



# 5TH IORA BLUE CARBON HUB THINK TANK MEETING NATURE, BIODIVERSITY AND CARBON MARKETS FOR SUSTAINABLE MANAGEMENT OF COASTAL ECOSYSTEMS

**10-12 September 2024**

**Co-hosted with the Department of Marine and Coastal Resources,  
Kingdom of Thailand**

## FINAL REPORT



## Table of contents

1.1	RECOMMENDATIONS:	3
1.2	BACKGROUND	4
1.3	DAY 1	5
1.4	INAUGURATION	5
1.5	KEYNOTE: SIRIPORN SRIARAM, NATURE-POSITIVE FINANCE, MANAGING DIRECTOR, BLUE RENAISSANCE	6
1.6	SESSION 1: WHY DO WE NEED NATURE FINANCE AND WHAT ARE THE OPTIONS?	7
1.6.1	ALESSANDRO VALENTINI, WHY DO WE NEED NATURE FINANCE AND WHAT ARE THE OPTIONS?, WORLD ECONOMIC FORUM	7
1.6.2	DR RADHIKA BHARGAVA, INTERNATIONAL BLUE CARBON POLICY FRAMEWORKS, NATIONAL UNIVERSITY OF SINGAPORE	8
1.6.3	PANEL DISCUSSION	8
1.7	SESSION 2: WHY DO WE NEED NATURE FINANCE AND WHAT ARE THE OPTIONS?	10
1.7.1	SIRIPORN SRIARAM, POLICY RECOMMENDATIONS FOR EFFECTIVE IMPLEMENTATION OF THE BIODIVERSITY PLAN, BUSINESS FOR NATURE	10
1.7.2	JAMIE YEO, WHY DO WE NEED FINANCE AND WHAT ARE THE OPTIONS?, IORA INDIAN OCEAN BLUE CARBON HUB	10
1.7.3	PUNLOP INTHANIN, THAILAND VOLUNTARY EMISSION REDUCTION PROGRAMME (T-VER), THAILAND GREENHOUSE GAS ORGANISATION	11
1.8	SESSION 3: TRAINING BY RADHIKA BHARGAVA, NATIONAL UNIVERSITY OF SINGAPORE	13
1.9	<b>DAY 2</b>	14
1.10	KEYNOTE: JESSICA NOVIA, CARBON ETHICS	14
1.11	SESSION 3: EXAMPLES OF NATURE FINANCE IN PRACTICE	15
1.11.1	ERNAWATI APRIANI, FOREST CARBON: SCALING COASTAL MANGROVE AND MARINE PROTECTION IN WEST PAPUA	15
1.11.2	AMY MUMO, KENYA MARINE AND FISHERIES RESEARCH INSTITUTE: BUILDING MARINE ECOSYSTEM SERVICES- A CASE FOR VANGA BLUE FOREST	15
1.11.3	ANCHANA PRATHEP, PRINCE OF SONGKLA UNIVERSITY: EXAMPLES OF NATURE FINANCE IN PRACTICE	16
1.11.4	WILL HAMILL, GREAT BARRIER REEF FOUNDATION: EXPLORING NATURE FINANCE FOR SEAGRASS RESTORATION ON THE GREAT BARRIER REEF	16
1.11.5	KYLIE MORTIZ, THE NATURE CONSERVANCY: BLUE CARBON COAST RESTORATION IN AUSTRALIA	17
1.12	SESSION 4: MEASURING NATURE	18
1.12.1	ANDY STEVEN, CSIRO: PRINCIPLES AND TOOL FOR MEASURING AND REPORTING IN NATURE, BIODIVERSITY AND CARBON MARKETS	18
1.12.2	GEMASAKTI ADZAN, WORLD RESOURCES INSTITUTE: NBS TOOL	19
1.12.3	VEDA FITZSIMONS, POLLINATION: NATURE FINANCE	20
1.13	ANNEXURES	I
	ANNEXURE A: LIST OF PARTICIPANTS	I
	ANNEXURE B: PROGRAMME	III
	ANNEXURE C: REMARKS	V

5<sup>th</sup> IORA Blue Carbon Hub think tank meeting on “Nature, biodiversity and carbon markets for sustainable management of coastal ecosystems

### **1.1 RECOMMENDATIONS:**

The final session was dedicated to an open discussion session, including breakout groups and a plenary. Four main questions were asked, with delegates requested to provide recommendations against each:

1. What policies can enable investment?
2. What policies can reduce barriers to investment?
3. What training and capacity building is needed?
4. What tools or methods for measurement and verification do we need?

The responses have been synthesised, together with recommendations made during the previous sessions, and distilled into a set of recommendations. This has been divided into recommendations that can be further developed through IORA, and those which are most appropriately developed by individual countries, perhaps in partnership with IORA or other countries.

Actions that can be progressed through IORA

- Training and capacity building, including on:
  - standards, financing and methodologies for carbon and nature
  - technical aspects of Measurement, Reporting and Verification (MRV), spatial data and remote sensing
- Develop a toolkit for accesses to finance
- Hold a regional dialogue
  - Possibly with nominated organisations acting as focal points for each Member State
- Support development of
  - advanced spatial analysis, artificial intelligence & remote sensing technology
  - less labour intensive and more cost-effective methods
  - models
  - digital databases
  - tools on non-carbon benefits (e.g. remote sensing for biodiversity)
- Support blue carbon project development
- Support ocean literacy programs

Actions that can be progressed by Member States

- Address gaps in governance including policies that clarify legal rights for carbon and nature
- Develop a regulatory environment to enable nature-based solutions, including mandatory reporting of nature-related impacts and dependencies on nature
- Partner to provide catalytic capital, technical assistance and capacity building
- Engage with and improve global environmental agreements
- Develop policies that support implementation of high integrity methods
- Clarify responsibilities among departments and reduce overlap
- Support assessments of baseline

The text from all the recommendations was entered into a word cloud generator to provide a sense of the themes that were discussed. This is the resulting word cloud.



## 1.2 BACKGROUND

Mangroves, seagrasses and tidal marshes (often referred to as ‘blue carbon ecosystems’) play a significant role in Earth’s carbon cycle. These ecosystems also support food security and livelihoods, including by supporting fisheries and tourism. They absorb and sequester carbon dioxide, underpinning an important role in climate change mitigation. They also offer potential solutions to help coastal communities adapt to the effects of climate change and reduce the risks of extreme events.

17 Member States attended the 5th IORA Blue Carbon Hub think tank meeting on “Nature, biodiversity and carbon markets for sustainable management of coastal ecosystems”, which was held on 10-12 September 2024 in Phuket, Thailand. The meeting was jointly organised by the IORA Blue Carbon Hub, in collaboration with the Thailand Department of Marine and Coastal Resources and the IORA Secretariat. The meeting provided participating IORA Member States with an opportunity to learn more about the potential to use market mechanisms to finance protection and restoration and generate livelihood opportunities for coastal communities. The [programme](#) and the [list of participants](#) are annexed.

### Objectives

The objectives of this ‘think tank’ meeting were to:

- convene experts to present on the constraints to and opportunities for using market mechanisms (including nature, biodiversity and carbon markets) to support protection and restoration activities
- identify the barriers to effective and sustainable nature finance, and potential solutions to those barriers
- provide a forum where the private sector, policymakers and practitioners can engage in discussions and discuss best practices
- build awareness and capacity in nature finance in IORA
- encourage IORA Member States to think about practical extensions of the options discussed in their unique contexts, and
- exchange information about finance mechanisms and policy frameworks

5<sup>th</sup> IORA Blue Carbon Hub think tank meeting on “Nature, biodiversity and carbon markets for sustainable management of coastal ecosystems

- convene discussions about how to enable an adequate and consistent flow of finance to restoration activities that support communities and nature.

### **1.3 DAY 1**

#### **1.4 INAUGURATION**

**Moderator: Tipamat Upanoi**

On behalf of the Thailand Department of Marine and Coastal Resources, Tipamat welcomed all the participants and thanked the IORA Blue Carbon Hub for partnering with the Department for this event. She highlighted the importance of the topic, the role blue carbon ecosystems (BCE) have in carbon sequestration, supporting biodiversity and protecting coastal communities from the impacts of climate change.

