



IORA BLUE CARBON HUB THINK TANK MEETING NATURE-BASED SOLUTIONS FOR ADAPTATION TO CLIMATE RISKS IN THE COASTAL ZONE

12-14 SEPTEMBER 2022
BALI, INDONESIA

FINAL REPORT



Table of Content

Table of content

<u>1.1</u>	<u>RECOMMENDATIONS</u>	<u>3</u>
<u>1.2</u>	<u>BACKGROUND</u>	<u>4</u>
<u>1.2</u>	<u>INAUGURATION</u>	<u>4</u>
<u>1.2.1</u>	<u>OPENING REMARKS: OPENING REMARKS BY MR FIRMAN HIDAYAT, DEPUTY MINISTER FOR MARITIME RESOURCES, COORDINATING MINISTRY FOR MARITIME AND INVESTMENT AFFAIRS, REPUBLIC OF INDONESIA</u>	<u>4</u>
<u>1.2.2</u>	<u>OPENING REMARKS BY MS AMELIA EKKEKEL, AUSTRALIAN CONSUL IN BALI</u>	<u>5</u>
<u>1.2.3</u>	<u>NATURE-BASED SOLUTIONS FOR ADAPTATION TO CLIMATE RISKS IN THE COASTAL ZONE BY DR MAT VANDERKLIFT: IORA INDIAN OCEAN BLUE CARBON HUB</u>	<u>5</u>
<u>1.2.4</u>	<u>KEYNOTE: MARINE LECERF – INTERNATIONAL POLICY EXPERT, OCEAN AND CLIMATE PLATFORM</u>	<u>6</u>
<u>1.3</u>	<u>COASTAL DEVELOPMENT: RESILIENCE, RESTORATION AND INFRASTRUCTURE REQUIREMENTS BY DR ANDY STEVEN: CSIRO</u>	<u>6</u>
<u>1.4</u>	<u>DAY 1</u>	<u>7</u>
<u>1.5</u>	<u>SESSION 1: ECO-ENGINEERING: THEORY AND CASE STUDIES</u>	<u>7</u>
<u>1.5.1.1</u>	<u>DR PAUL BRANSON: CSIRO [20 MINUTES]</u>	<u>7</u>
<u>1.5.1.2</u>	<u>APRI SUSANTO ASTRA: WETLANDS INTERNATIONAL INDONESIA</u>	<u>7</u>
<u>1.5.1.3</u>	<u>UPAL MAHAMUD: INSTITUTE OF WATER MODELLING, BANGLADESH</u>	<u>8</u>
<u>1.5.1.4</u>	<u>JEAN-CLAUDE LABROSSE: MINISTRY OF AGRICULTURE, CLIMATE CHANGE AND ENVIRONMENT, SEYCHELLES</u>	<u>8</u>
<u>1.5.1.5</u>	<u>KHAIRUL AZMI: INTERNATIONAL FEDERATION OF RED CROSS (IFRC) AND RED CRESCENT SOCIETIES</u>	<u>9</u>
<u>1.5.1.6</u>	<u>QUESTION (Q) AND ANSWERS (A):</u>	<u>9</u>
<u>2.1.1</u>	<u>SESSION 2: LIVELIHOODS</u>	<u>11</u>
<u>2.1.1.1</u>	<u>DR SHARINA HALIM: UNIVERSITI KEBANGSAAN MALAYSIA</u>	<u>11</u>
<u>2.1.1.2</u>	<u>EDGAR POLLARD: SAVE THE CHILDREN / MAI MASASINA GREEN BELT, SOLOMON ISLANDS</u>	<u>11</u>
<u>2.1.1.3</u>	<u>AJI ANGGORO, YKAN INDONESIA</u>	<u>12</u>
<u>2.1.1.4</u>	<u>QUESTIONS (Q) AND ANSWERS (A)</u>	<u>12</u>
<u>2.2</u>	<u>DAY 2</u>	<u>13</u>
<u>2.2.1</u>	<u>KEYNOTE: MANGROVE RESTORATION AND CONSERVATION TO ENHANCE COASTAL ZONE AND COMMUNITY RESILIENCE- DR DANIEL MURDIYARSO: PRESIDENT, INDONESIAN ACADEMY OF SCIENCES</u>	<u>13</u>
<u>2.2.2</u>	<u>SESSION 3: 'NATURE NAVIGATOR'- PATRICK BOLTE: BANYANEER</u>	<u>14</u>
<u>2.2.3</u>	<u>SESSION 4: POLICY AND FINANCE</u>	<u>15</u>
<u>2.2.3.1</u>	<u>DR NOVI SUSETYO ADI, MINISTRY OF MARINE AFFAIRS & FISHERIES, INDONESIA</u>	<u>15</u>
<u>2.2.3.2</u>	<u>PROF SEVVANDI JAYAKODY, SRI LANKA</u>	<u>15</u>
<u>2.2.3.3</u>	<u>JAMES KAIRO: KENYA MARINE AND FISHERIES RESEARCH INSTITUTE</u>	<u>16</u>
<u>2.2.3.4</u>	<u>QUESTION (Q) AND ANSWERS (A):</u>	<u>17</u>

Table of Content

<u>2.2.3.5 MARINE LECERF, OCEAN & CLIMATE PLATFORM- DEEP DIVE: COASTAL AND MARINE NATURE-BASED SOLUTIONS IN THE CLIMATE AND BIODIVERSITY REGIMES</u>	
<u>18</u>	
<u>2.2.4 SESSION 5: FINAL SESSION: BUILDING RECOMMENDATIONS</u>	<u>19</u>
<u>2.2.4.1 OPEN PLENARY DISCUSSIONS,</u>	<u>19</u>
<u>2.2.4.2 BREAKOUT DISCUSSIONS AND RECOMMENDATIONS</u>	<u>22</u>
<u>2.2.4.3 CLOSING REMARKS</u>	<u>24</u>
<u>2.3 ANNEXURES</u>	<u>I</u>
<u>2.3.1 ANNEX A: LIST OF PARTICIPANTS</u>	<u>I</u>
<u>2.3.2 ANNEXURE B: AGENDA</u>	<u>IV</u>

1.1 RECOMMENDATIONS

The IORA Blue Carbon Hub think tank meeting ‘Nature-based solutions for adaptation to climate risks in the coastal zone’ was held in Bali, Indonesia on 12-14 September 2023. The final session comprised breakout sessions to generate recommendations for actions to be considered by IORA mechanisms, with an intent that the listed recommendations would be useful for development of work plans. The full set of recommendations is listed in section 2.2.4.2; the following list of recommendations is synthesised from them, and are aggregated into four overall themes.

1. IORA as a platform to integrate a united common voice to encourage nature-based solutions across the Indian Ocean Region
 - improve the visibility of IORA within the region as resource to strengthen a regional voice highlighting the need for climate change adaptation,
 - engage with the UNFCCC, CBD, RAMSAR and other global platforms to prioritise research, funding, and policy support for the region,
 - facilitate access to climate finance to support projects that harness blue carbon ecosystems as nature-based solutions to climate change mitigation and adaptation

2. Eco-Engineering
 - facilitate knowledge exchange and capacity building among member states in eco-engineering solutions for coastal resilience, ensuring equity across ages and genders
 - support pilot projects to demonstrate the effectiveness of nature-based solutions for integrated seascape conservation and restoration.
 - create guidelines for application of nature-based solutions for adaptation and disaster risk reduction
 - develop a database to curate and share regional data on BC

3. Livelihoods:
 - encourage integration of nature-based solutions into coastal development policies, creating opportunities for sustainable livelihoods
 - establish mechanisms for identifying and valuing the socio-economic benefits of nature-based solutions for coastal livelihoods
 - promote initiatives that empower local populations to adapt to the impacts of climate change
 - encourage use of local and traditional knowledge and community wisdom in coastal governance

4. Policy and Finance:
 - support recognition and inclusion of nature-based solutions into climate mitigation and adaptation strategies and policies
 - create policy frameworks that incentivize private sector investment in nature-based solutions, such as carbon trading and ecosystem-based insurance

1.2 BACKGROUND

Delegates from Member States, namely, Commonwealth of Australia, People's Republic of Bangladesh, French Republic (on account of Reunion only), Republic of India, Republic of Indonesia, Republic of Kenya, Republic of Madagascar, Malaysia, Republic of Maldives, Republic of Mauritius, Sultanate of Oman, Republic of Seychelles, Federal Republic of Somalia, Republic of South Africa, Seychelles, Democratic Socialist Republic of Sri Lanka, Kingdom of Thailand, as well as Dialogue Partner, namely Republic of Korea (South Korea) participated in the IORA Blue Carbon Hub think tank meeting: Nature-based solutions for adaptation to climate risks in the coastal zone on 12-14 September 2023, in Bali, Indonesia, which was jointly organised by the IORA Blue Carbon Hub and the Coordinating Ministry of Maritime and Investment Affairs, Republic of Indonesia, in collaboration with the IORA Secretariat. The list of participants is annexed ([Annexure A](#)).

