



# AOGEO Task Group 2: Asia-Pacific Biodiversity Observation Network (APBON)

## Co-chairs

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the Ministry of Education, Culture, Sports, Science and Technology (MEXT) Japan;  
National Institute for Environmental Studies (NIES),  
and all other voluntary contributions.

<http://www.esabii.biodic.go.jp/ap-bon/index.html>

**APBON**  
Asia Pacific Biodiversity Observation Network  
For biodiversity conservation & sound decision making

**APBON Strategic Plan 2030**

H. Muraoka (Gifu Univ. & National Institute for Environmental Studies, Japan),  
Y. Takeuchi (National Institute for Environmental Studies, Japan), T. Yamakita (Japan Agency for Marine-Earth Science and Technology, Japan),  
Y. Kano (Kyusyu Univ., Japan), S. Nagai (Japan Agency for Marine-Earth Science and Technology, Japan), M. Nakaoka (Hokkaido Univ., Japan),  
Y. Trisurat (Kasetsart Univ., Thailand) and R.S. Pungga (Forest Department Sarawak, Malaysia)

APBON responds to local, regional and global needs by: [1] Developing national BONs and networking them in the region to contribute to CBD Aichi Biodiversity Targets and post 2020 Global Biodiversity Framework, [2] Filling observational and knowledge gaps for biodiversity status and trends to contribute to IPBES assessments, [3] Producing data and knowledge to address the issues particularly related to biodiversity and ecosystem sustainability by coordinated activities with GEO and AOGEO, [4] Contributing to achievements of SDGs by providing adequate and defensible biodiversity data that help developing policy for conservation and sustainable use of biodiversity, and [5] Learning the challenges of biodiversity issues under COVID-19 pandemic and on-going climate change.

**Our achievements from 2009 to 2020**

- 100 plots in 10 countries have been monitored for biodiversity & ecosystems
- Publications for data and knowledge sharing: Books, Original papers, Data papers
- Participants from 18 countries/areas: AOGEO Symposium, APBON Workshops, Webinars

**Our activities toward 2030**

Takeuchi et al. (2021) Ecological Research 36: 232-237 <https://doi.org/10.1111/1440-1708.12212>

Biodiversity observations	Networking observations and users	Capacity building
<p><b>Mission:</b></p> <ul style="list-style-type: none"> <li>Developing national BONs and networking them in the region to contribute to CBD Aichi Biodiversity Targets and post 2020 Global Biodiversity Framework</li> <li>Producing data and knowledge to address the issues particularly related to biodiversity and ecosystem sustainability by coordinated activities with GEO and AOGEO</li> <li>Contributing to achievements of SDGs by providing adequate and defensible biodiversity data that help developing policy for conservation and sustainable use of biodiversity, and</li> <li>Learning the challenges of biodiversity issues under COVID-19 pandemic and on-going climate change</li> </ul> <p><b>Key activities:</b></p> <ul style="list-style-type: none"> <li>Developing national BONs and networking them in the region</li> <li>Producing data and knowledge to address the issues particularly related to biodiversity and ecosystem sustainability by coordinated activities with GEO and AOGEO</li> <li>Contributing to achievements of SDGs by providing adequate and defensible biodiversity data that help developing policy for conservation and sustainable use of biodiversity, and</li> <li>Learning the challenges of biodiversity issues under COVID-19 pandemic and on-going climate change</li> </ul>	<p><b>Coordination of a regional network of biodiversity observation institutions</b></p> <p>Network users: Global, Regional, National</p> <p>Partners: AOGEO, GEO, IPBES, IUCN, WWF, WCS, etc.</p>	<ul style="list-style-type: none"> <li>Sharing knowledge and skill of biodiversity survey through workshops</li> <li>Training courses for taxonomic capacity building</li> </ul> <p><b>Our partner:</b> ESABII (East and Southern Africa Biodiversity Information Institute)</p>

**Please visit our website!** <http://www.esabii.biodic.go.jp/ap-bon/index.html>

**APBON Secretariat: Biodiversity Center of Japan**  
Nagata Conservation Bureau, Ministry of the Environment  
5997-1, Keimmarubi, Kamayoshida, Fuyuhashi City, Yamansashi Prefecture  
403-0005, JAPAN  
E-mail: [biodic\\_webmaster@env.go.jp](mailto:biodic_webmaster@env.go.jp)