#### **OPENING REMARKS BY DR PINSAK SURASWADI, DIRECTOR GENERAL THAILAND DEPARTMENT OF MARINE AND COASTAL RESOURCES**

In a video presentation, Dr Pinsak Suraswadi welcomed all the participants to the 5<sup>th</sup> IORA Blue Carbon Hub think tank meeting. As we collectively seek solutions for the challenges faced by the Indian Ocean (IO), Dr Pinsak mentioned the importance of BCE for mitigating the impacts of climate change and the opportunity that the think tank provided to leverage finance markets. He mentioned that is vital to explore innovative blue finance solutions. Our objectives are to share experiences and promote collaboration in sustainably managing blue carbon ecosystems. He highlighted how we can explore Nature-based Solutions (NbS) and ensure that the benefits reach coastal communities. Dr Pinsak thanked the IORA colleagues and IORA BC Hub for their collaboration and for organising this event. The full speech of Dr Pinsak can be accessed [here](#).

#### **OPENING REMARKS BY KIRSTEN FLETCHER, AUSTRALIAN CONSUL-GENERAL IN PHUKET, THAILAND**

Ms Kirsten welcomed all the IORA Member States and Dialogue Partners, and thanked Thailand and the IORA Blue Carbon Hub for their support in hosting the 5<sup>th</sup> think tank meeting. She mentioned that the meeting reflects the importance Australia places on IORA and close partnership with IORA and IORA Member States. She highlighted that the meeting would focus on nature and the use of natural processes to address environmental issues, nature-based solutions for coastal adaptation and potential to use market mechanisms to finance protection and restoration and generate livelihood opportunities for coastal communities. Australia attributes high importance to the protection of the oceans for future generation and supports NbS, including through the Paris Agreement, Ramsar Convention, and the Convention on Biological Diversity. The IORA Blue Carbon Hub is Australia's flagship blue carbon initiative for the Indian Ocean and the Hub is committed to the development and the promotion of blue economy with blue carbon initiatives playing an important role in environmental and livelihood needs. Since 2019, the Hub has contributed to build to knowledge and capacity to protect and restore blue carbon ecosystems (BCE) throughout the Indian Ocean, through annual think tank meetings and Early Ocean Professional Programme (ECOP), published research and reports and hosted webinars.

The Indian Ocean host a significant amount of the earth's blue carbon ecosystems. IORA Member States are responsible for the management of these ecosystems, but they are also affected by coastal hazards, and therefore they have much to gain from coastal adaptation solutions. As part of these solutions, BCE play a significant role in Earth's carbon cycle and climate change mitigation. BCE are the frontline in defence against the effects of climate change on the coasts. Through proper

5<sup>th</sup> IORA Blue Carbon Hub think tank meeting on “Nature, biodiversity and carbon markets for sustainable management of coastal ecosystems

management, we can harness this resource for protection against coastal erosion, storm surges and floods and provide coastal communities with opportunities to harvest food and earn resources and income. Australia leads the International Partnership for Blue Carbon with a wide range of partners and relevant stakeholders, who share the vision of protecting and restoring, sustainable management of BCE. This workshop provides an opportunity to engage with blue carbon experts and participants from IORA Member States. She encouraged the participants to provide concrete recommendations during the Q&A sessions and group discussions that will be useful for the IORA Working Group on Blue Economy. The full speech can be accessed [here](#).

### **WELCOME AND BACKGROUND: MAT VANDERKLIFT, IORA INDIAN OCEAN BLUE CARBON HUB**

Mat briefed the meeting about the establishment of the IORA Blue Carbon Hub and the important role of nature markets and finance in a blue economy. He stated that the common theme that binds the 23 IORA Member States is the ocean, which plays an important role in region’s prosperity. He mentioned that there is a need to rethink the ways in harvesting wealth from the ocean, including through the use of finance to protect the resources. Environmental risks, including extreme weather events, climate change, are among the greatest impacts with the year 2023 experiencing the highest temperature globally on record. This results in higher sea water temperature and sea level rise, which ultimately contributed to a wide range of risks, including inundation of coastal assets, extreme climate events, among others. The way that the Indian Ocean (IO) works makes it more vulnerable to these risks and the impacts are particularly more severe. This is because the IO is warmer compared to other oceans resulting in an increase in occurrence of more extreme events.

Globally, the state of nature, measured by the Living Planet Index, is declining. The same trend is also being seen in countries around the IO. Being dependent on nature for our day-to-day life, over half of global GDP is generated by industries dependent on ecosystem services. He highlighted that the Paris Agreement and the Global Biodiversity Framework have been signed by all IORA Member States (MS), committing them to achieve certain targets, as well as reporting obligations, such as Nationally Determined Contributions (NDC). However, finance is a barrier to achieving goals and this workshop will address the financial gaps and the ways to seek additional sources. There are many options for blue carbon finance but there are many issues that need to be considered, such as its support to sustainable livelihoods, among others. The IO MS contain half of the world’s mangroves, but they are being lost at a higher rate than elsewhere. There is a need to explore how government policy can enable effective private sector investment. Member States were requested to reflect on this question throughout the next two days and while providing recommendations. The full presentation could be accessed at:

<https://drive.google.com/file/d/1aKh2ZnwibnA-JdbijqCekZgBJ5NJ98qd/view?usp=sharing>.

### **1.5 KEYNOTE: SIRIPORN SRIARAM, NATURE-POSITIVE FINANCE, MANAGING DIRECTOR, BLUE RENAISSANCE**

Blue Renaissance (BR) has been addressing various challenges impacting on nature, such as climate change and biodiversity loss. Siriporn stated that, as per the study by the World Economic Forum (WEF), half of the world’s economy is dependent on nature. The study also suggests that \$44 trillion of economic value generation, over half the world’s total GDP, is dependent on nature and its services, and, as a result, exposed to risks from nature loss. She referred to the nature positive economy, which is a new theme to Thailand, which aims at promoting economic development, while minimising harmful impacts and maximising environmental protection by enhancing and restoring natural ecosystems. She referred to the Dasgupta Review on the Economics of Biodiversity, which found that in 2022 investments in nature-based solutions (NbS) totalled approximately \$200 billion, but finance flows to



activities directly harming nature were more than 30 times larger. According to the State of Finance for Nature report, the amount of money being invested significantly exceeds the cost of their destruction. She stated that most of the world’s top 500 companies have a climate target, but only 5% of these have one for biodiversity. Thailand is working toward addressing various target including through the Global Biodiversity Framework. She pointed out the importance of dialogue among various stakeholders, including the private sector to raise their awareness on biodiversity conservation. She explained the 30x30 goal for promoting conservation and provided detailed information on the Thailand Coalition. Thailand is working on the triple planetary crisis and toward addressing plastic pollution. She pointed out the types of blue finance instruments, such as blue bonds, blue loans, blue investment funds, carbon credits, among others, and their potential. The full presentation could be accessed at:

<https://drive.google.com/file/d/1bIVOFEvMPL-INwL-ZQL80iBaal3LSgut/view?usp=sharing>.

**Questions and Answers:**

Questions: Can human solutions be considered as NbS and carbon removal?

Answer: Yes

Question: During your approach to the private sector, what are the main challenges? How far do they care about the biodiversity in their business activity?

Answer: Companies must abide by regulations and targets applied by the government. For biodiversity, there is no regulation yet but there are for IUU fishing. There is a biodiversity act that is being developed.

**1.6 SESSION 1: WHY DO WE NEED NATURE FINANCE AND WHAT ARE THE OPTIONS?**

**1.6.1 Alessandro Valentini, Why do we need nature finance and what are the options?, World Economic Forum**

Allesandro presented environmental risks that are among the challenges that are being faced globally. He provided information on global risks tanked by severity over the short and long term and on biodiversity credits, including how these can be achieved for a more sustainable practice. There are different types of markets that are emerging for nature and biodiversity credits. He pointed out the different biodiversity credits markets, including voluntary (both regulated and non-regulated) and compliance (which are regulated). When it comes to compliance, there is a distinction between approaches used for compensation and approaches that seek a net benefit. The end users of these markets are large companies and we need to make sure that the frameworks are aligned with their strategies. There are some challenges when it comes to carbon credits and markets. For example, there are absence of an established taxonomy of the market, there are different methodologies with different metrics and measurement systems, and a lack of governance architecture and policy regulations. For blue carbon credits and biodiversity credits, integrity — in terms of governance, equity and inclusion and verification — is very important. He provided detailed information on emerging trends that are driving corporate interest in nature credits, including the drivers and the supporting conditions. He stated that the biodiversity credits is not the only finance needed to solve the biodiversity finance gaps and there are many aspects that need to be considered and included. He mentioned that there few fundamentals that need to be focused on to be able to address the gaps, and highlighted the key actions from policymakers, public finance institutions and regulators, which included actions to:

- mainstream natural capital and ecosystem accounting into policy frameworks
- develop policy drivers and regulation to underpin high integrity supply
- introduce mandatory reporting of nature-related impacts and dependencies on nature

5<sup>th</sup> IORA Blue Carbon Hub think tank meeting on “Nature, biodiversity and carbon markets for sustainable management of coastal ecosystems

- strengthen the demand signal through offtake agreements and partnerships, particularly with IPs and LCs
- work alongside MDBs and DFIs to provide catalytic capital, technical assistance and capacity building.