During the meeting, experts presented on nature-based solutions for adaptation to climate risks in the coastal zone. The meeting also comprised of training sessions covering topics on: understanding risk; modelling risk and risk reduction; and solutions. Participants also participated in interactive sessions, including polling quizzes, voting and group discussions. The meeting resulted in recommendations on the way forward and for follow-up actions. A copy of the Agenda is annexed ([Annexure B](#)).

1.2 INAUGURATION

1.2.1 OPENING REMARKS: OPENING REMARKS BY MR FIRMAN HIDAYAT, DEPUTY MINISTER FOR MARITIME RESOURCES, COORDINATING MINISTRY FOR MARITIME AND INVESTMENT AFFAIRS, REPUBLIC OF INDONESIA

The Honorable Minister extended a warm welcome to all participants. He recognised the importance of the event in addressing the issues of nature-based solutions (NbS) for coastal adaptation as part of the blue economy development, as well as climate change, which is an overall concern in the region. The sustainable use of coastal and marine resources is key to the region because so many people in the coastal region depend on them. Blue carbon ecosystems (BCEs) capture carbon from the atmosphere, contributing to decarbonisation goals in the IORA region. He mentioned that the Indian Ocean region has huge potential for NbS, making it the ideal candidate for this initiative. Protecting and restoring these valuable resources will not only drive sustainable development but also help IORA countries in achieving Nationally Determined Contributions (NDCs) and emission reduction targets. The role of BCEs in carbon sequestration and disaster mitigation and climate adaption, as well as, wellbeing of the community, was highlighted. This meeting will allow experts/speakers to share experience and information.

1.2.2 OPENING REMARKS BY MS AMELIA EKKEK, AUSTRALIAN CONSUL IN BALI

Ms Ekkel welcomed all the delegates. She highlighted the important role of BCEs in earth carbon cycle and climate change mitigation. IORA Member States are in the key positions to lead the management of these systems. However, we are disproportionately affected by coastal hazards, thus require adaptation solutions. Australia is committed to work with partners on the shared interests around the region to protect the oceans for future generation. Australia continues to support NbS, including through the Paris Agreement, Ramsar Convention on Wetlands, and the Convention on Biological Diversity. Australia leads the International Partnership for Blue Carbon (IPBC), with over 55 partners from government agencies, NGOs, intergovernmental organisations and research institutions, who share vision of protecting, restoring and sustainably managing BCEs. This partnership is considered the primary international platform on blue carbon policy and knowledge exchange. She mentioned the Blue Carbon Accelerator Fund launched by Australia to support the development of blue carbon restoration and conservation projects. She pointed out the IORA Blue Carbon Hub's (BCH) role, which aims at building capacity in the protection and restoration of BCEs. The Hub is Australia's flagship IORA initiative that has been operated since 2019.

1.2.3 NATURE-BASED SOLUTIONS FOR ADAPTATION TO CLIMATE RISKS IN THE COASTAL ZONE BY DR MAT VANDERKLIFT: IORA INDIAN OCEAN BLUE CARBON HUB

Dr Vanderklift started his presentation by highlighting that the World Risk Index highlights that Indian Ocean nations are exposed to substantial climate risks. These include sea level rise, extreme weather events, vulnerability of livelihoods, and damage to infrastructure. Environmental risks are among the greatest that the region is currently facing such as failure of climate change adaptation and natural disasters. He mentioned that the Indian Ocean Member States face substantial climate risks and the exposure to risks around the Indian Ocean is high. The Indian Ocean is the warmest ocean and thermal expansion is one of the main reasons of sea water rise, and other climate impacts include extreme events such as floods, droughts, etc that in turn impact on the vulnerability of livelihoods and damage infrastructure. The Indian Ocean is a magnifier of risks and there is a need to consider the type of adaptation solutions. He emphasised the importance of adaptation, risk, and resilience in addressing the increasing challenges posed by those climate risks, through ecosystem-based approaches, including through nature-based solutions (NbS).

He provided information on the solutions for climate-ready coastal infrastructure, such as the hybrid seawalls in Sydney, Australia. As solutions for coastal protection, he highlighted the importance of mangroves that provide more than \$80 B per annum coastal flooding and protect 18 M people. He also highlighted the need to restore coastal ecosystems, that can in turn help restore fish and diversify livelihoods, including through regenerative and restorative aquaculture. Such aquaculture is a way to mitigate climate change and can play an important role in climate mitigation and adaptation. To conclude, he provided an overview on the topics of the meeting: solutions for adaptation to physical risks; adaptation to enhance resilience of livelihoods; nature navigator handbook; policy and finance framework. He pointed out the expected outcomes of the meeting,

including the need to provide recommendations for actions by the Hub and IORA. A copy of the full presentation can be accessed at: <https://drive.google.com/file/d/1JLEtfNsw2ROI5M258Jp20pPhila2hf7d/view?usp=sharing>

1.2.4 KEYNOTE: MARINE LECERF – INTERNATIONAL POLICY EXPERT, OCEAN AND CLIMATE PLATFORM

Marine's presentation focused on unlocking the full potential of coastal and marine nature-based solutions. She provided an overview of the Ocean and Climate Platform. The importance of marine ecosystems, including BCEs, was highlighted, such as in carbon sequestration, climate change adaptation, biodiversity conservation and socio-economic benefits. She emphasised the need to integrate mangrove ecosystems in NDCs and made reference to the UNEA in 2022 in Nairobi, where the importance of mangrove ecosystems in addressing climate change was recognised. She provided information on critical safeguards to ensure effective nature-based solutions and highlighted the importance of community involvement, as well as the need to build their capacity to participate in nature-based solutions. She referred to the SeaTies initiative, including a workshop series. She also pointed out the work being carried out in France to address sea level rise such as a combined approach that include nature-based solutions and physical infrastructure. A copy of the full presentation can be accessed at:

<https://drive.google.com/file/d/1PlrZiXp5XtIphI00kw895nCoOP8dLRsF/view?usp=sharing>

1.3 COASTAL DEVELOPMENT: RESILIENCE, RESTORATION AND INFRASTRUCTURE REQUIREMENTS BY DR ANDY STEVEN: CSIRO

Moderator: Paul Branson

Dr Steven stated that this meeting is timely as we are experiencing natural disasters and environmental risks. He pointed out the challenges, the threats and the solutions for coastal resilience. He presented on changing and artificial coastlines and coastal and offshore infrastructure sprawl, with four key strategies identified for mitigation and adaptation actions for coastal ecosystem resilience: build ecosystem resilience, enhance community resilience, equity of access; advance sustainable climate ready blue infrastructure; and mitigate impacts of terrestrial and extractive activities. He pointed out the widespread support for NbS, including across government, industry, multilateral organisations, and science practitioners. Regarding resilience and adaptation, he stated that both of them consider physical actions and social dimensions. He explained about nature-based solutions (NbS) and its benefits and principles. He presented on sustainable climate ready blue infrastructure, which can be hybrid or natural. He further mentioned that the NbS will enhance community resilience, equity and access, but noted that several social factors confer resilience and thus emphasised the need to establish ocean equity and access. For the cost and benefits of NbS, he provided the estimates, and cost associated with the blue infrastructure. He also highlighted the importance of assessing the effectiveness of NbS, for example in terms of flood protection benefits of mangroves, which is considered as a NbS, and therefore require management actions for its conservation and protection. This also requires traditional owner governance and capacity development. He referred to research in Fiji, where the population was surveyed for how they value

ecosystem goods and services. He ended his presentation by mentioning that the overarching challenge is to ensure environmental sustainability, climate-preparedness and social equity. He also highlighted the need to build smarter for future climate conditions and enhance regional cooperation to help each other. The full presentation can be accessed at:

https://drive.google.com/file/d/1cDVUO2G3uUA53ayt_8eNfVMw9GWQ9kzn/view?usp=sharing

