach: A Case Study of Bumthang Valley. International Conference on Electrical and Electronics Engineering, ICEE 2020, Art No 9122948, pp 705-710**
- ⊙ Somalaraju K., Singh J.G. (2020) **Enhancement of Power Generation from Electromagnetic Scavenging Tile. 2020 International Conference on Power Electronics and IoT Applications in Renewable Energy and its Control, PARC 2020, Art No 9087142, pp 405- 410**
- ⊙ Nontapot T., Giao P.H. (2020) **A study on seawater intrusion using a tank model and mini- electric imaging measurements. 3rd Asia Pacific Meeting on Near Surface Geoscience and Engineering**
- ⊙ Hussain M.A., Tajima Y., Taguchi Y., Gunasekara K. (2020) **Tidal characteristics affected by dynamic morphology change in the Meghna estuary. Proceedings of the 7th International Conference on Asian and Pacific Coasts, APAC 2013, pp – 187- 197**
- ⊙ Jumber M.B., Assefa E., Tilahun S.A., Babel M.S. (2020) **Developing domestic water security index in urban cities, Bahir Dar City, Ethiopia. Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Tele-communications Engineering, LNICST 308 LNICST, pp 113- 125**
- ⊙ Samakpong T., Ongsakul W., Nimal Madhu M. (2020) **Optimal Power Flow Considering Cost of Wind and Solar Power Uncertainty Using Particle Swarm Optimization. Advances in Intelligent Systems and Computing, Volume 1072, pp 190- 203**
- ⊙ Belton B., Little D.C., Zhang W., Edwards P., Skladany M., Thilsted S.H. (2020) **Farming fish in the sea will not nourish the world. Nature Communications, Volume 11, Issue 1, Art No 5804**
- ⊙ Moreno M.L., Kuwornu J.K.M., Szabo S. (2020) **Overview and Constraints of the Coconut Supply Chain in the Philippines. International Journal of Fruit Science, Volume 20, Issue S2, pp S524- S541**
- ⊙ Aye Cho T.-Z., Sadiq M.B., Srichana P., Anal A.K. (2020) **Vitamin D3 enhanced intestinal phosphate cotransporter genes in young and growing broilers. Poultry Science, Volume 99, Issue 4, pp 2041- 2047**
- ⊙ Viridis S.G.P., Soodcharoen N., Lugliè A., Padedda B.M. (2020) **Estimation of satellite-derived lake water surface temperatures in the western Mediterranean: Integrating multi-source, multi-resolution imagery and a long-term field dataset using a time series approach. Science of the Total Environment, Volume 707, Art No 135567**
- ⊙ Shanmugam M., Suresh Kumar G., Narasimhan B., Shrestha S. (2020) **Effective saturation-based weighting for interblock hydraulic conductivity in unsaturated zone soil water flow modelling using one-dimensional vertical finite-difference model. Journal of Hydroinformatics, Volume 22, Issue 2, pp 423- 439**
- ⊙ Yang M., Sharma D. (2020) **The Spatiality and Temporality of Electricity Reform: A Comparative and Critical Institutional Perspective. Energy Research and Social Science, Volume60, Art No 101327**
- ⊙ Pradhan P., Tingsanchali T., Shrestha S. (2020) **Evaluation of Soil and Water Assessment Tool and Artificial Neural Network models for hydrologic simulation in different climatic regions of Asia. Science of the Total Environment, Volume 701, Art No 134308**
- ⊙ Dubey S.K., Sharma D., Babel M.S., Mundetia N. (2020) **Application of hydrological model for assessment of water security using multi-model ensemble of CORDEX-South Asia experiments in a semi-arid river basin of India. Ecological Engineering, Volume 143, Art No 105641**

- Chaikaew N., Pimmasarn S., Prommarin N., Usiri P., Sanguanserm Sri K. (2020) **Alcohol consumption in spatial dimension. International Journal of Geoinformatics, Volume 16, Issue 4, pp 81- 87**
- Vo H.N.P., Le G.-K., Nguyen T.M.H., Nguyen T.-T., Nguyen T.-B., Tra V.-T., Bui X.-T. (2020) **Influence of N/COD ratios and nitrogen forms on aerobic granulation in sequencing batch airlift reactor. Desalination and Water Treatment, Volume 174, pp 90- 97**
- Ahamed Nahid F., Ongsakul W., Madhu Manjiparambil N. (2020) **Very Short-Term Wind Speed Forecasting Using Convolutional Long Short-Term Memory Recurrent Neural Network. Proceedings of the 2020 International Conference and Utility Exhibition on Energy, Environment and Climate Change, ICUE 2020, Art No 9307061**
- Koottatep T., Connelly S., Pussayanavin T., Khamyai S., Sangchun W., Sloan W., Polprasert C. (2020) **Solar septic tank': Evaluation of innovative decentralized treatment of blackwater in developing countries. Journal of Water Sanitation and Hygiene for Development, Volume 1, Issue 4, pp 828- 840**
- Xue W., Lhaetee H., Yu S., Jenkhetkan T., Hong B., Liu X., Chen P., Namngam N., Tabucanon A.S. (2020) **Spatial and temporal variability of sedimentary nutrients in relation to regional development in the urbanizing lower Chao Phraya watersheds of Thailand. Journal of Soils and Sediments, Volume 20, Issue 11, pp 4042- 4054**

PUBLICATIONS (2021)

The following lists the total 383 publications available from SCOPUS database for 2021 that fall under five thematic research areas. Out of all publications in 2021, below is the list of publications that fall under Climate Change.