The full presentation can be accessed at:

<https://drive.google.com/file/d/1HARqsB7MrDhrUI2frzX68adAhnhtZdmK/view?usp=sharing>

### **1.6.2 Dr Radhika Bhargava, International Blue Carbon Policy Frameworks, National University of Singapore**

Dr Radhika explained about coastal blue carbon and the importance of blue carbon ecosystems. Detailed information was provided on BCEs as NbS in terms of protection, mitigation, restoration, and adaptation. Investing in nature is working, including mangrove protection because the rate of mangrove deforestation has reduced. However, protected areas are experiencing threats globally due to man-made actions, erosion, and extreme weather events. Mangroves play an important role in carbon sequestration. She referred to different instruments, including the Paris Agreement, and the reporting of NDC and National Greenhouse Gas Inventory. She also mentioned that IORA MS are well advanced in their NDC submissions. The types of targets that are covered in NDC include: biodiversity protection; adaptation; mitigation; and carbon sequestration. She presented the countries that include blue carbon ecosystems in their NDC and those who include blue carbon in their carbon sequestration potential. The full presentation can be accessed at: <https://drive.google.com/file/d/1dOe01ayvrsqLwo7w9286jiUHGAopmO5s/view?usp=sharing>.

### **1.6.3 Panel discussion**

Question: Most of these NDC can only be achieved through partnership. How do we move from NDC to actions?

Answer: The next step is to measure and assess blue carbon and include blue carbon ecosystems in National Greenhouse Gas Inventory.

Question: Why are there many countries that are rich in BCE that do not include blue carbon in their NDCs? Have you also studied phytoplankton and tried to consider any country that may have strong interest in phytoplankton as a carbon sink?

Answer: Indonesia is a very good example for NDC. One reason can be lack of awareness and capacity gaps. Regarding phytoplankton, this has not been considered in my study, but it can be a recommendation for the future.

Question: Current international frameworks mostly focus on protection. The financing of carbon credits is not included. How can this be addressed?

Answer: Carbon credits might be problematic because we need to focus on increasing the carbon sequestration rate instead of only protection. The Paris Agreement, which is binding, does not have a binding finance goal. It is the processes that matter. There are also targets on how to include the private sector and private sector investment.

Question: Is there any study on the impact of nuclear waste on blue carbon ecosystems?

Answer: Nuclear wastes are harmful to the marine ecosystems as a whole, but I am not aware of any study that has been done.



5<sup>th</sup> IORA Blue Carbon Hub think tank meeting on “Nature, biodiversity and carbon markets for sustainable management of coastal ecosystems

Question: You spoke to the complexity of the blue carbon credits and markets, including the metrics and methodologies, and you talked about the co-benefits. How are you working towards uniformity to solve the complexity?

Answer: We need to decide on the metrics to be used at the different steps. We tried to create a comparison on the different methodologies, looking at which kind of metrics to be used for which purpose.

Question: Is there a way of unpacking policy aspects when it relates to voluntary markets?

Answer: At this point in time there is a lot of market evolution. It takes one of the sectors to impact on changes in nature, which is land development. We need to invest in other environmental impacts. Creating more clarity on how carbon and biodiversity markets fit together, and some regulation can be helpful.

Questions: Why has been so difficult to link the government with the work that is being done and the value of biodiversity? Who do we tell the story?

Answer: I think that we all know the value of the services, but they can be difficult to measure, and we need to collectively improve. The market direction is for integrating instead of creating silos. Some biodiversity credits are also measuring carbon credits. We are already doing a lot, and we need more clarity on how to proceed.

Question: Bangladesh is more vulnerable to the impacts of climate change. You mentioned that there is USD \$2 billion of potential if some actions are taken. Clarify the actions to be taken.

Answer: Some of the points are included in the last slide of the presentation. We need to provide some regulation and incentives. Capacity building is important to increase the knowledge of coastal communities and empower them to contribute to biodiversity and BC conservation and understand the different opportunities these can provide.

Question: Is it possible for biodiversity to stand alone? In BC projects, how can we separate the benefit of carbon and biodiversity credits? There is growing opinion about the economic growth that depend on natural resources, the issues of carbon and biodiversity credits can disrupt economic growth. How can this be balanced?

Answer: There might be different contexts for biodiversity credits. It makes more sense to sell biodiversity and carbon credits together, but there might be instances where carbon credits are not possible, in which case biodiversity credits can be more appropriate. In some contexts it might make sense to merge biodiversity and carbon credits together. In terms of whether carbon and biodiversity credits can disrupt economic growth, if we don't consider that our economic growth is nature, there will be no biodiversity anymore. There might be more employment opportunities, but this will not be sustainable.

## **1.7 SESSION 2: WHY DO WE NEED NATURE FINANCE AND WHAT ARE THE OPTIONS?**

Moderator: Werachart Pengchumrus

### **1.7.1 Siriporn Sriaram, Policy Recommendations for Effective Implementation of the Biodiversity Plan, Business for Nature**

Siriporn’s presentation focused on policy recommendations for effective implementation of the Business for Nature Biodiversity Plan. She emphasised the important role of the government, through policies, legislation and incentives, to create a nature-positive economy. She mentioned that governments can:

- a) make sure businesses and financial actors protect nature and restore degraded ecosystems and governments should enable, require and incentivise business and financial actors to conserve and restore ecosystems, respecting the rights and practices of indigenous peoples and local communities
- b) ensure sustainable resource management to reduce production and consumption footprints to create a nature-positive economy and tackle the driver of nature loss, governments should enable and require businesses to transform their production and consumption models
- c) value and embed nature in all public and private decision-making and disclosure; governments should adopt measures to ensure businesses, financial institutions and consumers include the value of nature in short and long-term decision-making
- d) align all financial flows to transition to an equitable, net zero, nature-positive economy; to transform the financial system, governments should redirect all environmentally harmful subsidies and incentives that damage nature and, together with business and financial actors, increase green finance and integrate nature into mainstream finance.
- e) adopt ambitious and effective global treaties and agreements to address remaining nature loss challenges and continue to improve global environmental agreements and address gaps in governance to deliver a nature-positive future.

The different targets associated with the above recommendations were also pointed out. The full presentation can be accessed at:

[https://drive.google.com/file/d/1\\_S2s7CLiItVvYoRUCzIhO\\_QRaBHxAl5g/view?usp=sharing](https://drive.google.com/file/d/1_S2s7CLiItVvYoRUCzIhO_QRaBHxAl5g/view?usp=sharing)

#### **Questions and Answers:**

Question: How can we ensure that industries absorb the trade-off and encourage them to adopt fair pricing?

Answer: Government regulations should be enforced. We also need to educate the private sectors to take new initiatives. Financial assistance and loan can be useful for the business to transform but this should be supported by regulation.