1.4 DAY 1

1.5 SESSION 1: ECO-ENGINEERING: THEORY AND CASE STUDIES

1.5.1.1 Dr Paul Branson: CSIRO [20 minutes]

Dr Paul started his presentation by pointing out the components of risks, which is associated with hazard, vulnerability and exposure. He provided information on the adaptation approaches, which included policy, planning and capacity building. He mentioned that, out of the 60 projects that were analysed across the developing world, 45 were related to policy and planning. He provided information on the different stages of adaptation planning and presented the different types of responses to coastal risks and sea level rise. He explained about ecological engineering principles which is about designing of sustainable systems, consistent with ecological principles, which integrate human society with its natural environment for the benefit of both. These principles include: design consistent with ecological principles; design for site specific context; and acknowledge the values and purposes that motivate design. He demonstrated how mangroves, as a NbS, can be a better NbS with a higher performance, in terms of coastal protection, and provided information on the integrated approaches to enhanced resilience. He concluded by highlighting that: coastal adaptation planning provides a framework to build adaptive capacity to climate risk; ecological engineering discipline is the basis for the design of ecosystem-based adaptation (EbA); and EbA help address the additional dimensions of climate risk to enhance resilience. A copy of the full presentation can be accessed at:

<https://drive.google.com/file/d/1ovTzuLHarPrKfuzi2jFCE4-GAaeV9kNb/view?usp=sharing>

1.5.1.2 Apri Susanto Astra: Wetlands International Indonesia

Moderator: Dr Paul Branson

Apri's presentation focused on Building with Nature Indonesia, which is an upscaling programme from a previous project, that was carried out from 2015-2019. He provided an overview on the location, the partners and donors and provided information on the strategies that were used, which include the combination of smart engineering and ecological rehabilitation, as well as the introduction of sustainable land use practices. The measures that were implemented included permeable structures, mangrove-associated aquaculture and pond conversion in coastal green belt and pond conversion in river green belt. The community were involved in the project, during which a financing mechanism was set up, including loan facilities, whereby the coastal communities are encouraged to implement conservation measures. The project is supported by the Indonesian Government, including from Central Java province. He mentioned that one of the key factors toward the implementation of the project is through multi-disciplinary collaboration that involve

public-private partnerships, ecologists and engineers, and communities. He listed the awards achieved by the Building with Nature Indonesia Programme. As a follow-up of the project, one of the activities is to accelerate adaptation through Build with Nature (BwN) Asia. He presented the lesson-learned to scale up climate resilient development, including: proactive and early stakeholder engagement; exploiting the broad range of benefits; multi-financing streams; use natural dynamics to deal with future uncertainties; adaptive management; and political willingness and institutional collaboration. A copy of the full presentation can be accessed at:

https://drive.google.com/file/d/1K4nOOeZLtKu_WiyVnTQv35wquBlrgvva/view?usp=sharing

1.5.1.3 *Upal Mahamud: Institute of Water Modelling, Bangladesh*

Moderator: Dr Paul Branson

Upal provided an overview of the coastal area of Bangladesh in terms of coastline length, elevation, coastal population. He displayed the forest spatial map and coastal zone vulnerability map, highlighting the issue of erosion and salinity intrusion impacted by sea level rise. Studies showed that the mangrove species of Sunderban will be changed due to salinity intrusion in the southwest region. He mentioned that the coastal zones are impacted by cyclone and storm surges that lead to drastic economic loss and loss of life, as well as climate change related impacts, leading to Bangladesh adopting its national plan and policies related to NbS, including the National Adaption Plan (2022), comprising of the conservation of forestry and biodiversity. He provided information on the successful programmes implemented by Bangladesh such as: coastal mangrove plantation over 200,000 hectares, which is the world's largest coastal afforestation programme; climate resilient coastal polder funded by World Bank; storm surge protection measures through coastal Dyke Systems, protection barriers; 'Char' (island) Development and Settlement Project, which aim at improving the economic situation and living condition of the coastal population; and the Nature-based Solution for Erosion Protection and Beach Nourishment at Cox's Bazar. He pointed out the benefits of afforestation and challenges of application of NbS in Bangladesh, including lack of robust design, long-term finance flows, monitoring and evaluation of measures and lack of confidence by policy makers and professionals. As way-forward, he highlighted the need to encourage local community involvement, long-term monitoring, evaluation and learning systems for NbS; multi-institutional collaboration, upscaling best practices, etc. A copy of the full presentation can be accessed at:

<https://drive.google.com/file/d/10k3kHF9UK0guZhH2KIL-qpPkhCp-O2-s/view?usp=sharing>

1.5.1.4 *Jean-Claude Labrosse: Ministry of Agriculture, Climate Change and Environment, Seychelles*

Moderator: August Daulat

Mr Labrosse started his presentation by providing a general overview of Seychelles and its vulnerability and challenges, which include lack of resources and capacity building in various sectors. The impacts of climate change in Seychelles includes loss of land through coastal erosion/degradation, flooding, damage to infrastructure and loss of ecosystems. He pointed out the initiatives to improve coastal resilience in the island such as: coastal regeneration; rehabilitation of sand dunes, degraded areas, coastal wetlands; restoration of coastal areas, coral reefs; beach

nourishment. To promote blue carbon ecosystems and enhancing livelihoods, Seychelles is rehabilitating coastal areas through mangrove plantation, mapping of the entire seagrass ecosystems; coral reef restoration; rehabilitation of coastal areas using hybrid system; improving coastal resilience through community engagement. He underlined the Seychelles' international commitments, as well as reiterate its commitment towards the reduction of greenhouse gases emissions, to protect BCEs, which implies the protection of at least 50% of its seagrass and mangrove ecosystems by 2025 and 100% by 2030, as well as to implement its Marine Spatial Plan (MSP) and the effective management of 30% of its marine protected areas within the island's Exclusive Economic Zone (EEZ). He presented the legal and policy frameworks of Seychelles in supporting practical activities and programmes, such as the Environment Protection Act 2016. Regarding its commitments to SDGs, Seychelles has established the Seychelles National Development Strategy (2019-2023), which comprise of different thematic pillars. A copy of the full presentation can be accessed at:

<https://drive.google.com/file/d/1HfimGo5ANIFU81p-ZRARbH1MeghbnRxi/view?usp=sharing>

1.5.1.5 Khairul Azmi: International Federation of Red Cross (IFRC) and Red Crescent Societies

Moderator: August Daulat

Mr Azmi's presentation focused on Indonesia's climate resilience programme, including the NbS in coastal areas. He provided an overview on the IFRC, which is an international organisation that unites 191 Red Cross and Red Crescent Societies. He presented the climate strategies that are being adopted to respond to emergency situations, which is in line with Indonesia's blue carbon initiatives. He provided in-depth information on the Palang Merah Indonesia (PMI) programme and its climate portfolio. The programmes include: coastal community resilient disaster risk reduction (2012-2017) that comprise capacity building programmes, land rehabilitation and developing the village regulation. He highlighted the lessons learned and the success of the programme. He mentioned that the programme is being expanded in other areas and following the success stories, the government of Aceh Jaya has taken over and is sustaining the programme. He further pointed out the climate risk management (blue carbon) key activities of the PMI programme, including through cooperation with research institutions/university. As a follow-up of the PMI, climate champions were established to scale-up climate programme, application of climate science, assessing climate finance, engaging in climate advocacy and policy, communicating on climate, among others. A copy of the full presentation can be accessed at:

https://drive.google.com/file/d/1tP9mV24Gis0N3o6tdpkXfOK9dPYK_4i/view?usp=sharing

1.5.1.6 Question (Q) and Answers (A):

2 **Andy Steven:** How did Seychelles carry out the seagrass mapping?

Seychelles: There are 2 techniques that are being adopted. The seagrass was mapped at less than 25-m and satellite imagery was used.

Question to Jean-Claude: Seychelles has managed to look at MSP, how many conditions were taken into consideration?

Seychelles: For MSP, it is a subject that were discussed with several stakeholders, which were very much involved. The policy regarding the MSP is still being drafted with the relevant stakeholders. There has been consultation on the conditions to be considered.

Question to Jean-Claude: One of the big challenges is managing trade-off, how did you manage to convince farmers to convert their ponds?

Question to Apri: Through talks with the village government, socialising and sharing plan with the village. We ask them to invite people from the village, during which we introduce the programme. After that, several meeting and training are being organised to increase awareness and increase capacity and then select the community group members. We have 3 field facilitators in the village to encourage the village to engage in the programme. When we talk to community, we ask them how much they can provide to the programme and not impose on them the area that is normally required.

Question to Apri: The restoration work relies on funding, and is not sustained when the funds are over. How do you ensure the continuation of the project once the funding is over and what is the success regarding the loan facilitation?

Answer: We set a contract between the two parties, which comprise of requirements such as they need to carry out mangrove associated aquaculture, joint ventures among community group, which the community need to adhere to be eligible for the loan. There is also a saving strategy to ensure that they can continue to sustain the programme once the same is over. The loan is initially provided to a group of activities for the coastal communities, which is then converted to grants once the initially proposed targets are achieved.

