ASEAN NEXT 2019 Super Smart Community

Transformation of STI and Indigenous Knowledge to SDGs

Contents

Ministry of Science and Technology Thailand

The Ministry of Science and Technology (MOST) is presently tasked with forwarding the policy and strategic plan for science, technology and innovation and seeing to its effective and substantive implementation, both in terms of research and development as well as in terms of creating cooperative mechanisms between all sectors of society, with a view to promoting economic benefits and enhancing quality of life. Under the vision of "excelling as the steward or main organization in the development of science, technology and innovation" the Ministry of Science and Technology aims to

create and enrich the intellect of Thai society, in a manner that will support economic and social development and sustainable competitiveness.

There are 16 important supporting agencies to assist in this respect, namely the government agencies, autonomous agencies, state enterprises, and public organizations, which all come under the structure of Ministry of Science and Technology. For more information, please visit http://www.most.go.th/main/en/

Hydro and Agro Informatics Institute

Science and Technology for Sustainable Water Resources Management

Hydro and Agro Informatics Institute (HAII), is a public organization under Ministry of Science and Technology, Thailand. Focusing on research and promoting the usage of informatics in Thailand, the institute aims to develop and apply science and technology knowledge of water resource management at all levels including policy and community practitioners. With a goal to enhance their partners to be climate change and disaster risk resilience, HAII also expand its collaboration and accomplishment on integrated water resource management nationally and internationally. For more information, please visit www.haii.or.th

In 2011, HAII has established a central ICT platform to integrate online hydro-meteorological information from 37 agencies in Thailand and provide services so called **National Hydroinformatics and Climate Data Center (NHC)** www.thaiwater.net to collect and analyze Thailand data for decision support and water-related crisis management operation.

ASEAN Hydroinformatics Data Centre (AHC) is HAII initiative endorsed by ASEAN Committee on Science, Technology, and Innovation (ASEAN COSTI) to promote the implementation of hydroinformatics and related S&T for efficient water management and disaster risk reduction within ASEAN. AHC will create a platform for information and knowledge sharing and collaboration in collecting, integrating good practices of STI action for sustainability among ASEAN. www.aseanwater.net

Transformation of STI and Indigenous Knowledge to SDGs:
2019 Super Smart Community

The forum on "Transformation of STI and Indigenous Knowledge to SDGs: 2019 Super Smart Community" is a part of ASEAN NEXT 2019: Technology Driven for Community Happiness. This forum will introduce the role of Science, Technology, and Innovation (STI) implementation to achieve the 2030 Agenda for Sustainable Development.

This forum will bring together key stakeholders – ASEAN Member States (AMS), government agencies, international organizations, private sectors, academia, youth and civil society – to share, inspire and create new idea for a better integration solution from all sectors.

Introduction

T he 2030 Agenda for Sustainable Development is the integration of sustainable development on economic, social and environmental dynamics to eradicate poverty, achieve sustainable development and ensure no one is left behind.

In the past decades, humankind has faced many extreme events, especially climate and geographic disasters. These caused the substantial damage to property and threaten human life. The usage of STI including data –based and data analysis become significant for climate change resilience and sustainable development.

STI is a driven factor behind changes in the past centuries. It is a tool to handle climate change and global challenges such as disaster resilience and sustainability which leads to achieving development, improving the standard of living, and ensuring life security in urbanization period. On the other hand, indigenous knowledge from all areas can be applied with STI to strengthen the effectiveness of communty –based resilience in common geography.

This forum will mainly focus on sharing knowledge and experience of STI combining with indigenous knowledge from theory into action and expand for benefit of all. It will present effective management from Top-down approach (Policy to Community level) and Bottom-up approach (Community to Policy level) which will concentrate on the local actor and local action.