CLIMATE CHANGE

- Buaban S., Nitivattananon V., Shrestha S., Szabo S. (2021) **Exploring the Factors Associated with Climate-Related Issues in a Special Economic Development Zone: Application of a DPSIR Framework. International Journal of Sustainable Development and Planning, volume 16, issue-8, pp- 1529- 1540**
- Hlaing W.W., Szabo S., Cooper G.S. (2021) **Hydropower Impacts on Livelihood Capital: Evidence from the Resettlement of the Upper Paunglaung Hydropower Project, Myanmar. Asian International Studies Review, volume – 22, Issue- 2, pp- 189-216.**
- Dang N.A., Benavidez R., Tomscha S.A., Nguyen H., Tran D.D., Nguyen D.T.H., Loc H.H., Jackson B.M. (2021) **Ecosystem service modelling to support nature-based flood water management in the vietnamese mekong river delta. Sustainability (Switzerland), Volume- 13, Issue-24, Art No- 13549.**
- Subhani R., Saqib S.E., Rahman M.A., Ahmad M.M., Pradit S. (2021) **Impact of cyclone yaas 2021 aggravated by covid-19 pandemic in the southwest coastal zone of Bangladesh. Sustainability (Switzerland), volume- 13, Issue- 23, Art no-13324.**
- Khadka D., Babel M.S., Shrestha S., Virdis S.G.P., Collins M. (2021) **Multivariate and multi-temporal analysis of meteorological drought in the northeast of Thailand. Weather and Climate Extremes, Volume- 34, Art no- 100399.**
- Shrestha R.P., Qasim S., Bachri S. (2021) **Investigating remote sensing properties for soil salinity mapping: A case study in Korat province of Thailand. Environmental Challenges, Voume-5, Art no-100290.**
- Shrestha S., Bae D.-H., Hok P., Ghimire S., Pokhrel Y. (2021) **Future hydrology and hydrological extremes under climate change in Asian river basins. Scientific Reports, Volume- 11, Issue- 1, Art no- 17089.**

- ⊙ Bindhu V.M., Smitha P.S., Narasimhan B., Annamalai H., Srinivasan G. (2021) **Koppen–Trewartha climate classification as a diagnostic tool to identify pronounced changes in the projected climate by the General Circulation Models over India. International Journal of Climatology, Volume- 41, Issue-15, pp-6616-6639.**
- ⊙ Neupane S., Shrestha S., Ghimire U., Mohanasundaram S., Ninsawat S. (2021) **Evaluation of the CORDEX regional climate models (RCMs) for simulating climate extremes in the Asian cities. Science of the Total Environment, Volume- 797, Art no- 149137.**
- ⊙ Zam P., Shrestha S., Budhathoki A. (2021) **Assessment of climate change impact on hydrology of a transboundary river of bhutan and India. Journal of Water and Climate Change, Volume- 12, Issue- 7, pp- 3224-3239.**
- ⊙ Lugovoy O., Jyothiprakash V., Chatterjee S., Sharma S., Mukherjee A., Das A., Thakur B., Some S., Dinesha D.L., Das N., Bosu P., Padhi L., Roy B., Debsarkar A., Patil B., Dasgupta S., Roy J. (2021) **Towards a zero-carbon electricity system for india in 2050: Idea model-based scenarios integrating wind and solar complementarity and geospatial endowments. Energies, Volume- 14, Issue-21, Art no-7063.**
- ⊙ Ghimire U., Shrestha S., Neupane S., Mohanasundaram S., Lorphensri O. (2021) **Climate and land-use change impacts on spatiotemporal variations in groundwater recharge: A case study of the Bangkok Area, Thailand. Science of the Total Environment, Volume-792, Art no-148370.**
- ⊙ Abatan A.A., Collins M., Babel M.S., Khadka D., De Silva Y.K. (2021) **Assessment of the Ability of CMIP6 GCMS to Simulate the Boreal Summer Intraseasonal Oscillation Over Southeast Asia. Frontiers in Climate, Volume-3, Art no- 716129.**
- ⊙ Pathak M., Roy J., Patel S., Some S., Vyas P., Das N., Shukla P. (2021) **Communicating climate change findings from IPCC reports: insights from outreach events in India, 2021. Climatic Change, Volume-168, Issue- 4-Mar, Art no-23.**
- ⊙ Babel M.S., Gunathilake M.B., Jha M.K. (2021) **Evaluation of ecosystem-based adaptation measures for sediment yield in a tropical watershed in Thailand. Water (Switzerland), Volume- 13, Issue- 19, Art no- 2767.**
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PUBLICATIONS (2022)

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TECHNOLOGY, POLICY, AND SOCIETY

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