Question: What is done if they cannot achieve the targets?

Answer: We normally ensure that the targets and parameters for the loan application is achievable so that the applicant does not have to pay back the loan.

Question : What would be the strategies to increase the protection and adaptation measures by 2050 for the coastal areas to be still sustainable?

Answer: We cannot say objectively that we have the capacity to do that by 2050. Without taking those first steps and learning from the region, we cannot establish the policy requirements to address these challenges.

Mat Vanderklift: It is the reason why we are here. We have been given some good examples of adaptation around the Indian Ocean. We recognise the importance of learning from both failures and successes. We need to capture the information in a systematic way to build on the mass of knowledge.

Andy Steven: There is a lot of money being mobilised around NbS but we need to collect information around the region and make the knowledge available to everyone. How to transfer the knowledge to action is the main challenge.

French embassy: Translating the knowledge and awareness to the policy makers is very important.

Marine Lecerf: There are 2 opportunities that exist: (i) the Ocean and Climate change dialogue which was created in 2019 is dedicated to stakeholders to engage in coastal ecosystem restoration and fisheries management, (ii) The Nairobi Work Programme which has a specific ocean group to assist developing countries to build their strategies that enable countries to express their needs.

Comment: We need to identify the key stakeholders and who need to be converted to adapt to NbS. There are certain stakeholders that have the required technology and we can learn from other partners.

2.1.1 SESSION 2: LIVELIHOODS

2.1.1.1 Dr Sharina Halim: Universiti Kebangsaan Malaysia

Dr Halim's presentation focused on livelihoods and adaptation towards climate resilient development pathways. She mentioned that the impacts of climate change has already significantly affected livelihoods and living conditions of coastal communities. Vulnerability to environmental change is different at national and international level. She stated that some people are disproportionately affected by climate change related risks. She shared some key findings of the IPCC reports related to impacts, adaptation and vulnerability.

She pointed out the impacts of climate change in many ecosystems and human systems worldwide (such as water scarcity and food production). She mentioned that there are many overlapping challenges (such as limited access to water, sanitation and health services, climate-sensitive livelihoods, high levels of poverty, weak leadership, lack of funding, lack of accountability and trust in government) when climate change are combined with unsustainable use of natural resources, habitat destruction, growth urbanisation and inequity. She further stated that research has shown that ASEAN countries are at "medium level of readiness" for a 1.5°C increase associated with climate change. She emphasized that there is an urgency in the development of climate resilience and in accelerating adaptation, through political commitment, institutional frameworks, enhancing knowledge, monitoring and evaluation, and inclusive governance. However, she stated that there is limitation to resilience, and it will be more challenging to some type of farming at a 2°C increase. She provided examples of climate responses and adaptation options in line with the sustainable Development Goals (SDGs). Human vulnerability to climate change is a complex and multifaceted phenomenon that is often influenced by historical development processes. She mentioned that cities and settlement (C&S) by the sea are on the frontline of climate change and highlighted the importance of medium- and long-term financing strategies. A copy of the full presentation can be accessed at:

<https://drive.google.com/file/d/1RtKDtVMYQnFqk5n7fGyxKEdhaiE21UA9/view?usp=sharing>

2.1.1.2 Edgar Pollard: Save the Children / Mai Masasina Green Belt, Solomon Islands

Edgar's presented on "Honey and carbon: a complementary approach". He pointed out the challenges that the island is facing including the threats and overharvesting of mangrove forests. As solutions to mangrove restoration, the production of honey from bees is being carried out, that not only represent a source of income but also support mangrove pollination and fruiting. The project also involve capacity building of coastal communities that could secure markets for blue/green honey. In Solomon Island, carbon projects make people think about money and bee keeping is a source for income for those coastal communities. A copy of the full presentation can be accessed at: https://drive.google.com/file/d/1lqCUI_tWWHLA_omd5PgviBzraxpoBzTg/view?usp=sharing

2.1.1.3 Aji Anggoro, YKAN Indonesia

Aji presented on "Balancing livelihood and mangrove conservation: A study case from East Kalimantan, Indonesia" focused both on mangrove conservation and the research that is being carried out in other places. He provided an overview of the mangrove ecosystems and the challenges that they face including loss and degradation. He explained about the dynamics of changes in mangrove coverages over the years across Indonesia. He mentioned that the reduction of mangrove coverage is due to the expansion of shrimp aquaculture. He displayed the current and anticipated project sites and provided information about the project interventions that comprise urban/coastal development, illegal logging for charcoal, and aquaculture pond development. He stated that in East Kalimantan, there has been about 13% decline in mangrove cover owing to shrimp aquaculture in 2019. As a solution to this challenge and to sustain income generation, shrimp-carbon aquaculture (SECURE) is being adopted, which minimise threats and pollution to mangrove ecosystem, and combine the aquaculture practices with mangrove restoration. To ensure an environment friendly shrimp aquaculture, ecosystem-based approaches are being used to facilitate mangrove restoration and shrimp production. So far, there are 20 SECURE Ponds expanded over 219 ha and 106 ha mangrove restoration area. Through this restoration programme, the natural regeneration of mangrove seedlings has increased. He pointed out the SECURE milestones and provided information on the ongoing collaborative research that is being carried out with the University Mulawarman, Samarinda East Kalimantan, whereby environmental DNA is being used to monitor change in biodiversity shrimp ponds and mangrove ecosystem. He further provided information on the monitoring works and the contribution of mangrove ecosystem to shrimp pond productivity. The possibility for the current project to be eligible for blue carbon and resilience credits is being explored. A copy of the full presentation can be accessed at:

<https://drive.google.com/file/d/1c5aeHUyBK1hSKacW718Z7TAfBU5Xv1x7/view?usp=sharing>

2.1.1.4 Questions (Q) and Answers (A)

Question to Aji: To what extent can you ensure successes in improving livelihoods?

Answer: The project is still a model, the challenge that we are facing is how to ensure that the hydrodynamic system increase the natural regenerative process. For the moment, we want to convince the population to be involved in the project.

Question to Aji: We have talked about livelihoods and income generation, but the cost of the product need to be feasible. What kind of intervention that you make to ensure that you trade off

to restore the mangrove? **To Edgar:** how big is the market demand for honey in the Solomon Islands? We have experience about mangrove crab management, instead of concentrating one species, we implemented temporary closure for mud crab, which also help community to gain more money.

Answer by Aji: We are trying to work with the stakeholders to increase the value of shrimp to ensure that the seller have a better price for the products. We are exploring opportunities for carbon credits, combined with shrimp production, to improve their income generation. The cost for redesigning is pricey but maybe we can have a shared responsibility to share the cost of redesigning.

Answer by Edgar: the price for honey in the local markets is about 20-30 USD.

Question: Is there an appetite for blue/green honey?

Andy mentioned about the need for the shrimp to meet quality standard to access international markets.

Andreas: there are issues related to livelihoods, regarding the use of mangroves for firewood as as source of income generation. So, the production of honey can be an alternative for the use of mangrove for firewood. The products are also sold online.

Comments: when we talk about livelihoods, it is important that we involve private sectors to create a sustainable market for climate and risks.

2.2 DAY 2

2.2.1 KEYNOTE: MANGROVE RESTORATION AND CONSERVATION TO ENHANCE COASTAL ZONE AND COMMUNITY RESILIENCE- DR DANIEL MURDIYARSO: PRESIDENT, INDONESIAN ACADEMY OF SCIENCES

In his keynote address, Dr Daniel linked adaptation to mitigation. He mentioned that in our efforts to reduce carbon emissions and to address the sea level rise issues, people are often left out. He provided an overview on Sustainable Wetlands Adaptation and Mitigation Programme (SWAMP) and referred to the Blue Carbon Summit in 2018, which capture the interest of Indonesia on blue carbon. Since then, several capacity building programmes have been carried out at national and global levels. One of the reasons for conserving mangroves is because, although Indonesian mangroves sequester more than 3 billion tonnes of carbon, they are being degraded. Understanding of seagrasses is still limited. Restoration is often seen as involving as many people as possible and focusing on one single species. He mentioned that the pressure on mangroves and other coastal ecosystems are very high in Central Java given that most of the population lives near the coastal areas. Sea level rise or/and land subsidence are causing problems to coastal communities.