Purpose

To promote integration of STI, SMART Community and Sustainability from the success stories towards Sustainable Development Goals (SDGs)

Expected Outcomes

1. Integration of STI towards SDGs in both policy and implementation level
2. STI for SDGs Networking
3. Provisional integration project to support SDGs

Agenda

Transformation of STI and Indigenous Knowledge to SDGs: 2019 Super Smart Community
Date: Tuesday 19 March 2019
Venue: Pullman King Power Hotel, Bangkok

Time	Programs
08:30 – 09:00	Registration
	Opening Ceremony
09:00 – 09:20	Opening Remarks from Vice Permanent Secretary, Ministry of Science and Technology (MOST), Thailand)
09:20 – 09:30	Photo Session
09:30 – 10:50	**Session 1: Role of STI for SDG 13 – Climate Action** Moderator: Dr. Kanoksri Sarnnapakorn (HAII), Head of Climate and Weather Section, Hydro and Agro Informatics Institute (HAII), Thailand Panelists: ● **WMO Contributions to SDG 13: Climate Action** By Dr. Chung Kyu Park, Director, Regional Office for Asia and the South-West Pacific, World Meteorology Organization ● **Co–benefit and contribution to sustainable development goals of Vietnam's Vietnam Climate Change Response actions** Dr. Lieu – Nguyen Thi , Vietnam Institute of Meteorology, Hydrology and Climate Change (IMHEN), Vietnam ● **"Ichi–Nichi–Mae (The Day Before the Disaster)" Project for Inheriting Modern Indigenous Knowledge for Disaster Awareness** By Dr. Satoru Nishikawa, Professor, Disaster Mitigation Research Center, Nagoya University, Japan ● **Science and Technology in Action: Thailand Case Study** By Dr. Sutat Weesakul, Director, Hydro and Agro Informatics Institute
10:50 – 11:10	Coffee Break
11:10 – 12:30	**Session 2: Role of STI for SDG 2 – Zero Hunger** Moderator: Ms. Pakarat Danusatianpong, Director of Community Water Resource Management Division, Hydro and Agro Informatics Institute (HAII), Thailand

Time	Programs
11:10 – 12:30	Panelists: • **Digital Agriculture: Trends and Challenges** By Mr. Gerard Sylvester, Knowledge and Information Management Officer, Food and Agriculture Organization of the United Nations (FAO) • **Bajamba ; Application To Improve Food Security and Achieve No Hunger In Sustainable Development Goals** By Kangen Drivama, Andalas University, Indonesia • **Sustainable Agricultural Production in the 21st Century** By Dr. Seishi Ninomiya, The University of Tokyo, Japan • **Toward Sustainable Agriculture with Agri–Map** By Dr. Noppadon Khiripet, Lab Head, Knowledge Elicitation and Archiving Lab, National Electronics and Computer Technology Center (NECTEC),Thailand
12:30 – 14:00	Lunch
14:00 – 15:20	**Session 3: Role of STI for SDG 11 – Sustainable Cities and Communities** Moderator: Dr. Royboon Rassameethes, Deputy Director, Hydro and Agro Informatics Institute (HAII), Thailand Panelists: • **Smart Cities and SDGs** By Mr. Taimur Khilji, United Nations Development Programme • **Thai Government Role in Smart City Development** By Dr. Passakon Prathombutr, Senior Executive Vice President, Digital Economy Promotion Agency (DEPA), Thailand • **Roles of Private Sectors on Development of Sustainable City** By Dr. Pattanapong Topark–ngarm, College of Local Administration, Khon Kaen University, Thailand
15:20 – 16:00	**Session 4: New Initiative Project on STI for SDGs** 1. Sustainable Development's City for Better Livelihood 2. Water Energy Innovations and Cleaner Production of Tea for Sustainable Community Development on Highland Area
16:00 – 16:20	**Interactive coffee break between participants and New Initiative Project Presenters**
16:20 – 16:30	**Vote for the New Initiative Project Selection**
16:30 – 17:00	**Closing session** – Summary – Announcement of the New Initiative Project – Closing Remarks
18:00	**Dinner hosted by HAII**

