



# ASEAN Innovation Roadmap & Bioeconomy Forum in Conjunction with GBS 2020

20 November 2020

## PLENARY SESSION: SUSTAINABLE BIOECONOMY : ECOSYSTEMS & BIODIVERSITY UTILIZATION

**Description:** This session will address ecosystem services in ASEAN, related to the conservation and utilization of natural ecosystems, for example, ocean, forest, and wildlife ecosystem. Role of multi-stakeholders and regional cooperation, both in policy & regulation alignment and science & innovation collaboration in building a more sustainable ecosystem benefit to both community and social levels will be illustrated.

09:00-09:15

### Overview of Ecosystem & Biodiversity Utilization in ASEAN



Prof. Dr. Padermsak Jarayabhand  
Chulalongkorn University, Thailand

Comprising of 10 countries i.e. Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam, ASEAN is endowed with rich biological resources. Its land area is about 3% of global land area and marine area is about 2-3 times of its land areas. 3 out of 24 mega-diverse country are ASEAN Member Countries namely Indonesia, Malaysia, and the Philippines and 4 of the world's 34 biodiversity hotspots are within the region.

At the level of ecosystem, terrestrial, coastal and marine ecosystems play important roles in provisioning, regulating, protecting, and supporting the basic elements of life support system or known as ecosystem services. These ecosystem services have enhanced the livelihood of people in ASEAN for a long time. At species diversity level, there are 54,370 reported species, (Animal 30,618; Plant 17,849) excluding bacteria and archaea. It is generally accepted that these figures are underestimated. There is very limited information at genetic diversity level in the ASEAN region. Both species diversity and genetic diversity required further studies with appropriate techniques.

These biological resources are also being utilized directly and indirectly for social and economic development. Based on the aforementioned information, ASEAN member countries has been dependent on biological resources for their well-being long before the establishment of ASEAN and even now as ASEAN is transforming into one community.

ASEAN member countries have utilized ecosystem and biodiversity extensively to fulfill **social need** in the past and intensively to fulfill **social want** at present. This changes from extensive to intensive use of resources has resulted in consistently biodiversity loss at all levels (ecosystem, species, and genetic levels). The impact of human activities are habitat change, climate change, introduction of invasive species into the region, overexploitation of resources, and pollution and poverty. This implies that keeping on the

business as usual patterns of ecosystem and biodiversity utilization are no longer possible. And new approaches have to be discovered, invented and applied appropriately in order to achieve sustainability.

Bioeconomy, Circular economy, Green economy, and blue economy are possible solutions and required further cooperation and collaboration at all levels within ASEAN through existing mechanisms such as COST<sup>1</sup> and ASOEN<sup>2</sup>. In addition ASEAN can cooperate with dialogue partners for the implementation of bioeconomy through the framework of ASEAN+1 (with 10 dialogue partners: Australia, Canada, EU etc.), ASEAN+3 and East Asia Summit

<sup>1</sup>ASEAN Committee on Science and Technology

<sup>2</sup>ASEAN Senior Officials on the Environment

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09:15-09:45

### Transforming Seafood Industry to a Sustainable Bioeconomy



Dr. Tunyawat Kasemsuwan  
Thai Union Group PCL, Thailand

Over the past few years, awareness of global warming and its related implications has grown and consumers have responded by demonstrating increasing concern in caring for our world's limited resources in a proactive manner. Consumer expectations have evolved accordingly to effect real change, manufactures are now not only responsible for delivering a quality product but also for ethical and responsible stewardship of our shared environment. Thai Union Group is the global leader for Seafood, we are more than a brand leader – we are a leader of sustainability, a leader of change. Part of that change is to ensure that our world's limited resources are utilized to their fullest potential while preserving natural nutritional values.

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09:45-10:15

### Quantitative, Edible and Wealthy Conservation by the co-operation of Charoen Pokphand Group and Hua-sai Local Fishery Association



Dr. Atip Asvanund  
CP Group, Thailand

With significant operations in the agro-food industry, which relies on the abundance of marine resources, Charoen Pokphand Group (C.P. Group), recognizes its responsibility towards the marine environment. We take part in the conservation and restoration of marine resources along the Gulf of Thailand and the Andaman Sea coasts through the “SEACOSYSTEM: For Sustainable Thai Sea” initiative, which seeks to enhance marine sustainability through:

1. Development of sustainable business model and policy throughout the supply chain
2. Enhancing economic resilience and quality of life for coastal communities
3. Protection and enhancement of marine ecosystems, via mangrove forest rehabilitation, artificial coral reefs and fish habitats, and engaging communities to conserve and promote sustainable utilization of marine resources
4. Enrichment of marine species abundance and diversity through breeding programs
5. Research and development in sustainable fishery and marine resources management

Through these efforts, we aim to restore marine ecosystem balance, generate income for local communities and improve quality of life. We can only succeed through working closely with local stakeholders to build consensus and work towards a common goal.