### **1.7.2 Jamie Yeo, Why do we need finance and what are the options?, IORA Indian Ocean Blue Carbon Hub**

Jamie started her presentation by stating the finding of the IPBES report in terms of biodiversity frameworks. She mentioned that biodiversity credits are different from biodiversity offsets. She provided information about biodiversity credits and explained about additionality, mentioning that additionality is not being met in protected areas. According to Sreekal et al. (2024), deforestation continues to increase despite protection efforts. She further provided detailed information on the methodologies of measuring biodiversity credits. To better choose which biodiversity metrics to adopt, it is important to identify what are the goals the intervention is trying to achieve and then how to democratise the technology to be used and their accessibility to the coastal communities. She ended her presentation by mentioning that biodiversity credits have high potential, but we need to choose

5<sup>th</sup> IORA Blue Carbon Hub think tank meeting on “Nature, biodiversity and carbon markets for sustainable management of coastal ecosystems

the right metrics and methodologies, following which their accessibility to the coastal communities should be ensured. The full presentation can be accessed at:

[https://drive.google.com/file/d/1nWkNZIHhKrQ2tEdEoi8oHiCMp\\_EUaSoh/view?usp=sharing](https://drive.google.com/file/d/1nWkNZIHhKrQ2tEdEoi8oHiCMp_EUaSoh/view?usp=sharing)

### **1.7.3 Punlop Inthanin, Thailand Voluntary Emission Reduction Programme (T-VER), Thailand Greenhouse Gas Organisation**

Khun Punlop started his presentation by providing general information on T-VER and its objectives, which are to: promote participation for domestic voluntary GHG mitigation in Thailand; promote a domestic carbon market; and prepare readiness of all sectors for GHG mitigation commitments. He mentioned that there are two types of T-VER: (i) the standard T-VER, which was developed since 2014; and (ii) the Premium T-VER, developed since 2022, which requires additional demonstration to ensure high quality carbon credits. He further explained about T-VER carbon credits, and the project types related to renewable energy, transport, energy efficiency, CCUS, factory, waste and land use (agriculture and forestry). Detailed information was provided on the methodology for both types of T-VER, as well as the validation and verification body. He explained about the project development process for project registration and carbon credit issuance, and the project crediting period. Information on the standard and premium T-VER methodology in forestry was provided.

For the Standard T-VER projects and credits, he stated that there are 457 registered projects and 170 issued projects. He also mentioned that there are 11 registered mangrove forest projects covering 14 provinces with an expected GHG reduction of around 159,021 tCO<sub>2</sub> eq/year and 1 mangrove community forest project from one province with an expected GHG reduction of around 927 tCO<sub>2</sub> eq/year.

For Premium T-VER projects and credits, there are 4 registered projects with an expected GHG reduction of 19,517 tCO<sub>2</sub> eq/year. He ended his presentation by providing examples of Standard T-VER and Premium T-VER projects. The full presentation can be accessed at:

<https://drive.google.com/file/d/1Lla2hxyEvge-N5weEzTUs3UbZv5YR6Dg/view?usp=sharing>.

#### **Questions and Answers:**

Question: Who buys the credit?

Answer: The private sector is buying the carbon credits from our projects.

Question: Does the mangrove project generate more carbon sequestered and more value?

Answer: The carbon sequestration capability is not the same and the price for carbon is between 55-300 baht.

Question: Indonesia is trying to develop its standard target. Why do you think it is important for Thailand to develop their own standard and how can it be applied to voluntary carbon market?

Answer: For the standard, we have developed the international market in line with the Paris Agreement. Thailand has developed their own standard because there is a lot of domestic demand. T-VER has not sold their carbon to international markets.

Question: What is the cheaper and higher project and where does blue carbon sit?

5<sup>th</sup> IORA Blue Carbon Hub think tank meeting on “Nature, biodiversity and carbon markets for sustainable management of coastal ecosystems

Answer: For some project that are community-based, the price can be low, around 55 Baht but this are voluntary and flexible given and there is no fixed price.

Question: What is the national budget for Thailand for managing their own standard? How long does it take to register the project under the standard? Because it is national standard, once you have exhausted the domestic market, what next?

Answer: Thailand is trying to have a Thai standard. In the past, the government put in some money to develop the methodology but realised later realised that they require more fund. To register the project, there should be an expression of interest, for example from a company, they need to fill in the application, which takes around 60 days.

Question: Can Australia’s standard be used for international market?

Answer: Australia and Thai are the only two countries that have national voluntary mechanisms in which the private sector can purchase the credits that include blue carbon. However, those credits are internally to Australia.

Question: What is the challenge of a country having their own standards? How does the standard compare to international ones like IPCC? Is it because the plantation is young that is why the price is low?

Answer: The challenge is to get the privacy on, and a mechanism is being developed. there is good alignment between the T-VER and T-VER Premium, which is aligned to international standards.

Question: How to get the measurement for carbon stocks for mangrove and associate mangrove?

Answer: The process (sampling and measurement) will be the same, but we use species-specific equations.

Question: If we remove associate plants to allow mangrove to grow more?

Answer: We should think of the ecosystem as a whole.

Question: Were the metrics and methodologies variable?

Answer: The methodology are not quite comparable but there was some trend on habitat metrics that are being used, also species richness metrics.

### **1.8 SESSION 3: TRAINING BY RADHIKA BHARGAVA, NATIONAL UNIVERSITY OF SINGAPORE**

For this session, Dr Radhika requested participants to reflect on and discuss the following questions, following which participants from each group were requested to share the main outcomes:

1. Which blue carbon ecosystems are present in your country?
2. Which blue carbon ecosystems are most important for your country?
3. Does your country include blue carbon ecosystems in NDC?
  - a. Which ecosystems are included?
  - b. What are some of the targets?
4. Does your country include blue carbon ecosystems in GHG accounting?
  - a. Which ecosystems are included?
  - b. What kind of data/tier of data is used?
5. If blue carbon ecosystems are not included in your country’s NDC or national GHG inventory, is it interested?

Following the interactive session, Dr Bhargava explained about Greenhouse Gas National Inventory Report (GHG NIR), including the sectors of the GHG NIR, which comprise: energy; industrial processes and product use; agriculture; land use, land-use change, and forestry; and waste. In addition, she provided detailed information on the IPCC 2013 Wetland supplement, in particular specific management activities in coastal wetlands. She also described carbon accounting applied to wetlands, carbon pools as per the IPCC GPG (2003), forest change activities in Southeast Asia, emission factors, and the accuracy assessment. Needs and gaps relevant to BCE in GHG NIR, both in Asia and Oceania, were presented, referring to the example of Australia’s GHG NIR 2021. She further demonstrated how to calculate Tier 1 and Tier 2 mangrove emission, for mangrove forest deforestation, stating that Indonesia will be moving from Tier 1 to Tier 2, with 736 data across 249 sites. This is also due to the fact that Indonesia involves local university researchers, conduct field measurements and calculations, do mapping or use already mapping products, among others. In a final discussion, she requested participants to brainstorm on how nations can build capacity to incorporate BCE in their GHG NIR and move from Tier 1 to 2 or from 2 to 3 in GHG NIR reporting. The full presentation can be accessed at:

[https://drive.google.com/file/d/1ZbsL1GWxyBTWud2OT8pL4of\\_47-4YfuU/view?usp=sharing](https://drive.google.com/file/d/1ZbsL1GWxyBTWud2OT8pL4of_47-4YfuU/view?usp=sharing).

## 1.9 DAY 2

### 1.10 KEYNOTE: JESSICA NOVIA, CARBON ETHICS

Jessica provided an overview of Carbon Ethics, which was established in 2019. She emphasised on the need to engage youth in nature conservation. About 75% of young people think the future is frightening due to climate change. For Carbon Ethics, enhancing collaboration is important. Carbon Ethics is also collaborating with the World Resources Institute and several awareness and education campaigns are being organised. Eco-trips are being organised with private companies, encouraging them to make investment decisions, which is viewed as an alternative way for blue carbon financing. Integrity is another aspect that is very important. She presented case studies and current blue carbon initiatives, and shared experiences. The full presentation can be accessed at: [https://drive.google.com/file/d/1PDDDN6EwRg2T315zeOIGuaGLQVpF\\_3gA/view?usp=sharing](https://drive.google.com/file/d/1PDDDN6EwRg2T315zeOIGuaGLQVpF_3gA/view?usp=sharing).

#### Questions and Answers:

Question: What are your experiences with community engagement?

Answer: To understand their needs, including in terms of their economy, consistency and their direct benefits from mangrove.

Question: What do businesspeople invest during the eco-trips?

Answer: It is a competition whereby carbon and money are being provided, following which they will have to make investment decision. The winner is the one who reaches net zero first. We also have presentations where we build awareness on lowering carbon footprint.

Question: Are you considering working with companies?