SUSTAINABLE DEVELOPMENT G🔆ALS

1 NO POVERTY

End poverty in all its form everywhere

2 ZERO HUNGER

End hunger, achieve food security and improved nutrition and promote sustainable agriculture

3 GOOD HEALTH AND WELL-BEING

Ensure healthy lives and promote well-being

4 QUALITY EDUCATION

Ensure inclusive and equitable quality education and promote life long learning opportunities for all

5 GENDER EQUALITY

Achieve gender equality and empower all women and girls

6 CLEAN WATER AND SANITATION

Ensure availability and sustainable management of water and sanitation for all

7 AFFORDABLE AND CLEAN ENERGY

Ensure access to affordable, reliable, sustainable, and modern energy for all

8 DECENT WORK AND ECONOMIC GROWTH

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Build resilient infrastructure,promote inclusive and sustainable industrializa tion and foster innovation

10 REDUCED INEQUALITIES

Reduce inequality within and among countries

11 SUSTAINABLE CITIES AND COMMUNITIES

Make cities and human settlements inclusive, safe, resilient and sustainable

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Ensure sustainable consumption and production patterns

13 CLIMATE ACTION

Take urgent action to combat climate change and its impacts

14 LIFE BELOW WATER

Conserve and sustainably use the oceans, seas and marine resources for sustainable development

15 LIFE ON LAND

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forest, combat desertification, and halt and reverse land degradation and halt biodiversity loss

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

17 PARTNERSHIPS FOR THE GOALS

Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

SUSTAINABLE DEVELOPMENT GOALS

Goal 13 Climate Action

Take action to stop climate change and its impacts from getting worse.

Climate change is a global challenge that does not respect national borders. There is no country in the world that is not experiencing first-hand the drastic effects of climate change. Greenhouse gas emissions continue to rise, and are now more than 50% higher than their 1990 level. Further, global warming is causing long-lasting changes to our climate system, which threatens irreversible consequences if we do not take action now.

It is an issue that requires solutions that need to be coordinated at the international level to help developing countries move toward a low-carbon economy.

Facts and figures

+1°C
As of 2017, humans are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels.

+20 cm
Global sea levels have risen by about 20 cm since 1880 and are projected to rise another 30–122 cm by 2100.

2050
To limit warming to 1.5C, global net CO2 emissions must drop by 45% between 2010 and 2030, and reach net zero around 2050.

1/3
Climate pledges under The Paris Agreement cover only one third of the emissions reductions needed to keep the world below 2°C.

$26 trillion
Bold climate action could trigger at least US$26 trillion in economic benefits by 2030.

18 million
The energy sector alone will create around 18 million more jobs by 2030, focused specifically on sustainable energy.

WMO Contributions to SDG-13: Climate Action

WMO is the co-custodian of Goal 13 on climate action. The WMO community's challenge is to provide decision-makers with the scientific facts and analyses they need to adapt to climate change impacts and build climate resilience. WMO is firmly committed to supporting the Paris Agreement on climate change and to help guide valuable emission-reduction actions as per "nationally determined contributions." In addition to hosting the Intergovernmental Panel on Climate Change (IPCC), the World Climate Research Programme (WCRP) and the Global Climate Observing System (GCOS), WMO is promoting international action and cooperation on climate change by establishing Regional Climate Centres (RCCs) and Regional Climate Outlook Forums (RCOFs). WMO Contribution to SDG-13 is based on the results based framework and mechanism through the Global Framework for Climate Services (GFCS), the Climate Services Information System and the Multi-Hazard Early Warning System.

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Keyword:
Climate Service, Climate Action, Sustainable Development Goals

Co–benefit and contribution to sustainable development goals of Vietnam's Vietnam Climate Change Response actions

The analysis of climate benefits of climate change responses shows that GHG emission mitigation actions impacts on climate change adaptation (2.6) are lower than vice versa climate change adaptation actions for GHG emission mitigation actions (2.9). The climate change mititgation actions of the LULUCF sector have the largest contribution to the climate change adaptation while Climate change adaptation actions in Agriculture and Rural Development sector have the greatest contribution to the climate change mititgation.