# APBON development and networking

Year	GEO/GEOSS Symposia	GEO BON	AP BON Meetings	National BONs	CBD COPs	IPBES
2009	3rd GEOSS AP (Kyoto, February)		1st AP BON (July, Japan) 2nd AP BON (December, Japan)	Japan BON (May)		
2010	4th GEOSS AP (a session, Bali, March)	GEO BON Meeting (February, USA)	3rd AP BON (CBD COP10 Preconference, March, Japan)		COP10 (Japan, Side-event)	
2011			4th AP BON (December, Japan)			
2012	5th GEOSS AP (Tokyo, April)	GEO BON Meeting (December, USA)	WCC of IUCN (September, Korea)	Korea BON, Nepal BON, Bangladesh BON	COP11 (India, Side-event)	
2013	6th GEOSS AP (Ahmedabad, February)		5th AP BON (November, ACB, Philippines)	Philippines BON		Plenary-1
2014	7th GEOSS AP (Tokyo, May)	IC and AB (June, Germany)	6th AP BON (October, NIBR Korea)		COP12 (Korea, Side-event)	Plenary-2
2015	8th GEOSS AP (Beijing, September)	IC and AB (June, Germany)		Sino BON Indonesia BON		Plenary-3
2016	2016-2025 A New GEO Strategy Plan Initiated	All-Hands Meeting (July, Germany)	7th AP BON (ACB, Thailand) 8th AP BON (Taipei, Taiwan)	WCC of IUCN (September, USA)	COP13 (Mexico)	Plenary-4
2017	9th GEOSS AP (Tokyo, January), 10th GEOSS AP (Hanoi, September)	IC and AB (July, Germany)				Plenary-5
2018	11th GEOSS AP (October, Kyoto)	All-Hands Meeting (July, Beijing)	9th AP BON (Bangkok, February), 10th AP BON (Kuching, July)		COP14 (Egypt)	Plenary-6
2019	12th AOGEO (November, Canberra)		11 <sup>th</sup> AP BON (KL, Malaysia)			Plenary-7
2020		Open Science Conference & All Hands Meeting			COP15 (China) (postponed)	Plenary-8 (tbc)
2021	13 <sup>th</sup> AOGEO (March, Online) 4 <sup>th</sup> AOGEO WS (July) 14 <sup>th</sup> AOGEO (Nov. Online)		12 <sup>th</sup> APBON (Online) 13 <sup>th</sup> APBON (Online)		COP15 (China)	Plenary-8 (June)



**Participants from...**  
 Japan, Thailand, Malaysia, China, Republic of Korea, Indonesia, Nepal, Cambodia, Myanmar, Vietnam, Philippines, USA, ASEAN Centre for Biodiversity, ICIMOD

# Key Activities and Achievements since 2009

- Species recording, mapping biodiversity for terrestrial, freshwater, coasts/marine, and landscape (river basin)
- Detect changes of biodiversity
- Assessing risks on biodiversity
- Data and knowledge sharing, publishing together
- Networking sites / people / institutes / data / communities
- APBON Webinars (2020~)

## “APBON Books” (Springer, 2012, 2014, 2016)



## IPBES Regional Assessment Report (2018) “Ecological Research” Data paper (Ecological Society of Japan, Wiley)

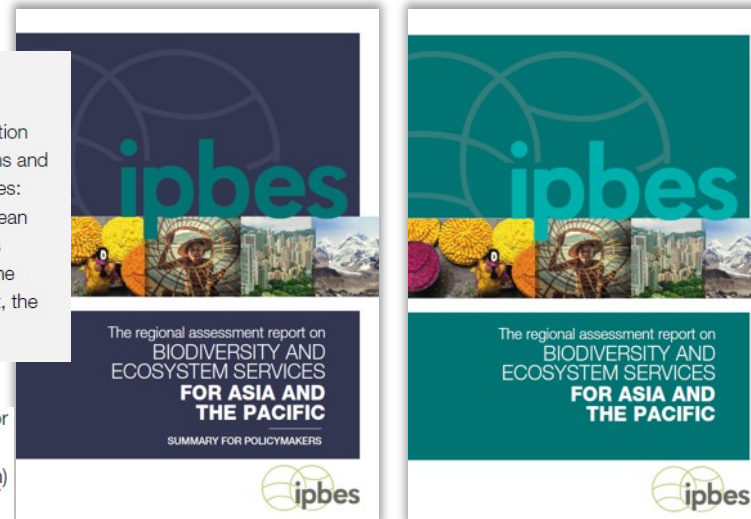
### Box 2 Data sources of the Asia-Pacific Regional Assessment.