Answer: Yes, one of the advantages is we have the network, and I have experience in the private sector. In Indonesia, there is no market yet but focus is on achieving targets. There are more ESG and more climate roadmap being developed. Investment into carbon project is not yet there.

Comment: The sustainability aspect is of great importance. The offsetting is not there yet.

Question: About the Bintan project, can you share the support of CE in supporting the dugong project. Do you have some figure on how is the impact on the coastal communities and the ecosystem?

Answer: We have carbon research going on in Bintan, which is home to dugong and the deforestation of seagrass is high. We hope to do more work on dugong and seagrass in Bintan. We calculate social return on investment, used for CSR project. Every 1\$ and the SRI is the USD 2.16. We build waste bank to address plastic pollution in mangrove. We build road as part of benefit sharing. Some of the benefits are shared with the bigger community.

Question: In terms of funding, where do you get those?

Answer: We started as a foundation. We sell blue carbon packages that help plant mangrove and fund seagrass research. The funding comes from selling the packages and we also get revenue from consulting, including policy consulting. We are also working with conservancy.



## **1.11 SESSION 3: EXAMPLES OF NATURE FINANCE IN PRACTICE**

### **1.11.1 Ernawati Apriani, Forest Carbon: Scaling coastal mangrove and marine protection in West Papua**

Ms Ernawati started her presentation by stating that Forest Carbon (FC) is funded by UBS Climate collective, IUCN Blue Accelerator Fund and in-kind contribution from FC. The fund supports the Misool Project, aiming to enhance conservation by protecting mangroves and seagrass, while developing a sustainable business model and fostering community engagement. She listed the Verra registered blue carbon projects in the world. An update on blue carbon markets for the year 2022 and 2023 and the carbon valuations of the FC was provided, showing that much work is being done on conservation. She provided an overview of the project area, Misool, that contains mangroves, seagrasses, and coral reefs. She pointed out the project partners, and project achievements, including marine reserve achievements. With regard to carbon financing, she mentioned that this year’s work has started with the coastal communities focusing on mangroves, coral reefs and seagrasses. Although mangroves are known to coastal communities, knowledge on seagrasses is limited. She also pointed out the threats to the different ecosystems. She stated that carbon credits are not a sufficient standalone revenue source due to limitations in credit generation. She presented the carbon credits potential in Misool at the different BCE and the challenges of carbon standards in Marine Protected Areas (MPA), including inter alia: challenges in meeting additionality requirements for blue carbon credits; lack of methodologies for open ocean carbon crediting; no inclusion of coral reefs in carbon credits; methodology gaps for seagrass conservation. She explained about Biodiversity Credit Measurement, which is mainly based on Ecosystem Extent Approach, and pointed out the limitations of existing crediting models, whereby existing biodiversity credit standards are poorly suited for marine ecosystems due to their terrestrial focus and strict additionality requirements that undervalue sustainably managed marine areas. Other types of financing are being explored, such as impact bonds and coral bonds. To address the gap, she recommended to go beyond carbon and through innovative marine solutions. The full presentation can be accessed at: <https://drive.google.com/file/d/1Zyzi8I7rLQPkiDECYmk1Xy21YSbMMk-g/view?usp=sharing>.

### **1.11.2 Amy Mumo, Kenya Marine and Fisheries Research Institute: Building Marine Ecosystem Services- A case for Vanga Blue Forest**

Amy briefed about Payment for Ecosystem Services (PES) projects in Kenya related to mangroves, including stock assessment, plantation experiments, valuation studies and mangrove research in Kenya. KMFRI are scaling up its current project in the Lamu archipelago, where work has already started, including mangrove forest assessment, training, and more. She provided an overview of the Vanga Blue Forest, which is impacted by habitat conversion, deforestation, and increased vulnerability to natural and climatic drivers, leading to mangrove degradation. The project is based on community engagement, whereby 16% of the total carbon income goes to community development. She stated that at the start of the trading in 2021, carbon was being sold at \$8-11 tCO<sub>2</sub>, which reached \$15-20 tCO<sub>2</sub> in 2022. She presented the Carbon Market Regulations 2024, in terms of the governance and the fees. The aim of these regulations are to: incentivize GHG emission reduction and removal; accountability of projects in GHG accounting; inform on GHG National Inventory Reports (NIRs); reduce double accounting; and compliance and voluntary markets.

She mentioned that a seagrass project is also being implemented in Vanga Bay encompassing 225 ha of seagrass, which also involves local communities from 4 villages. She provided details of the locally managed mangrove areas (LMMA) process, that includes threat identification, development of an ecological baseline, site selection, community development and engagement, LMMA governance and monitoring protocol. The selection process, based on various criteria, were explained. With regard to degradation interventions, there are gear restrictions and limited access to fishing grounds. She presented project governance in relation to mangrove/carbon related matters and seagrass/biodiversity-related matters, and the stakeholders list, that includes universities, institutions,

5<sup>th</sup> IORA Blue Carbon Hub think tank meeting on “Nature, biodiversity and carbon markets for sustainable management of coastal ecosystems

ACES, Plan Vivo, KMFRI, Kenya Wildlife Services, among others. In addition, she described the carbon plus model that would enhance carbon storage and sequestration, fisheries and coastal protection, increase project income and increase funding for community development projects. She highlighted the challenges faced in the implementation of the projects, including: changing local community perceptions; literacy levels; donor funding; capacity building; methodology and standards; and policy. She shared lessons learnt, highlighting the need to have effective community engagement, donor funding, synergising donor efforts, diversity, harmonising community developments and science-community interaction. The full presentation can be accessed at: <https://drive.google.com/file/d/1SElyVtR8l6WoiptLzFHEX7B-giUIZrI4/view?usp=sharing>.

### **1.11.3 Anchana Prathep, Prince of Songkla University: Examples of Nature Finance in practice**

Dr Anchana aims at applying the carbon research into policy. She presented Thailand’s Climate Action and mentioned that when the roadmap was developed, BCE data was limited and not included. She explained GHG mitigation mechanisms, including standards, price mechanisms, technology, fiscal policy, monitoring policy and science-based targets. For the price mechanism, she referred to the T-VER work, which has developed Thailand’s standard. Regarding Thailand’s methodology for blue carbon credits, the T-VER methodologies, she stated that these were developed from existing methodologies, for example from IPCC, Verra methodologies, and CDM methodologies and tools. For the methodology for blue carbon credits, she mentioned that there are ongoing conservation and restoration activities. She further explained about the implementation of blue carbon credits in Southeast Asia (SEA) region and challenges that are faced by Thailand for blue carbon credit implementation. Land ownership is one of the biggest challenges and therefore, abandoned aquaculture sites are being targeted for development and investment. Apart from the carbon credit, Thailand is also focusing on NbS. Reference was made to the guideline on how to include blue carbon in NDC and the national assessment and variability of blue carbon in seagrass ecosystems in Thailand. The full presentation can be accessed at: <https://drive.google.com/file/d/1v9W-cjDEgacJzR6HJpY-E5pfqqd59drV/view?usp=sharing>.

### **1.11.4 Will Hamill, Great Barrier Reef Foundation: Exploring nature finance for seagrass restoration on the Great Barrier Reef**

Will started his presentation by highlighting the challenges facing the Great Barrier Reef (GBR), including climate change. He mentioned that BCE are intrinsically linked with coral reef ecosystems, providing ecosystem services and carbon sequestration, and that unlocking blue carbon and nature finance brings additional investment to reef conservation. He presented the coastal restoration programme that aims at accelerating and scaling up coastal restoration opportunities on the Great Barrier Reef, and the Pacific. He pointed out the enabling conditions for seagrass restoration including: availability of proven seagrass restoration techniques; availability of mapping, data and decision support tools to select restoration sites and partners; and strong advocacy and support for new seagrass blue carbon method to create finance and the development of the nature repair market. He referred to the Verra’s Nature Framework and its implementation. He also presented the seed-based seagrass restoration that requires ongoing restoration and monitoring, necessitating grants and finance. He explained the way governance can help finance management actions; how the government assign legal rights and to whom; methods for quantification and how to select indicators to measure state of seagrass. As a way forward, he highlighted the need to: invest in an Accounting for Nature environmental account to standardise measures for extent and condition; engage with government on assignment of legal rights; and continue to work with Traditional Owners on projects and include FPIC for any market measure. The full presentation can be accessed at: [https://drive.google.com/file/d/1hB PFdNxnF7CJyXypi1-6X6\\_Zpje55XY/view?usp=sharing](https://drive.google.com/file/d/1hB PFdNxnF7CJyXypi1-6X6_Zpje55XY/view?usp=sharing).