In addition, the results of co-benefits assessment between climate change mitigation actions bring benefits in terms of not only climate change adaptation benefits but also socio–economic development benefits and vice versa (synergy benefits) and the greatest synerg benefits of GHG mitigation actions come from the field of LULUCF (3.6). Regardings climate change adaptation actions, the largest synerg benefit is on the Agriculture and Rural Development sector, which is also rated at an average level (2.4).

The greatest contribution of GHG mitigation actions in NDC to SDGs is on Goal 17 "To strengthen the ability to implement and renew the global partnership for sustainable development". The greatest contribution of climate change adaptation actions in NDC to SDGs is on Goal 13 " To take timely and efficisent action to combat climate change and natural hazards " and Objective 11 " To make urban and rural areas resilient and sustainable; ensure safe living and working environment; reasonable allocation of residents and laborers by region" From the above analysis results, the implementation of actions to respond to climate change is important and necessary, helping Vietnam implement its commitments on climate change with the international community. Assessing the benefits of climate change adaptation actions also provides a scientific basis to promote domestic and foreign business investment activities for climate change, contributing to the benefits of Climate change response and promote socio–economic development in a green and sustainable direction in Vietnam.

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"Ichi-Nichi-Mae (The Day Before the Disaster)" Project for Inheriting Modern Indigenous Knowledge for Disaster Awareness

Numerous educational materials have been developed to raise public awareness on disasters in Japan. However, it has been often the case that these materials are not seriously accepted by adults and have not led to preventive action. To address this issue, a new program; **'Ichi–Nichi–Mae (the Day before the Disaster) Project'** for Disaster Awareness was initiated by the author in 2005. This program interviews people who have been seriously affected by a major disaster, by posing the question 'What would you do if you were back the day before the disaster?' and edits the most impressive personal short stories which give clues for future preventive action. These stories have been used for disaster awareness seminars and have proven to be effective. This methodology is being introduced to JICA's various training courses on disaster reduction by the author and have proven to be easily understandable and accepted as a method to extract modern indigenous knowledge.

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Keyword:
disaster awareness,
storytelling, educational
material, indigenous
knowledge, international
cooperation

Science and Technology in Action: Thailand Case Study

Climate change is the global challenge which has no borders. Urgent action to tackle this global issues required collaboration across sectors. Science and societytechnology is one of the key communities that can contribute their knowledge to this challenge. In Thailand, Hydro and Agro Informatics Institute (HAII) is one of the agencies provided S&T knowledge in the form of hydroinformatics to support decision making during crisis and development work during normal operation. Early this year, Thailand's east coast was hit by Tropical Storm Pabuk. There were many concerns it will be the repeat of tropical storm Harriet which killed 900 people in 1962. However, precise early warning from government sectors and prompt early action either from government or local authorities/ communities helped ensure the storm passed Thailand with limited loss of life. According to Thailand's Disaster Prevention and Mitigation Department, Pabuk affected 212,784 people across 2,635 villages in 18 provinces, but only seven people were reportedly killed. Modern technologies which provide 1-week early warning can stimulate early action which resulted in the decrease of disaster losses. There are totally 7 routine models running during this storm and their products are used to narrow down possible and type.and type. disaster location This improves effective resources management/ allocation and more systematic approach in area base. In normal operation, HAII introduced the use of S&T to local community such as monitoring system, water balance analysis, New Theory agriculture (integrated agriculture), identification of check dam location by GPS receivers, and land use map. This operation enables HAII to receive information from community during crisis situation.

The action of S&T for both top-down and bottom-up approach will consequently reduce disaster risk and develop sustainability.

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Keyword:
S&T, climate, hydroinformatics, early warning, early action, disaster risk reduction

Goal 2 Zero Hunger

Stop people going hungry, make sure everyone can get the good, healthy food they need and use ways of growing food that will work into the future.