These include among several others the Clearing-House Mechanism (CHM) of the CBD, the Global Biodiversity Outlook, National Specimen Information Infrastructure (NSII), the Global Biodiversity Information Facility, the Indian Bio-resource Information Network, the Group on Earth Observations Biodiversity Observation Network with regional components, the Asia-Pacific Biodiversity Observation Network and subregional or national components, [the Japanese Biodiversity](#)

[Observation Network](#) and the Korea Biodiversity Observation Network; regional initiatives: the Economics of Ecosystems and Biodiversity for South-East Asia; regional research institutes: Biodiversity International (Asia-Pacific Oceania division), Ocean Bio geographic Information System, the World Resources Institute, the CGIAR Consortium for Spatial Information, the International Centre for Integrated Mountain Development, the International Union for Conservation of Nature

**STRATEGIC GOAL E: Enhance implementation through participatory planning, knowledge management and capacity building**

Regional and national initiatives for BES knowledge sharing are growing, such as [Asia-Pacific Biodiversity Observation Network \(AP-BON\)](#), [J-BON \(Japan\)](#) and [K-BON \(Korea\)](#).



# APBON Work Plan update toward 2030

**Earth observations** – increasing the societal demand under climate change  
**Needs ...** We need to respond to the global agenda and activities by providing adequate and defensible biodiversity data that help developing policy for conservation and sustainable use of biodiversity

- APBON will strive to **supply the scientific evidence** to develop sound assessments and facilitate policy-making
- Promoting **interdisciplinary research and problem-solving approaches** with filling the knowledge gaps
- Strengthening **biodiversity observation networks** and collaboration with Earth observation communities for societal benefits
- Promoting the **data accessibility, deliver our information and knowledge** to global platforms such as CBD, IPBES, and KBA.

Takeuchi & Muraoka et al. (2021)  
*Ecological Research*

## Strategy

### 1. Biodiversity research and monitoring

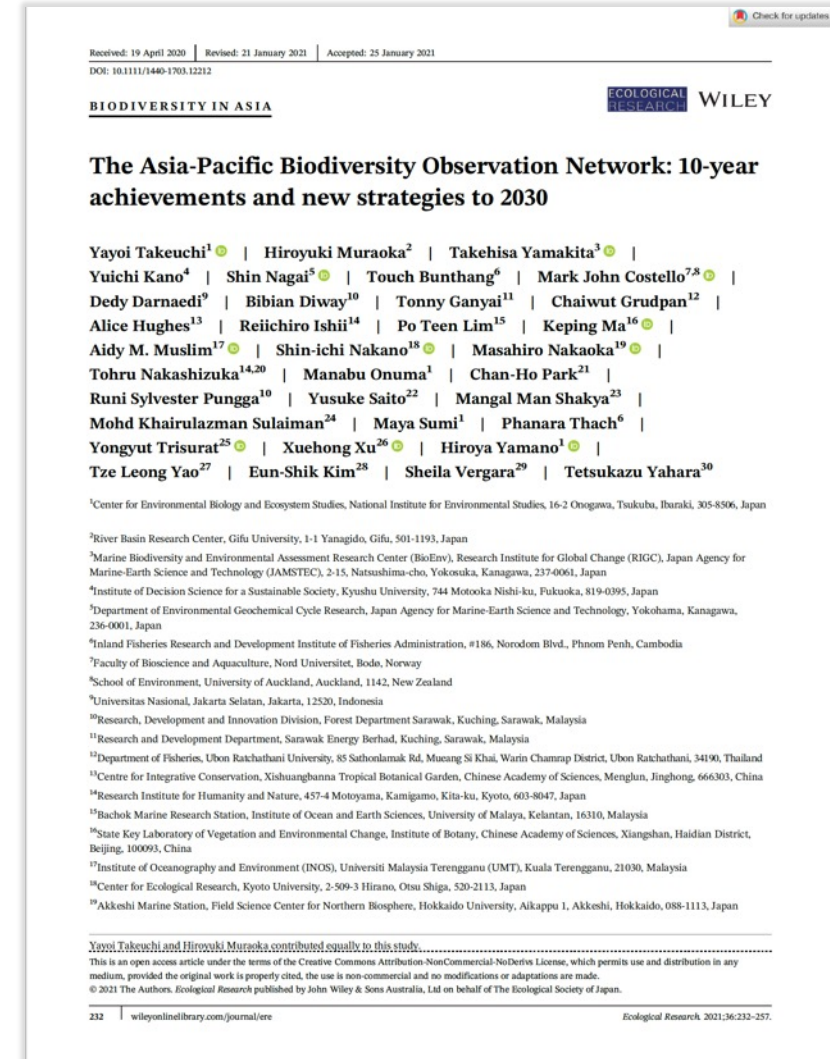
- a. Monitoring states and changes of biodiversity
- b. Filling gaps in data availability
- c. Increasing access to data (GBIF, ABCDNet, Data paper, OBIS)
- d. Improving knowledge by using cutting-edge technologies