Indonesia is encouraging young scientists to publish their work related to resilience, adaptation and restoration of BCEs. He further pointed out the challenges and opportunities related to mangrove restoration efforts in Indonesia. Indonesia has a vision of restoring 600,000 hectares of mangroves but the work is still ongoing and requires the support of technical experts, as well as the involvement of local communities. He stated that adaptation is imperative and emphasised the need to invest in adaptation programme to yield long-term economic and ecological benefits. There is a need to evaluate BCE services, with the support of local communities and government. He pointed out how local communities can benefit from mangroves, for example through aquaculture and ecotourism. He mentioned that mitigation and adaptation goes hand-in-hand, with both holding the same importance and included in NDCs. A full copy of his presentation can be accessed at: https://drive.google.com/file/d/1K_VhxVcWtiSYuVVE4nWdDGK0UGscfUEr/view?usp=sharing

Question: Do you have any easy suggestion on how to translate information from science to policy?

Answer: Policymakers cannot afford to wait until science is published and need scientific results be shared with them at the earliest opportunity.

2.2.2 SESSION 3: 'NATURE NAVIGATOR'- PATRICK BOLTE: BANYANEER

Mr Bolte presented on the Nature Navigator. He referred to the mangrove afforestation programme in Vietnam in 1994-1996, which failed and later gained success after consultation with scientists. He highlighted the importance of good guidance (by scientists, experts, and local communities) in implementing NbS at scale. He mentioned that Disaster Risk Reduction (DRR) efforts have reduced fatalities eight-fold, but economic loss has almost tripled. He referred to cases whereby fatalities have significantly decreased with increasing investment in DRR measures, especially in preparedness. However, there are some environmental risks that we are currently facing such as climate change. He pointed out the protective benefits of blue carbon ecosystems, and the ecosystem risks, through a demonstration activity. He explained about the cost effectiveness of NbS, its resilience benefits and the associated economic opportunities. He presented the Nature Navigator Handbook for disaster management practitioners that comes with toolkits for application and facilitation, which includes a stepwise approach to NbS. He provided an insight on the content of the book which includes case studies, and an overview of the appendix. For NbS, he emphasized the need to be realistic about the timelines and the usefulness of master plans, to have ecosystem experts onboard, and to identify the right scale to maximise effectiveness. A copy of Mr Bolte's presentation can be accessed at:

<https://drive.google.com/file/d/1G6eOachD2bGYAEbW3CsqMZUngk7LzinB/view?usp=sharing>

Question: Most organisations will ask for a business case which can take months to develop. How can we make the economic benefits visible?

Answer: The Nature Navigator does not address that. There is a need to link that with the policy.

Question: NbS sometime may take time to achieve results, but disaster is faster and bigger and with more magnitude before the NbS is functional. Should we combine eco-engineering with NbS?

Answer: We need to have the stakeholders onboard and consider trade-off. You need to include tangible direct benefits that do not have to do with the NbS and the main objectives of the proposals. Protective benefits only accrue when there are disasters, and NbS will not get traction if it is not serving the purpose.

Question: How can we reduce the impacts given that NbS are not yet trusted as much as engineering approaches?

Answer: Sharing of experiences is important. There can be more investment in communicating the information and the case studies.

Question: In preparation of the book, how was the interaction between religion/spirituality in raising the NbS solutions?

Answer: Community was consulted but it is something that we need to consider in the future.

2.2.3 SESSION 4: POLICY AND FINANCE

2.2.3.1 Dr Novi Susetyo Adi, Ministry of Marine Affairs & Fisheries, Indonesia

Moderator: Andy Steven

Dr Novi presented Indonesia's initiatives in the fight against climate change. He referred to the Paris Agreement and the ocean climate in the UNFCCC COPs. He mentioned that Indonesia has already translated the NDCs into actions in their National Development Plan. He provided an overview of the Ministry of Maritime Affairs and Fisheries (MMAF) initiatives and its mandate on ocean-climate, highlighting that the Presidential Regulation comprises of both mitigation and adaptation measures. He referred to the GHG Methodology Book and the Geospatial Information Agency Regulation 16/2023 that make provision for evaluating Indonesia's seagrass meadow and that protect/govern the use of data, including satellite data, by the MMAF. He pointed out the different regulations related to geospatial information. He explained Indonesia's NDC and carbon pricing. He provided information on the GHG Project Cycle and offsetting, the challenges on seagrass blue carbon in Indonesia and the network-based data collection, data management, capacity building programmes. He mentioned that the network comprises universities, vocational schools, etc but it is being expanded to include other stakeholders. The National Geospatial Information Network comprise of central and local government agencies. A copy of the full presentation can be accessed at:

<https://drive.google.com/file/d/18OP2RpY2qkg9sslpyNXE5rAx0D3pULhH/view?usp=sharing>

2.2.3.2 Prof Sevvandi Jayakody, Sri Lanka

Moderator: Andy Steven

Prof Sevvandi emphasised the importance of a solid base for NbS, especially for Sri Lanka, when the country started to work towards adaptation and mitigation measures for BCEs. She pointed out as to why, where and who should be part of this restoration, adaptation and mitigation measures.

To plan NbS, she highlighted the need to look for direct and indirect beneficiaries, including the people. In 2020, Sri Lanka adopted the National Policy on Conservation and Sustainable Utilisation of Mangrove Ecosystem in Sri Lanka, which enabled the country to pool the finance, including the development of the National Blue carbon Task force and the setting up of various committees that would contribute to collective decisions. This collective decision-making is of prime importance for Sri Lanka to guide methodology and actions to be taken to better understand and implement NbS. Regarding financing, following the challenges that the country undergone recently, Sri Lanka had to explore different approaches, including through strengthening collaboration with relevant stakeholders. Sri Lanka also adopted the National Guidelines for the Restoration of Mangrove Ecosystems of Sri Lanka and developed the National Strategic Action Plan for Conservation and Sustainable Utilisation of Mangrove Ecosystems 2022-2026.

Prof Sevvandi mentioned that finance can be in different ways and forms, not necessarily in monetary values, but can also be in-kind contribution. The finances may not come to Sri Lanka, but it is used to promote the youth, through grants and educational programmes. Sri Lanka has already recognised BCEs in its NDC and has established the climate change Secretariat and Lanka Carbon Fund. The problems is being addressed at multiple sectors and beyond policy, Sri Lanka is promoting the motto “livelihoods that are new also needs new approaches of introductions”. Private sectors are becoming partners and assist with the data collection. As recommendations, she pointed out the following:

- IORA needs to invest on building synergies (CBD, Ramsar, 30by30) and develop a framework for adopting NbS for IORA countries;
- Need to share the policy initiatives, lessons as well as MISTAKES on NbS within IORA;
- Shared vision for MSP within IORA, also linked to NbS thus collaborative financial solutions;
- Adopt agreed risk analysis practices for the region;
- Use the windows such as EAS and NBSAP updating to ensure policy and financial commitments;
- As a region a common set of indicators to measure outcomes:
- Invest on capacitating “high influence and high impact stakeholders” and access finance; and
- Ensure NbS deliver financial, social and spiritual well-being to communities.

A copy of the full presentation can be accessed at:

<https://drive.google.com/file/d/1TUX8gZbhZaNjHoJ64XHP05VnvkDGDwQg/view?usp=sharing>

2.2.3.3 James Kairo: Kenya Marine and Fisheries Research Institute

Moderator: Andy Steven

James’ presentation focused on the mangrove, climate and livelihood nexus. He mentioned that his participation at AMCEN 2023 enabled him to contribute to the decision related to the protection of mangroves to be tabled at the COP28. He highlighted the importance of the mangrove ecosystems and the threats facing mangrove forests. However, he mentioned that we need to explore how to sustain the supply of mangrove goods and services, roles and financing. He explained about the Mikoko Pamoja project, which aims at restoring and protecting mangroves

through sale of carbon credits. Out of the 718 hectares of mangrove forest, 117 hectares are protected. He provided information on the objectives and the study site of the project, the scheme, the project milestones, the scorecard of the project. the finance is used for educational programme, for water and sanitation, and more. He pointed out the building blocks/ requirements for the project and the tools for measuring, monitoring and verification of blue carbon. A copy of the full presentation can be accessed at:

<https://drive.google.com/file/d/1RxZQUUCxb664CInuqs-GIUTdjVMKwrkt/view?usp=sharing>

2.2.3.4 Question (Q) and Answers (A):

Question from AFD, Indonesia: When compared with mangroves, seagrasses face different types of pressures, which are difficult to control. What would be the plan once the seagrass is mapped to address the drivers of seagrass loss?

Answer: We are now reviewing the previous maps from existing work. We have started to develop a baseline scenario based on existing national seagrass maps. The ministry is also mandated to develop MSP. We also compile seagrass emission data. We have established regulatory framework that would reduce pressures on seagrasses. In addition, marine spatial plans are being modified for particular activities cannot be done in seagrass areas. The second way is through a 30 by 45 % MPA, whereby some areas would be designated as marine protected areas (MPAs), but this project has not yet started.