This SDGs aim to end all forms of hunger and malnutrition by 2030, making sure all people – especially children – have access to sufficient and nutritious food all year round. This involves promoting sustainable agricultural practices: supporting small scale farmers and allowing equal access to land, technology and markets. It also requires international cooperation to ensure investment in infrastructure and technology to improve agricultural productivity. Together with the other goals set out here, we can end hunger by 2030.

Facts and figures

795 million

One in nine people in the world today is undernourished; that's 795 million people.

67%

Asia is the continent with the most hungry people, two thirds of the total.

1 in 4

A quarter of children suffer from stunted growth. In some developing countries, it's as high as one in three.

40%

Agriculture is the world's largest employer, providing livelihoods for 40 percent of the global population.

150 million

If women farmers had the same access to resources as men, the number of hungry people in the world could be reduced by 150 million.

75%

Since the 1900s, some 75 percent of crop diversity has been lost from farmers' fields.

Digital Agriculture: Trends and Challenges

While many stakeholders acknowledge the need for e-agriculture strategies, most countries are yet to adopt a strategic approach in making the best use of ICT developments in agricure. E-agriculture strategies will help to rationalize resources (financial and human) and address holistically, the ICT opportunities and challenges for the agricultural sector in a more efficient manner while generating new revenue streams and improve the livelihoods of the rural community as well as ensure the goals of the national agriculture master plan are achieved.

The existence of e-agriculture strategy and its alignment with other government plans will prevent e-agriculture projects and services from being implemented in isolation. The **Food and Agriculture Organization (FAO)** with their domain knowledge in agriculture and in the use of emerging technologies for food security, agriculture, and rural development and the **International Telecommunication Union (ITU)** the lead UN specialized agency on ICTs, have come together to develop an e-agriculture strategy guide and also to assist countries to develop their national e-agriculture strategy/ master plan based on the guide.

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Keyword:
Agriculture, E-agriculture, Digital Agriculture, ICT4AG, ICT4D, SDGS, Livelihoods, Strategy

The E-agriculture Strategy Guide is available at:
http://www.fao.org/3/a-i5564e.pdf

Bajamba ; Application To Improve Food Security and Achieve No Hunger In Sustainable Development Goals

Based on Global Hunger Index, Indonesia experiences serious rate of hunger with score 22.0. Millions people reported have malnutrition, 13 of 100 children gain stunting body, and 2-3 of 100 children in Indonesia died before 5 years old. In responding hunger problem, author generates inovative application called Bajamba. Bajamba is social media application which connects the society in order to achieve No Hunger. It refers to conceptual framework of sharing economy and food security where it enables society to share their surplus food to institution and people in need. Bajamba has 3 main features ; (1) Food Donation, (2) Collective purchasing, and (3) Communication Action Forum. Through these main features, Bajamba aims to improve food security components both food utilization and food entitlement.

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Keyword:
Bajamba, No Hunger, SDGs,

Sustainable Agricultural Production in the 21st Century

Agricultural production in the 21st needs to achieve both its productivity and sustainability, having learned the lessons from that of the 20th century which was rather successful in terms of its productivity but left several drawbacks regarding sustainability. While solving several issues such as biodiversity, environmental pollution, GHG emission, limited arable land, water shortage, too much energy use, climatic change, food loss and waste, we need to provide sufficient, safe and quality food. Such production will fully contribute to SDGs. In addition to zero hunger (Goal 2) and healthy life (Goal 3), food production is related to all of the other goals as a basis of human life. It is an extremely complex problem to realize such sustainable agricultural production. This presentation will discuss how ICT should contribute to achieve such production.

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Keyword:
Smart farming, AI, ICT, SDGs, sufficient and quality food

Toward Sustainable Agriculture with Agri-Map

Promoting sustainable agriculture with technologies and fair management can improve food security, end hunger and malnutrition of our population that is now one of the great challenges of our time. Here, Thailand's Agricultural Map for Adaptive Management (Agri-Map) for sustainable land use planning is presented. It is operating and serving Thai government's policy makers and farmers nationwide for better crop options by matching between crops and capability of farmland (land suitability) along with economics and logistics factors. It serves official and accurate information as a key tool for decision makers to implement management policies.