**1.11.5 Kylie Mortiz, The Nature Conservancy: Blue carbon coast restoration in Australia**

In her presentation, Kylie explained the blue carbon method that has been developed for mangrove and salt marsh restoration in Australia. To assess the best areas for blue carbon restoration, she adopted a multi-criteria decision analysis to identify and prioritise blue carbon wetland restoration sites, for which she provided detailed information on the steps involved, including current coastal vegetation mapping, modelling future tidal inundation, project complexity and tidal blockage analysis, carbon sequestration analysis and site prioritisation assessment. She also presented the blue carbon pilot project in the South Australia. She provided an overview of the project site, which is 255 hectares, and contains wetlands and 200 hectares of mangroves. The project has been registered under Australia’s ACCU method and work will be starting soon. She provided information on the cost of the project, the carbon benefits, the carbon income (over 25 years) being around AUD\$261,625-\$322,745. A project in northern Queensland, its carbon, co-benefits and cost were also presented. She shared the lessons learned, emphasizing that carbon credits alone will not sustainably finance blue carbon projects, but would require the system of economic and environmental accounting, co-benefits to restoration, stacking different environmental markets and blended finance models. She explained about a system of aggregation, incorporating cooperative governance model for environmental markets. She highlighted the importance of landholders to work together, which will be more cost and resource effective. The full presentation can be accessed at: <https://drive.google.com/file/d/1ftRMq17K4VgAlmAPs6ShgHzRtlBAOq3F/view?usp=sharing>.

**Questions and Answers**

Question: What are the early signs of overcoming the barriers related to nature finance?

Answer: Exploring traditional business models to funding restoration finance activities; land value has a real impact on decision making; to educate people, involve more stakeholders; green job; more visibility for the project to attract investment; more focus on ecosystem services and alternatives to livelihood to decrease pressure on natural resources; more pressure on the market; and greater stakeholder engagement.

Question to Kylie: How is your project linked to the national process and why is Australia slow in funding and accounting?

Answer: The government is funding projects, but they are also in the learning phase. Once we start earning carbon credits, it will be linked to the national process, and we will start to report to NDC.

Question: With the current conditions, so far, we are thinking that BC is an important tool to finance our natural capital in a sustainable way, but it seems that it is difficult if it is standalone and requires additional fund to top-up the management of the area. The contribution and the role of the local people are usually neglected. In most of the developing countries the role of local people are very important and are being blamed for destroying the ecosystems, but they are doing that for their livelihoods. How to balance our natural capital in the same way the investment need to have return on investment. How to utilise this condition?

Answer: A lot of current projects we have to include community, and it has been difficult because they are using it as daily use which are not really threatening the ecosystems. we need to work with them on how their livelihoods can be enhanced and not only focus on how much carbon are being generated. We need to look at the ecosystem services. In Thailand the private sector is ready to invest but sometimes they don’t have the right information. There should be a common platform to link the right

stakeholders such as private sectors, researchers, policymakers to join hand together. In Australia, blue carbon is quite new, and we are still learning.

Comment: There is a carbon market and crediting, biodiversity crediting but each country has different challenge, BCE and some of them are not necessarily meeting the international standard. We can adopt nature-based crediting matter because at the end of the day whatever route is taken it will contribute to the biodiversity crediting.

Question: There is target of net zero and the net profit mechanism. Mauritius lag behind in terms of blue carbon. What should we be looking at, net zero target, carbon crediting, biodiversity crediting?

Answer: There is a lot of work and people are building capacity and developing the project with the right techniques in place is fundamental. When it comes to the different goals, scientists have to come to an agreement. The lack of agreement on the methodology. As scientists, we need to align our goals and objectives with the relevant stakeholders.

Question: What are your needs for enabling environment for projects to be more investible?

Answer: An environment that support restoration, policy regulation and education; policy and regulations that support biodiversity project and credits; increase private sector involvement to create the demand, which will in turn create market.

Question: How do you ensure that different projects are not confusing them?

Answer: When working with the local communities, they just know that we are bringing a new layer of conservation. It is important to understand how to engage them and to be very diplomatic. You need to talk to the different NGO already working with the same community group to promote collaboration and avoid duplication of objectives. We also try to understand their perception and their interaction with the ecosystem. We need to share knowledge on the value of these ecosystems.

## **1.12 SESSION 4: MEASURING NATURE**

Moderator: Sundy Ramah

### **1.12.1 *Andy Steven, CSIRO: Principles and tool for measuring and reporting in nature, biodiversity and carbon markets***

Dr Andy started his presentation by highlighting biodiversity challenges and what should be avoided and restored regarding mangrove and seagrass conservation. He stressed the need to measure nature. High importance was attributed to high integrity crediting mechanisms and a variety of crediting schemes. He referred to the different frameworks that rely on the same primary data; however, this commonality is often not recognised and data collection is often not sustained. He pointed out the targets and the associated challenges, as well as indicators and metrics. He provided detailed information on nature technologies for different applications and metrics, such as remote sensing, metabarcoding, and passive acoustic monitoring. The contribution of earth observation (EO) in the collection of biodiversity data, including for the classification of land cover and blue carbon habitat mapping, was presented. He explained environmental descriptors and their application. He referred to the case study of the Brecon Beacons National Park in South Wales, whereby distribution were predicted using environmental descriptors in two and three dimensions as input to a species distribution model. He also highlighted the challenges in measuring seagrasses with EO. He described iBenthos, a platform for automated seagrass mapping being developed with Indonesia, Thailand and Fiji. He pointed out the measuring conditions and the vegetative indicators that can be used in different

5<sup>th</sup> IORA Blue Carbon Hub think tank meeting on “Nature, biodiversity and carbon markets for sustainable management of coastal ecosystems

habitats. He further provided information on the modelling toolbox for assessing conditions. He emphasised the need to engage more and use indigenous knowledge. For the IORA context, he raised some points for thought for the next recommendation session. The full presentation can be accessed at: [https://drive.google.com/file/d/1QaM\\_m7uC9BqCW72Mo7AiDiXLAglQJX0J/view?usp=sharing](https://drive.google.com/file/d/1QaM_m7uC9BqCW72Mo7AiDiXLAglQJX0J/view?usp=sharing).

### **Questions and Answers**

Question: Technology has adapted to go to the community. How do you expect this technology be transferred to the IORA Member States?

Answer: Digital Africa has some data that are accessible to African region, but this require people to be trained to access the data.

Question: The UN Ocean Decade has a decade programme related to blue carbon. Can we have a joint collaboration under this programme?

Answer: There is also a UN Decade of Restoration. There are many pledges being made. Something can be done if the right project is proposed.

Question: What model do you use to engage the communities in taking photos, machine learning, modelling, for example?

Answer: We would train the people in, for example machine learning. There are standard protocols that can also be used.

Question: What does the government need or is there any standardisation for measuring blue carbon?

Answer: We need to know what framework the government needs.

### **1.12.2 Gemasakti Adzan, World Resources Institute: NbS Tool**

Gemasakti provided an overview of the S CeNe coalition, its aims and workstreams (comprising a NbS tool, NbS incubator and NbS portfolio). The NbS tool was developed in response to rising demand for high quality NbS projects to leverage climate financing opportunities. The key features of the NbS tool include a data analyser, interactive map and project management, with detailed information on each feature. There are several versions of the tool, and the next version is being launched in different countries. He mentioned that there are more than 3,300 users with an average engagement time of 4-5 minutes. A live demonstration was provided. The tool provide an interactive map, that included land cover (including mangroves), climate and population. The tool has a data analyser feature that can provide information on the site, the climate, community and the nature conditions. He provided information on avoided deforestation and ecosystem restoration projects. He further explained on how to engage with S CeNe Coalition. The full presentation can be accessed at: [https://drive.google.com/file/d/1xy995mx9dsfvuQurg77In\\_b2KJfSYUML/view?usp=sharing](https://drive.google.com/file/d/1xy995mx9dsfvuQurg77In_b2KJfSYUML/view?usp=sharing).