Question: What is the strategy to upscale the project and how to ensure high-quality projects (less uncertainties to be solved and the cost of developing the project is effective)?

Answer: We need to ensure that experts transfer knowledge to the people on the ground. We are trying to seek in-kind contribution and use the grant for research and to facilitate the transfer of knowledge to the local community. We need to explore how the restoration efforts can benefit the local community and how these lessons could be transmitted to them.

The development of carbon credit benefits people in terms of offering protection against natural disaster. The government needs to regulate on carbon financing and high-quality carbon but this will depend on the initiator and the level of understanding.

Question: How to change the narrative and shift the mindset to focus more on humans as stewards?

Answer: We need to have a paradigm shift from losses and balances and instead come up with a win-win solution. It is important because the Indian Ocean countries are connected and there is a need to have a holistic marine spatial environmental assessment along the coastline and, ways to improve the landscape and seascape connectivity.

Experience is the best teacher. One way to have a behaviour change is through education whereby communities are taught to plant mangroves.

Answer by Novi: Our institute is supposed to regulate blue carbon. In Indonesia the indicator for blue carbon project under the local policy is the amount of blue carbon. We are thinking about the

certification of blue carbon. Probably we need to mainstream and emphasise at equal level biodiversity and socio-economic benefits. It is the high-quality carbon that needs to be certified. He emphasised on the need to regulate ocean accounts by local government else no one will follow.

Comments: We need regulation and to apply science to regulation. We always talk about nature as external for our use, but this way of speaking is an illusion. We need to know by measure, and we only love what we know that is why we need to educate the local communities. We need to respect nature and to see by ourselves as nature is important.

2.2.3.5 *Marine Lecerf, Ocean & Climate Platform- Deep Dive: Coastal and Marine Nature-based Solutions in the Climate and Biodiversity Regimes*

Moderator: Sundry Ramah

Marine's presentation focused on the importance of government including NbS in NDCs, which have to be updated every 5 years. She mentioned that there is an emission gap, which highlights the need improve understanding and communication around ocean-based climate solutions. She explained the ambition cycle and provided information on the current 148 updated NDCs, out of which 97 included NbS. Out of these 97 NDCs, 62 included coastal and marine NbS, specifically for mitigation purposes and actions to protect BCEs. She referred to existing initiatives and commitments of countries towards adopting NbS. For example: Belize is committed to enhance the capacity of the country's mangrove and seagrass ecosystems to act as carbon sink by 2023; Liberia is committed to fully integrating greenhouse gas fluxes, meaning emissions and removals, from mangroves ecosystems into the national GHG inventory by 2023; Cape Verde expressed intention to halt the alteration and destruction of marine habitats, as well as the loss of marine biodiversity, through the extensions of MPAs and the implementation of their monitoring mechanisms; and Maldives undertook to diversify the fishery sector to better respond to emerging climate-induced challenges and uncertainties. She further stated that these show that parties have recognised the ability of coastal and marine based solutions to contribute to mitigating and adapting to the impacts of climate change that will leverage these solutions in their national climate strategies.

For the Global Stocktake, she mentioned the world is currently not on track to meet the goals of the Paris Agreement and emphasised the need to translate all the commitments into actions. The Global Stocktake is a mechanism under the UNFCCC, which aims to assess the world's collective progress towards achieving the long-term global goals of the Paris Agreement. It is an inventory that will oversee where the world stands on climate actions, identifying the gaps and exploring the way forward. The stocktake plays an important role in informing the next round of NDCs, which acts as a checkpoint between the short-term goals of the NDCs and the long-term goals of the Paris Agreement. The stocktake started at COP26 in 2021 and will conclude in 2028. It will be an important step before the second round of NDC submission that is supposed to start in 2025 and it will help countries to integrate and strengthen NbS in their strategies. However, she mentioned that the oceans remain absent from all the discussion related to the global stocktake, but countries still can provide more feedback to the global stocktake to ensure that the oceans are not left out of the discussion. She highlighted the importance of building synergies across the climate and biodiversity regime. The Paris Agreement will not be implemented unless there are joint efforts. To

build bridges between NbS and biodiversity loss, she highlighted the importance of capacity building, science, policy, action and finance are important. A copy of the full presentation can be accessed at:

<https://drive.google.com/file/d/191sretfZLISywW3YOEQ8imUoSlyqwTHB/view?usp=sharing>

2.2.4 SESSION 5: FINAL SESSION: BUILDING RECOMMENDATIONS

2.2.4.1 Open plenary discussions.

Question: What according to you would be the next step to bridge the gap between science, government, community and the private sector?

Marine Lecerf: Regarding science to policy, it is about understanding both and to go towards more actionable knowledge and to improve research to include all kind of knowledge. This knowledge should be able to be integrated in science-based policy making. We need to look at the commitment and see what has been implemented and measure the indicators that have been achieved. There is a need to better integrate the different stakeholders to work together to inspire each other and to better understand the system.

Dr Daniel Murdiyarso: Science is the interaction between and policy and business, which is, however, quite challenging and rarely done and very slow. The business community is profit-oriented, which preoccupies the scientific community. Although the interaction between science and policy is more common, the interaction between business and science is limited. The best strategy is to improve communication between science and business, and then approach the policymakers.

James Kairo: The role of government is to make the roadmap that would include the business sectors. MSP, NDCs and mangrove management plan are government processes but for them to be actioned, the private sector has to be involved. To bridge the gap, there is a need to manage expectations according to the available resources, which is managed by private sectors.

Sharina Halim highlighted the need to sympathise, emphasise and empower the private sector. The language being used to communicate by scientists is sometime not properly understood by private sector. We need to have a common way and improve the communication to empower the private sector and achieve our common goals. We need to have a database and platform to keep memory and information, as well as the need to have these shared with relevant stakeholders so that we do not have to duplicate projects and would help in policy-making.

Mat Vanderkliff: In the Indian Ocean, we have 3 IPCC authors as panellists. How can regional organisations interact with those global overarching ones that have set the agenda?

Daniel Murdiyarso: The IOR is quite unique in term of their size and the domain is quite an empty space and countries have not really engaged with each other. For example, the MPA is managed based on the coastal or by each individual territory. For mangroves and coastal based MPAs, we need to identify the common opportunities and challenges that would enable the countries in the region to interact with each other on tackling and find solutions to these issues together.

Marine Lecerf: There are huge perspective in the way that the countries can coordinate at the international scene. If there are shared interest, IORA can align with the ocean and climate dialogue objective, and the Member States can identify areas of common interest and coordinate how can one country represent each other in international for a and share their common concern and case studies within region.

James Kairo: The REDD+ concept proposed at Kyoto was pushed by small states but when we look at the region, we do not seem to speak one voice. Kenya hosted the inaugural Conference on the African Climate Summit, which aim at looking for a common voice to discuss on specific and issues of common interest at the COP. When we go to the treaty, we do not move as one and as a block. IORA can play an important role in the pre-COP on some of the issue around NbS.

Sharina Halim agreed with James and mentioned that it is about solidarity and regional cooperation. We can learn from IPCC because there is a lot of opportunities to the solutions.

South Africa: A lot of country are not contributing to the NDCs. South Africa is involved in a number of conventions, a lot of discussion around the country's work in terms of ecosystem-based approach is about understanding the impacts of climate change within our ocean space. The challenge of pulling a team together is that a lot of issues that have been discussed are terrestrial related rather than the marine-related aspects and the only place where oceans are featured is only in the CBD because of MPAs. The discussion on ocean issues is not yet where we want it to be.

James Kairo: The gap in ocean literacy is not only in the Indian Ocean region, but it is global. The UN Ocean Decade for Sustainable Development has as objective to increase awareness. With reference to the IPCC report, the ocean report highlights the role of oceans. The government of countries in the region has done well in terms of including ocean-climate actions in their NDCs. There is a willingness, but then the political ambition, financing and technology are all challenges facing the region.

Marine Lecerf: There are existing tools, and we should avoid duplication of projects. One such tool is the Nairobi Work Programme Ocean Expert Group, which is not being tapped to its full potential. There are many reports that have been published that could be used to match the interests of countries and to push further the commission for the climate convention. This is the strategy that was adopted by the Pacific Island countries for the ACG14. Although the ocean was included in the biodiversity fora, the solutions were not taken into consideration. Talking about the ocean only from the MPA perspective is quite limited and conversely, they do not talk about climate. There is space for collaboration since they have a target addressing climate change, but it is not included in the framework at the moment. They do not account for the challenges associated with climate change.