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Keyword:
Agricultural Map, Adaptive Management, SDG2

Goal 11 Sustainable Cities and Communities

Make cities and other places people live safer, more inclusive and ready for the future.

Extreme poverty is often concentrated in urban spaces. National and city governments struggle to accommodate the rising population in these areas. Making cities safe and sustainable means ensuring access to safe and affordable housing, and upgrading slum settlements. It also involves investment in public transport, creating green public spaces, and improving urban planning and management in a way that is both participatory and inclusive.

Facts and figures

3.5 billion

3.5 billion people, half of the world's population, live in cities. By 2050, the urban population is expected to reach 6.5 billion.

3%

Cities occupy just 3 percent of the Earth's land but account for 60 to 80 percent of energy consumption and 75 percent of carbon emissions.

883 million

Currently 883 million people live in slums, and the number is rising.

28

In 1990, there were 10 cities with 10 million inhabitants or more; by 2014, the number of "mega–cities" had reached 28.

95%

In the coming decades, 95 percent of urban expansion will take place in the developing world.

1.2 billion

1.2 billion jobs depend on a healthy and stable environment.

Smart cities and SDGs

This presentation will introduce UNDPs work on smart cities and emphasize the linkage with SDGs. It will then delve into a few initiatives that UNDP has been leading in the region.

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Keyword:
Cities, tech, ASEAN, SDGs, Private Sectork

Thai Government Role in Smart City Development

To drive the SDG 11 "Sustainable cities and communities", the Thai government has initiated the smart city development strategic plan with the goal of 77 smart cities within five years and acted as the facilitator. This session will share the experience of how the Thai government facilitate the private sector and make a sustainable smart city development with a showcase in Phuket city. The strategic activities like the smart city award, the city data platform, the citizen engagement program, the funding mechanism, and the national policy will be introduced. Lastly, this session will discuss the role of ASEAN countries in the ASEAN Smart City Network (ASCN) and the plan in the future.

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Roles of Private Sectors on Development of Sustainable City

The partnership between private sectors, higher educational institutions and public sectors in Khon Kaen has shown a new model for a city development. Khon Kaen becomes the first province in Thailand to have Smart City program, "Khon Kaen 2029", put in the province's strategic plan. With all three sectors working together, Khon Kaen is able to develop one of the biggest transportation projects in the Northeast, "Light Rail Transit (LRT)" to be a driving vehicle toward Sustainable City.

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Keyword:
Sustainable City, City Development, Khon Kaen Model

New Initiative Project on "STI and Indigenous Knowledge for SDGs"

The New Initiative Project on "STI and Indigenous Knowledge for SDGs" provides opportunity for new project idea for Sustainable Development Goals with collaboration from ASEAN and Japan. The initiative focus on the transformation of "Science, Technology and Innovation (STI)" or "Indigenous Knowledge" to one of the following SDGs :

WON :
PROJECT STARTING FUND OF
US $ 15,000
(500,000 THB)

SEE YOU IN BANGKOK...

FOCUS AREA

2 ZERO HUNGER

11 SUSTAINABLE CITIES AND COMMUNITIES

13 CLIMATE ACTION

Take part in the voting and give the most support to your favorite candidate!!!

1

Project on Sustainable Development's City for Better Livelihood By

- **Thailand:** Phrae Community, Maejo University (Phrae Campus), and Hydro and Agro Informatics Institute
- **Lao PDR:** National University of Laos (Dongdok Campus)
- **Japan:** The National Agricultural and Food Research Organisation (NARO)

2

Water Energy Innovations and Cleaner Production of Tea for Sustainable Community Development on Highland Area

- **Thailand:** Faculty of Engineering and Technology, North–Chiang Mai University, Chiang Mai
- **Lao PDR:** Department of Technology and Innovation
- **Japan:** The University of Tokyo

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