### **Questions and Answers**

Question: When you develop this tool, is there any way to validate the accuracy of the data? how do you project aboveground and belowground biomass?

Answer: Regarding the data, these are published data. All generated data need to be validated using high-resolution data. The biomass data is explicitly spatial. The most final data that are globally available for above-ground biomass is from IPCC but for the below ground we use root: shoot ratio.

Question: Why tiger conservation?

Answer: Because one contributor was from WCS who has an interest and funding for tiger.

### **1.12.3 Veda FitzSimons, Pollination: Nature Finance**

Veda presented some options for policymakers to consider on addressing the climate and nature crisis. In order to close the nature finance gap, she highlighted the need to explore ways to direct finance across all aspects of the mitigation hierarchy, for example through: recalibrating government revenue and expenditure; direct government finance; enable private sector expenditure; require private sector expenditures; inform private and public sector expenditure. Environmental markets, which essentially involve the trade of unitised form of benefits (often referred to as “credit”), is an important factor for getting securing finance. There are several credit types and for each credit type, there are several ways to overall benefits delivered by a project can be packaged and sold. She mentioned that additional benefits can be unquantified and quantified. She pointed out the indicative benefits and stated that for benefits to be traded in environmental markets as a standalone unit there must be: a standard for unitising the benefits; business rationale for purchasers to buy the credits; and business rationale for the project proponent to sell the benefits as a credit. She stated that there may be opportunities for credits of different types to be bundled, stacked or stapled, providing details on each of these.

With regard to carbon credits, she added that these must be generated under a methodology approved by a crediting standard. She pointed out the role of the government in directing finance to blue carbon ecosystems through carbon markets, for example to establish, fund or endorse carbon credit methodologies for target blue carbon activities, aligned with climate/nature goals, as well as establish policy settings that support a business case for investment in carbon credits (i.e. carbon pricing mechanisms, consumer-facing certification bodies). She further stated that, globally, a significant number of biodiversity credits initiatives and schemes are emerging and although there is significant diversity in the formulation of these biodiversity credits, there are some patterns that have been observed across the market. For example, four core archetypes across biodiversity credits have been identified, namely: (i) regeneration credit; (ii) adaptation credit; (iii) protection credit; and (iv) stewardship credit. There are also several existing biodiversity credit schemes that apply to coastal and marine ecosystems, and these focus on regeneration, but also on protection, stewardship and adaptation. The full presentation can be accessed at: [https://drive.google.com/file/d/12AhSdaqhgK4\\_ppjw4inNvlrzQ5u3amR5/view?usp=sharing](https://drive.google.com/file/d/12AhSdaqhgK4_ppjw4inNvlrzQ5u3amR5/view?usp=sharing).



## Appendix

## 1.13 ANNEXURES

**ANNEXURE A: LIST OF PARTICIPANTS**

First Name	Surname	Country	Organisation
Mat	Vanderklift	Australia	CSIRO
Andy	Steven	Australia	CSIRO
Angelica	Casado	Australia	DFAT
Veda	FitzSimons	Australia	Pollination
Will	Hamill	Australia	Great Barrier Reef Foundation
Kylie	Moritz	Australia	TNC
Cheryl	Fernandez-Abila	Australia	Global Ocean Accounts Partnership
Syed Misbah	Uddin Ahmad	Bangladesh	Ministry of Foreign Affairs Bangladesh
Adelaïd Ben	Ali Abdou	Comoros	Ministère des Affaires étrangères
Amrita	Gupta	India	Ministry of Environment, Forest and Climate Change
Andreas	Hutahaeen	Indonesia	Coordinating Ministry for Maritime Affairs and Investment
Jessica	Novia	Indonesia	Carbon Ethics
Ernawati	Arpiani	Indonesia	Forest Carbon
Gemasakti	Adzan	Indonesia	World Resources Institute (WRI) Indonesia
Alessandro	Valentini	Italy/Switzerland	World Economic Forum
Amy	Mumo	Kenya	KMFRI
James	Kairo	Kenya	KMFRI
Nancy	Mwangi	Kenya	Embassy of the Republic of Kenya, Thailand
Lantoasinoro	Ranivoarivelo	Madagascar	Institut Halieutique et des Sciences
Nurashikin	Mansor	Malaysia	Ministry of Economy
Ahmed	Raidh	Maldives	Ministry of Climate Change, Environment and Energy
Sundy	Ramah	Mauritius	Ministry of Blue Economy, Marine Resources, Fisheries & Shipping
Shamimtaz Bibi	Sadally Roomaldawo	Mauritius (IORA)	Indian Ocean Rim Association (IORA) Secretariat
Jamie	Yeo	Singapore	IORA Blue Carbon Hub
Radhika	Gajre	Singapore	Natonal University of Singapore

Appendix

Yulu	Liu	Singapore	Centre for International Law, National University of Singapore
Mohamud Omar	Mohamud	Somalia	Ministry of Foreign Affairs and International Cooperation
Athi	Mfikili	South Africa	South African Environmental Observation Network
Nimal Sri Rajarathna	Wickrama Arachchilage	Sri Lanka	Coast Conservation and Coastal Resource Management Department
Augustino	Bwambwala	Tanzania	Department
Siriporn	Sriaram	Thailand	Ministry of Transport
Pimchanok	Buapet	Thailand	Blue Renaissance
Anchana	Prathep	Thailand	Prince of Songkla University
Laddawan	Sangsawang	Thailand	Prince of Songkla University
Punlop	Inthanin	Thailand	Department of Marine and Coastal Resources
Natthawadee	Bantiwivatkul	Thailand	Thailand Greenhouse gas Management Organization
Ratchanee	Chinnapitakkul	Thailand	Department of Marine and Coastal Resources
Pornpana	Pechsri	Thailand	Department of Marine and Coastal Resources
Anitta	Attantra	Thailand	Department of Marine and Coastal Resources
Ornanong	Pengchumrus	Thailand	Department of Marine and Coastal Resources
Arisa	Setthasuk	Thailand	Department of Marine and Coastal Resources
Poonsri	Wanthongchai	Thailand	Department of Marine and Coastal Resources
Narongrit	Lertkasetvittaya	Thailand	Department of Marine and Coastal Resources
Werachart	Pengchumrus	Thailand	Department of Marine and Coastal Resources
Tipamat	Upanoi	Thailand	Department of Marine and Coastal Resources
Punnapa	Daycharthongnoi	Thailand	Department of Marine and Coastal Resources
Chaimongkol	Yaemarunpattana	Thailand	Department of Marine and Coastal Resources
Kanlapassara	Klabkong	Thailand	Department of Marine and Coastal Resources
Sumana	Kojonwattanakul	Thailand	Department of Marine and Coastal Resources
Pranom	Chumriang	Thailand	Department of Marine and Coastal Resources
Surasak	Thongsukdee	Thailand	Department of Marine and Coastal Resources
Fahmi Abdulhadi	Binshbrak	Yemen	Environment Protection Authority EPA

**ANNEXURE B: PROGRAMME**

<b>Day 1: Tuesday, 10 September 2023</b>	
08:30-09:30	Registration
09:30-10:45	<p>Moderator: Tipamat Upanoi</p> <p>Opening remarks by Dr Pinsak Suraswadi, Director General Thailand Department of Marine and Coastal Resources</p> <p>Opening remarks by Kirsten Fletcher, Australian Consul-General</p> <p>Welcome and background: Mat Vanderklift, IORA Indian Ocean Blue Carbon Hub [20 minutes]</p> <p>Keynote: Siriporn Sriaram, Blue Renaissance [20 minutes]</p> <p>Questions: [10 minutes]</p>
10:45-11:15	Break
11:15-12:45	<p>Moderator: Mat Vanderklift</p> <p>Session 1: Why do we need nature finance and what are the options?</p> <p>Speakers: Alessandro Valentini, World Economic Forum [20 minutes] Radhika Bhargava, National University of Singapore [20 minutes] Mat Vanderklift, IORA Indian Ocean Blue Carbon Hub [10 minutes]</p> <p>Questions [20 minutes]</p>
12:45-14:00	Break
14:00-15:30	<p>Moderator: Werachart Pengchumrus</p> <p>Session 2: Why do we need nature finance and what are the options?</p> <p>Speakers: Siriporn Sriaram, Business for Nature [20 minutes] Jamie Yeo, IORA Indian Ocean Blue Carbon Hub [15 minutes] Punlop Inthanin, Thailand Greenhouse Gas Organisation [25 minutes]</p> <p>Open plenary discussion</p>
15:30-16:00	Break
16:00-17:30	<p>Session 3: Training</p> <p>Radhika Bhargava, National University of Singapore</p>
17:30-17:40	Closing comments: Mat Vanderklift [10 minutes]