Patrick Bolte: If IORA have a communique, what would you like to be included in that?

Daniel Murdiyarto: DRR can be one of the topics.

Marine Lecerf: Adaptation to sea level rise is one of the key themes, which require financing to support the associated actions.

James Kairo: Promote ocean based NbS for climate change adaptation and mitigation.

Sharina Halim: We share more commonalities than differences and there are more to tap from our similarities, especially in the Indian Ocean region, and these need to be highlighted, emphasised and empowered because the sharing and communication is probably a wish that hopefully can be translated at all levels, especially to the most vulnerable and disadvantaged.

Seychelles: What lies in the future for the countries that are facing these calamities but at the same time implementing NbS against the impacts of climate change? What would be the hope for the countries in the future especially that now we have heard that ocean climate actions are missing in the discussion of some platform?

James Kairo: The small island states have healthy ecosystems, fisheries and tourism but the government only see the economic benefits derived from fisheries and tourism and not from the healthy ecosystems. We need to go beyond GDP and integrate natural capital into the GDP so that the government recognise the need for healthy system. For example for countries like Maldives, even if you pay for carbon and the sea is rising, they need to have healthy system to protect them. The government need to highlight the need for healthy ecosystems.

Daniel Murdiyarto: The government of Indonesia has a system to track budget spending for national development plans, including for mitigation budget tracking in 2016 and in 2018 they also track the budget for adaptation measures. The Commission of Adaptation emphasised that adaptation cost is not something that will be burdensome, which will not be cost-centred but will ultimately be profit-centred. There is a need to invest into development budget for adaptation to ensure long-term profits.

Marine Lecerf: Long-term dynamic and adaptative planning driven by science and, to adopt a seascape approach within the region and to be able to coordinate among countries around all the approaches that countries share interest in.

Sharina Halim: Intersecting mangrove innovatively by combining it with sustainable use such as eco-tourism to achieve solutions. For example, for addressing climate actions, leveraging, and mainstreaming the other intersectionality that we have in our everyday life. A lot of innovation is driven by this narrative and comes from academia. We need to explore ways of integrating the hard-soft solutions because there is a need to emphasise and integrate the aspects of spirituality and wellbeing into the various systems, as well as acknowledging and respecting the diversity and background that we come from.

Concluding remark: James thanked the organisers because coming together enabled us to better understand and fill the gap. With the upcoming COP, we need to identify the message that need to be put forward and how to enhance what we have done. We should not leave anyone behind, including the private sectors.

Daniel Murdiyarto: IORA is bigger than ASEAN in terms of geographic coverage and diversity. I hope that with these challenges, we should strive to work together rather than individually.

Marine Lecerf: Congratulated everyone because all the themes that were discussed on the implementation of the solutions, partnerships, collaborations, sharing experiences are all that we are doing right now. We need to continue what is being done.

2.2.4.2 breakout discussions and recommendations

Group 1

Recommendations	Specific country project	Blue carbon Hub	IORA	IORA+others
1. Improve the visibility of IORA within the region as a source of info/support so that regional voice strengthened			√	
2. Create a framework to implement 5M (Measure, manage, monitor, mitigate, mistake, messaging) within IORA		√		
3. Facilitate within nation synergies and regional synergies			√	√
4. Ensure youth and gender mainstreaming for BCE	√	√		
5. Expand research and development beyond mangroves to other BCEs with regional initiatives		√		
6. Promote alternative learning and use of community wisdom in BCEs governance	√	√		
7. Develop platforms to raise awareness through training, research, meetings and material development	√	√	√	√
8. Common negotiations to face targets of CBD, 30by30 for Indian Ocean and reporting to international commitments as one voice (MSP).	√	√	√	

Group 2

1. Sharing of case studies (success and failure) on IORA Platform
2. Capacity building through data sharing with scientific practitioners.
3. Design criteria /guidelines for NbS measure to deal with SLR/Disaster Risk Mitigation
4. Community awareness through knowledge product on coastal ecosystem services
5. Collation of database and related issues

Principle:

- Need to benefit all of IOR
- Demonstrate both physical and social adaptation
- Timeframe short enough to demonstrate that there have been impacts on local communities.

Group 3

Draft Recommendations for IORA

IORA may consider in each of the following areas:

5. Eco-Engineering:

- Promote the research and development of eco-engineering techniques tailored to the specific coastal challenges faced by IORA member countries.
- Facilitate knowledge exchange and capacity building among member states in eco-engineering approaches for coastal resilience.
- Support pilot projects to demonstrate the effectiveness of nature-based solutions for integrated seascape conservation and restoration.

6. Livelihoods:

- Encourage the integration of nature-based solutions into coastal community development programs, creating opportunities for sustainable livelihoods.
- Promote sustainable community-based resource management initiatives that empower local populations while conserving the coastal ecosystems.
- Establish mechanisms for monitoring and evaluating the socio-economic impacts of nature-based solutions on coastal livelihoods.
- Adapt livelihoods to the impacts of climate change, promote climate reliant crops as an adaptation measure to salinity intrusion in the coastal zone to enhance food security of IORA member countries.

7. Policy and Finance:

- Advocate for the incorporation of nature-based solutions into national and regional climate change adaptation and mitigation policies.
- Facilitate access to climate finance mechanisms, including climate funds and grants, for projects related to blue carbon and coastal resilience.
- Create policy frameworks that incentivize private sector investment in nature-based solutions, such as carbon trading and ecosystem-based insurance

8. IORA common voice on NbS to CC

IORA strongly advocates for the urgent recognition and inclusion of ocean nature-based solutions as integral components of global climate strategies, emphasizing their effectiveness in addressing climate impacts in the coastal zones of IORA countries, and calls upon the UNFCCC to prioritize research, funding, and policy support for solutions.

2.2.4.3 Closing remarks

During this training workshop, various topics were discussed in the context of the Indian Ocean, such as sea level rise, eco-engineering solutions, as well as NbS that offer protection against the effects of storms, sea level rise and enhancing the livelihood and resilience of coastal communities. Throughout the panel discussion, the importance of having one voice, one common vision despite our diversity. The work will be taken forward and continued with the IORA under their mechanisms. Dr Mat Vanderklift thanked all the speakers, the participants from Member States, the Coordinating Ministry of Maritime and Investment Affairs and Mark Wilson for his continuous support for the logistical arrangement.

2.3 ANNEXURES**2.3.1 ANNEX A: LIST OF PARTICIPANTS**

Countries	Name	Institution		Email
MEMBER STATES				
Australia	Patrick Bolte	Banyaneer	Speaker	pbolte@banyaneer.com
Bangladesh	Upal Mahamud	Institute of Water Modelling	Speaker	upm007@gmail.com
Bangladesh	Ahmad Al Karim	Ministry of Foreign Affairs, Dhaka, Bangladesh	Delegate	ahmad.alkarim@mofa.gov.bd
France	Marine LECERF	Ocean & Climate Platform	Speaker	mlecerf@ocean-climate.org
France	Florian Gonzales	Ambassade de France	Delegate	florian.gonzales@ifi-id.com
France	Maxence Prat	AFD (French Development Agency)	Attendee	prtm@afd.fr
India	Sundeeep	Ministry of Environment, Forest and Climate Change, Govt. of India	Delegate	sundeeep.cpcb@nic.in
Indonesia	Apri Susanto Astra	Wetlands International Indonesia	Speaker	apriastra@wetlands.or.id
Indonesia	Andreas Hutahaeen	Ministry of Maritime Affairs and Investment	Speaker	andreas0212@gmail.com
Indonesia	Aji Anggoro	YKAN	Speaker	aji.anggoro@ykan.or.id
Indonesia	Daniel Murdiyarso	CIFOR	Speaker	d.murdiyarso@cifor-icraf.org
Indonesia	August Daulat	BRIN	Delegate	daul.sinaga@gmail.com
Indonesia	T. Khairil Azmi	International Federation of Red Cross	Speaker	TKHAIRIL.AZMI@ifrc.org
Indonesia	Engelbert Maspaitella	Yayasan Ecoducation Atap Langit	Attendee	ecoducation.ataplangit@gmail.com
Indonesia	Muh. Rasman Manafi	Coordinating Ministry for Maritime Affairs and Investments	Attendee	rasman1173@gmail.com
Indonesia	Suci Alisafira	Coordinating Ministry for Maritime Affairs and Investments	Attendee	suci.alisafira@gmail.com