For Example, C.P. Group have partners with local fishery community in Hua Sai District (Nakhon Sri Thammarat Province) in order to find the proper methods in conservation and bring back vanishing marine resources in their area. The co-operation executes various techniques such as developing an Innovative Automatic Aquatic Hatchery System and creating a Reusable Fish Aggregating Device to accelerate the rehabilitation and creation of marine ecosystems which leading to sustainable profession for fishermen and improve the livelihoods of fishing communities in the Thai seas.

When there are bountiful marine resources in the vicinity of local fishermen residence leading to more catches, therefore, the local fishermen look forward to add more value to their marine catches, gaining more control on selling price, evading the middlemen which would help local income distribution, creating more local jobs, conserving marine resources along with improving the community way of life in reciprocal. From this, Marine catches were processed under “Roi Yim Chao Lay” brand, focusing on doing community business in the way of “Social Enterprise”. Analysing local problems in order to define goals for better local fishermen quality of life, leading to sustainable self-reliance compassionate with the idea of “Quantitative Conservation, Edible Conservation, Wealthy Conservation”

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10:15-10:45

### Ecosystem Services of Pattani Bay, Thailand; Multi-Value to the Local People



Assoc. Prof. Dr. Sukree Hajisamae  
Prince of Songkla University, Pattani Campus, Thailand

Ecosystem service is defined as a wide range of conditions and processes through which natural ecosystems, and the species that are part of them, help sustain and fulfil human life. Four different services are proposed including supporting, provisioning, regulating and cultural. Pattani bay, a semi-enclosed 55 km<sup>2</sup> coastal habitat in southern Thailand, is long known for its biodiversity richness and heavily utilized its bioeconomy services by different activities including fishing (provisioning service), coastal aquaculture (supporting service) and industries (supporting service). However, the nature of service has been changed for the last couple of year due to changes of ecosystem, regulation and human interest. The economy based on fishing, coastal aquaculture and industry has dramatically decreased and the cultural service is found risen significantly. To drive the local economy, there is an effort from various agencies to concentrate more on supporting and cultural services than that of the provisioning service by utilizing multi-

dimensional value of resources. This includes promoting eco-tourism in the bay, creating infrastructure for tourism, searching for new spots or valuable animals as a new destination, culturing of new species of aquatic organisms that can promote, not destroy, mangrove habitat. To do this some recommendation is proposed including amendment of laws and regulations, provide appropriate infrastructure and educate local people to value ecological services.

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11:00-11:30

### ASEAN Perspective on Microbial Bioprospecting: The Prospects and Challenges of Microbial Communities



Prof. Antonius Suwanto  
IPB University, Indonesia

Microbes and viruses have been around for almost as long as the history of earth. They have co-evolved in line with earth development, and they have made essentially all plants and animals as their habitats. The microbiomes of plant, animal, and human become important factors that define the health and happiness as well as the sustainability of our planet. The world 2020 economy essentially collapsed due to a virus - responsible for Covid 19 pandemic. Therefore, we need to have more understanding on the network and interactions of microbial communities, not just on individual isolates. Because most microbes could not be cultivated, it is essential to conduct in situ preservation including cultural conservation. Moreover, the rich ASEAN forests, ocean, or food are not just sources of matter and energy. They are also sources of microbes responsible for human health, welfare, and the beauty of environment. Mutual and solid collaborations among ASEAN members should be paramount importance to conserve and wisely utilize their potential microbiomes.

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11:30-12:00

### Unsustainable Consumption of the Natural Forests and the Wildlife of Southeast Asia



Assoc. Prof. Dr. George Andrew Gale  
King Mongkut's University of Technology Thonburi (KMUTT), Thailand

The forests and wildlife of Southeast Asia are undergoing massive declines due to unsustainable practices within nearly all the countries in the region. During the past 20 years it is now well documented that mainland Southeast Asia has lost at least 50% of its forest cover. Most of this loss is essentially permanent and can be attributed primarily to commodity production (e.g., palm oil, rubber and wood fiber); and despite corporate commitments, the rate of deforestation due to commodity production has not declined since 2001. Meanwhile, wildlife from tigers to lowland forest specialist birds are undergoing steep population declines due to a combination of unsustainable hunting and forest loss. Several species are at immediate risk of global extinction with little or no chance for even captive breeding in zoos. Urgent solutions are needed, and they

will need to come from multiple stakeholders: (1) local communities who are enabled to protect and sustainably manage their local resources, (2) from national governments who set sustainable and enforceable agricultural policies, (3) corporations who maintain rigorous accountability of their supply chains and (4) consumers who place a premium on conserving the natural world.

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12:00-12:15

### Wrap up & Closing



Prof. Dr. Padermsak Jarayabhand  
Chulalongkorn University, Thailand