Appendix

<b>Day 2: Wednesday, 11 September 2024</b>	
09:30-10:15	Recap: Mat Vanderklift [10 minutes] Keynote: Jessica Novia, CarbonEthics [20 minutes] Questions: 10 minutes
10:15-10:45	Break
10:45-12:30	Moderator: Mat Vanderklift  Session 3: Examples of nature finance in practice  Speakers: Ernawati Apriani, Forest Carbon [15 minutes] Amy Mumo, Kenya Marine and Fisheries Research Institute [15 minutes] Anchana Prathep, Prince of Songkla University [15 minutes] Will Hamill, Great Barrier Reef Foundation [15 minutes] Kylie Mortiz, The Nature Conservancy [15 minutes]  Panel discussion [30 minutes]
12:30-13:30	Break
13:30-14:40	Moderator: Sundy Ramah  Session 4: Measuring nature  Speakers: Andy Steven, CSIRO [20 minutes] Gemasaki Adzan, World Resources Institute [20 minutes] Veda FitzSimons, Pollination [20 minutes]  Open discussion [30 minutes]
14:40-15:15	Break
15:15-16:45	Breakout discussions session: building recommendations Moderators: Laddawan Sangsawang, James Kairo, Andreas Hutahaeon
16:45-17:00	Field trip briefing [10 minutes] Mark Wilson Closing comments Mat Vanderklift and Tipamat Upanoi
19:00	Workshop dinner [venue TBC]
<b>Day 3: Thursday, 12 September 2024</b>	
	Fieldtrip

**ANNEXURE C: REMARKS**

**1. Opening remarks by Dr Pinsak Suraswadi, Director General Thailand Department of Marine and Coastal Resources**

Miss Kirsten Fletcher, Australian Consul General, distinguished guests, fellow delegates, ladies and gentlemen, Sawasdee khrap.

Good morning and welcome to the IORA Blue Carbon Hub Think Tank on Opportunities for using nature, biodiversity and carbon markets to support sustainable management of coastal ecosystems. On behalf of the Government of Thailand, it is my great honour to welcome you all to Phuket and the beautiful city of Patong. We are particularly delighted to host this important gathering in collaboration with IORA as we collectively seek solutions to some of the most pressing challenges facing our coastal ecosystem.

Thailand, like many countries in the Indian Ocean region is deeply aware of the critical role that blue carbon ecosystems play in our climate, our economy and the livelihoods of millions of people. Mangrove, seagrass and tidal marsh not only provide crucial protection against coastal hazards but are also key to mitigating the impact of climate change by sequestering carbon.

However, these ecosystems are under threat, and it is our shared responsibility to find sustainable ways to protect and restore them. This think tank provides us with a unique opportunity to engage in fruitful discussions on how we can leverage market-based mechanisms such as carbon markets and biodiversity finance to support this ecosystem.

As nations, that rely heavily on coastal resources for food security, tourism and economic stability. It is vital that we explore innovative financing solutions for the long-term health of our blue carbon ecosystems.

Over the next three days, we will hear from expert policymakers and private sector leaders who will share their experience and insights. Our objectives are clear, to identify the barriers to effective nature finance, to explore potential solutions and to foster collaboration between IORA member states. Through dialogue and chair learning, we hope to deepen our understanding of how market mechanisms can be harnessed to protect nature, enhance livelihoods and contribute to climate resilience.

The Department of Marine and Coastal Resources has recognised that sustainable management of coastal ecosystems is not only a national priority, but a regional and global imperative. By working together, we can unlock the potential of nature-based solutions and ensure that the benefit of biodiversity and Blue Carbon markets reach the communities that need them most.

In closing, I would like to extend my heartfelt thanks to all of you for your participation and contributions. I would also like to express my gratitude to our IORA colleagues for their collaboration and the IORA Blue Carbon Hub for organising this important event.

Let us use this opportunity to share ideas, build partnerships and pave the way for a sustainable future for our coastal ecosystems and the people who depend on them.

Thank you and I wish you all a productive and successful meeting.

## **2. Opening remarks by Kirsten Fletcher, Australian Consul-General**

Thank you, Dr Suraswadi, and good morning and welcome everyone. I am Kirsten Fletcher, the Australia Consul-General here in Phuket, and I am pleased to jointly open this three-day workshop.

I would like to welcome and acknowledge our distinguished guests here today:

- Dr Pinsak Suraswadi, Director General at the Thailand Department of Marine and Coastal Resources
- and Dr Mat Vanderklift, Director of the IORA Indian Ocean Blue Carbon Hub

And a very warm welcome to all participants from IORA member states and dialogue partners.

These think-tank workshops reflect the importance Australia places on IORA and the close partnerships between Australian and the IORA member countries. This is the fifth think tank in the series and the first to be held in partnership with Thailand. And I thank the Department of Marine and Coastal Resources for your collaborative effort.

Over the course of the next three days, you will focus on the use of nature and natural processes to address environmental issues, or nature-based solutions, for coastal adaptation, with a focus on learning more about the potential to use market mechanisms, to finance protection and restoration, and generate livelihood opportunities for coastal communities.

Australia works at home and internationally, to protect our oceans for future generations. We support nature-based solutions, including through the Paris Agreement, Ramsar Convention of Wetlands of International Importance, and Convention on Biological Diversity.

The IORA Blue Carbon Hub is Australia's flagship blue carbon initiative for the Indian Ocean. The Hub is committed to the development and promotion of the Blue Economy, where Blue Carbon initiatives play a critical role in environmental and livelihood needs. Since 2019, the Hub has continued building the region's collective knowledge and capacity to protect and restore blue carbon ecosystems throughout the Indian Ocean through annual think tank meetings an annual early career oceans professionals' program, publishes research and reports, presents webinars, and provides helpful resources through its website.

The Indian Ocean hosts a significant amount of the Earth's blue carbon ecosystems. IORA Member States are responsible for the management of these systems, but these member states are also significantly affected by coastal hazards, they therefore have the most to gain from adaptation solutions. As part of these solutions, mangroves, seagrasses and tidal marshes, or blue carbon ecosystems, play a significant role in Earth's carbon cycle and climate change mitigation. Blue carbon ecosystems are the front line of defence against the effects of climate change on the coast, such as sea level rise and storms. Through careful management we can harness this resource to protect homes and infrastructure against coastal erosion, storm surges and floods and provide opportunities for coastal communities to harvest food and earn new sources of income.

Australia leads the 'International Partnership for Blue Carbon', with over 60 partners from government agencies, non-governmental and intergovernmental organisations, and research institutions who share a vision of protecting and restoring sustainably managed global blue carbon ecosystems. This partnership has grown significantly since its establishment in 2015 and is now considered the primary international platform on blue carbon policy and knowledge exchange.

Throughout this workshop, you will have opportunities to engage with Blue Carbon experts and your fellow peers from across the Indian Ocean, through Q&A sessions, breakout group discussions to



## Appendix

propose recommendations to the IORA Blue Economy Working Group and a field trip on Thursday. I look forward to your recommendations and encourage member states to take action where possible.

I would like to thank the Kingdom of Thailand's Department of Marine and Coastal resources for co-hosting this event in partnership with the IORA Blue Carbon Hub's host organisation Australia's esteemed 'Commonwealth Scientific and Industrial Research Organisation' to foster discussions and collaborations on Blue Carbon in the Indian Ocean region.

Now, please let me introduce Dr Mat Vanderklift, the director of the IORA Indian Ocean Blue Carbon Hub

- Dr Vanderklift is a marine ecologist whose research primarily focuses on coastal ecosystems.
- His research has encompassed tropical and temperate ecosystems in Australia, the USA, France and Indian Ocean states like Indonesia, Sri Lanka, and Madagascar.
- His focus is on developing a sustainable "blue economy" for Australia and the Indian Ocean, especially through nature-based solutions.
- He is exceptionally qualified to guide the discussions over the next three days and I now hand over to him.