Appendix

Indonesia	Dr.Luky Sembel	Fakultas Perikanan dan Ilmu Kelautan Universitas Papua	Attendee	lukysembel76@gmail.com
Indonesia	Maman	Yayasan Pesisir Lestari	Attendee	maman@pesisirlestari.org
Indonesia	Ni Made Ernawati	Universitas Udayana	Attendee	ernawati@unud.ac.id
Indonesia	Permana Yudianto	BPSPL Makassar	Attendee	permana.yudianto@gmail.com
Indonesia	Ketut Putra	Konservasi Indonesia	Attendee	kputra@conservation.org
Indonesia	Yasser Ahmed	Deputi 4 Kemenko Marves	Attendee	yassera575@gmail.com
Indonesia	Beby Pane	Yayasan Pesisir Lestari	Attendee	beby@pesisirlestari.org
Indonesia	Getreda Melsina Hehanussa	KKP, BPSPL Denpasar	Attendee	getreda75@gmail.com
Indonesia	Yuniarti Karina Pumpun	KKP, BPSPL Denpasar	Attendee	yuniarti.karina@gmail.com
Indonesia	Jessica Novia	Carbon Ethics	Attendee	jessica@carbonethics.org
Kenya	James Kairo	Kenya Marine and Fisheries Research Institute	Delegate	gkairo@yahoo.com
Madagascar	Lantoasinoro RANIVOARIVELO	Institut Halieutique et des Sciences Marines	Delegate	lantoasinoro@hotmail.com
Malaysia	Sharina Abdul Halim	Universiti Kebangsaan Malaysia	Speaker	sharinahalim@ukm.edu.my
Malaysia	Lee Chin Chin	Ministry of Economy	Delegate	lee.chinchin@ekonomi.gov.my
Malaysia	Salina Muhamad Sali Luddin	Ministry of Economy	Delegate	salina.saliluddin@ekonomi.gov.my
Maldives	Khadeeja Jumana Siraj	Ministry of Environment, Climate Change and Technology	Delegate	khadheeja.jumana@environment.gov.mv
Mauritius	Sundy Ramah	Ministry of Blue Economy, Marine Resources, Fisheries & Shipping	Delegate	sundy.ramah@gmail.com
Oman	Nadir Al-Abri	Ministry of Agriculture, Fisheries and Water Resources	Delegate	n.alabri79@hotmail.com

Appendix

RSA	Potlako Khati	Department of Forestry Fisheries and the Environment	Delegate	pkhati@dffe.gov.za
Seychelles	Jean Claude Labrosse	Climate Change Department	Delegate	j.labrosse@env.gov.sc
Soloman Is.	Edgar Pollard	Save the Children / Mai Masasina Green Belt	Speaker	coordinator@mai-masasina.org
Somalia	Abdullahi Dool	Ministry of fisheries and Blue Economy	Delegate	abdullahidoolmohamed@gmail.com
Sri Lanka	Sevvandi Jayakody	National Blue Carbon Task Force/ Wayamba University of Sri Lanka	Speaker	sevandij@gmail.com
Sri Lanka	Himali Eranthika Gamage	Ministry of Environment	Delegate	himaligamage23@gmail.com
Thailand	Tipamat Upanoi	Department of Marine and Coastal Resources	Delegate	tipamatu@yahoo.com
DIALOGUE PARTNER				
Republic of Korea	PARK Hansan	Korea-Indonesia Marine Technology Cooperation Research Center	Attendee	hansanpark@mtcrc.center
ROK-RI	NIDYA NASRUN	KOREA INDONESIA MTCRC	Attendee	NIDYANASRUN@MTCRC.CENTER
IORA SECRETARIAT				
IORA	Shamimtaz Sadally	Indian Ocean Rim Association	Speaker	shamimtaz.sadally@iora.int

2.3.2 ANNEXURE B: AGENDA



4th IORA Blue Carbon Hub think tank meeting Nature-based solutions for adaptation to climate risks in the coastal zone

12-14 September 2023

Co-hosted with the Coordinating Ministry of Maritime and Investment
Affairs, Republic of Indonesia

Agenda

Times given in Central Indonesia Time: UTC+8

Location: Krisan Room, Courtyard by Marriott, Nusa Dua, Bali

Day 1: Tuesday, 12 September 2023	
08:30-09:30	Registration
65 minutes 09:30-10:35	<p>Moderator: Andreas Hutahaean</p> <p>Opening remarks by Mr Firman Hidayat, Deputy Minister for Maritime Resources, Coordinating Ministry for Maritime and Investment Affairs, Republic of Indonesia</p> <p>Opening remarks by Ms Amelia Ekkel, Australian Consul in Bali</p> <p><i>Nature-based solutions for adaptation to climate risks in the coastal zone</i></p> <p>Dr Mat Vanderklift: IORA Indian Ocean Blue Carbon Hub [20 minutes]</p> <p>Keynote: Marine Lecerf [15 minutes]</p> <p>Questions: 10 minutes</p>
40 minutes 10:35-11:15	Break
85 minutes 11:15-12:40	<p>Moderator: Paul Branson</p> <p><i>Coastal development: resilience, restoration and infrastructure requirements</i></p> <p>Dr Andy Steven: CSIRO [20 minutes]</p> <p>Session 1: Eco-engineering: theory and case studies</p>

Appendix

	<p><i>Introduction and background</i> Dr Paul Branson: CSIRO [20 minutes]</p> <p>Speakers Apri Susanto Astra: Wetlands International Indonesia [15 minutes]</p> <p>Upal Mahamud: Institute of Water Modelling, Bangladesh [15 minutes]</p> <p>Questions [15 minutes]</p>
80 minutes 12:40-14:00	Break – Lunch at Momo Café (Courtyard by Marriott)
60 minutes 14:00-15:00	<p>Moderator: August Daulat</p> <p>Session 1 continued: Eco-engineering: theory and case studies</p> <p>Jean-Claude Labrosse: Ministry of Agriculture, Climate Change and Environment, Seychelles [15 minutes]</p> <p>Khairul Azmi: International Federation of Red Cross and Red Crescent Societies [15 minutes]</p> <p>Open discussion [30 minutes]</p>
30 minutes 15:00-15:30	Break
90 minutes 15:30-17:00	<p>Session 2: Livelihoods</p> <p>Moderator: Andreas Hutahaean</p> <p>Dr Sharina Halim: Universiti Kebangsaan Malaysia [20 minutes]</p> <p>Edgar Pollard: Save the Children / Mai Masasina Green Belt, Solomon Islands [15 minutes]</p> <p>Aji Anggoro, YKAN Indonesia [15 minutes]</p> <p>Open discussion [30 minutes]</p> <p>Closing comments: Mat Vanderklift [10 minutes]</p>
Day 2: Wednesday, 13 September 2023	
40 minutes 09:00-09:40	<p>Recap: Mat Vanderklift [10 minutes]</p> <p><i>Keynote: Mangrove restoration and conservation to enhance coastal zone and community resilience</i> Dr Daniel Murdiyarto: President, Indonesia Academy of Sciences [30 minutes]</p>
60 minutes 09:40-10:40	<p>Session 3: 'Nature Navigator'</p> <p>Patrick Bolte: Banyaneer</p>

Appendix

30 minutes 10:40-11:10	Break
70 minutes 11:10-12:20	<p>Session 4: Policy and finance</p> <p>Moderator: Andy Steven</p> <p>Dr Novi Adi, KKP, Indonesia [15 minutes]</p> <p>Prof Sevvandi Jayakody, Sri Lanka [15 minutes]</p> <p>Dr James Kairo: Kenya Marine and Fisheries Research Institute [15 minutes]</p> <p>Open discussion [25 minutes]</p>
80 minutes 12:20-13:40	Break – Lunch at Momo Café (Courtyard by Marriott)
70 minutes 13:40-14:50	<p>Session 4: Policy and finance (contd)</p> <p>Moderator: Andy Steven</p> <p>Marine Lecerf, Ocean & Climate Platform [20 minutes]</p> <p>Dr Joko Tri Haryanto, Managing Director, Environment Fund Management Agency Indonesia [20 minutes]</p> <p>Panel discussion [30 minutes]</p>
30 minutes 14:50-15:20	Break

100 minutes 15:20-17:00	<p>Session 5: Final session: Building recommendations</p> <p>Open plenary discussions, breakout discussions and recommendations [90 minutes]</p> <p>Closing comments and field trip briefing [10 minutes]</p>
19:00	Workshop dinner [venue TBC]

Day 3: Thursday, 14 September 2023

	<p>Meet 09:00</p> <p>Depart 09:30</p> <p>Field demonstrations</p> <ul style="list-style-type: none"> G20 mangrove planting at Tahura Mangrove and seagrass ecosystems and seaweed-based livelihoods at Nusa Lembongan (involves a fastboat ride and a canoe tour) <p>Return 17:15</p>
--	---