### 2. Networking of networks

- a. Networking of in-situ biodiversity/ecosystem monitoring networks
- b. Science-policy and science-society networks

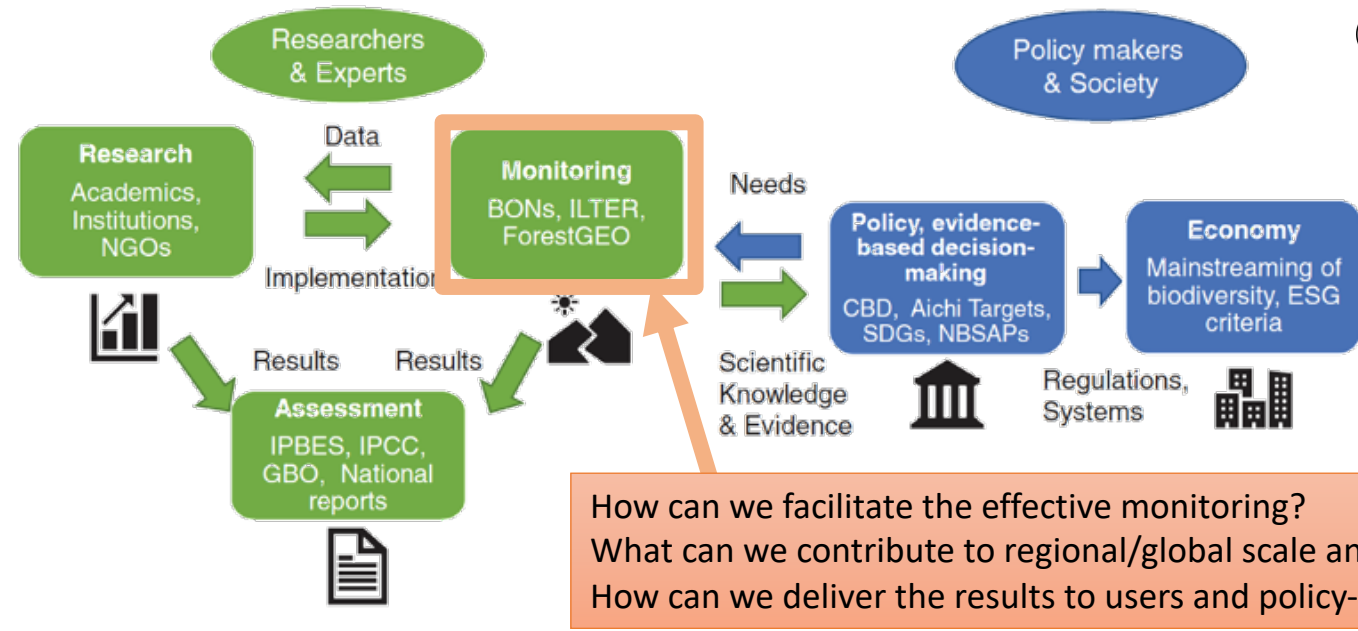
### 3. Capacity building

- a. Training workshops (students, scientists, users)



# APBON's missions

- ❑ Promoting interdisciplinary research and problem-solving approaches with filling the observational and knowledge gaps,
- ❑ Promoting data sharing and data accessibility through/by networks of the observation networks,
- ❑ Delivering our information and knowledge to stakeholders and global platforms



How can we facilitate the effective monitoring?  
 What can we contribute to regional/global scale analysis?  
 How can we deliver the results to users and policy-makers?

## Post-2020 Global Biodiversity Framework

(Convention of Biological Diversity) <https://www.cbd.int/>

- ❑ First draft was published in July 2021.
- ❑ Build on the Strategic Plan for Biodiversity 2011-2020 and sets out an ambitious plan to implement broad-based action to bring about a transformation in society's relationship with biodiversity and to ensure that, by 2050, the shared vision of living in harmony with nature is fulfilled.

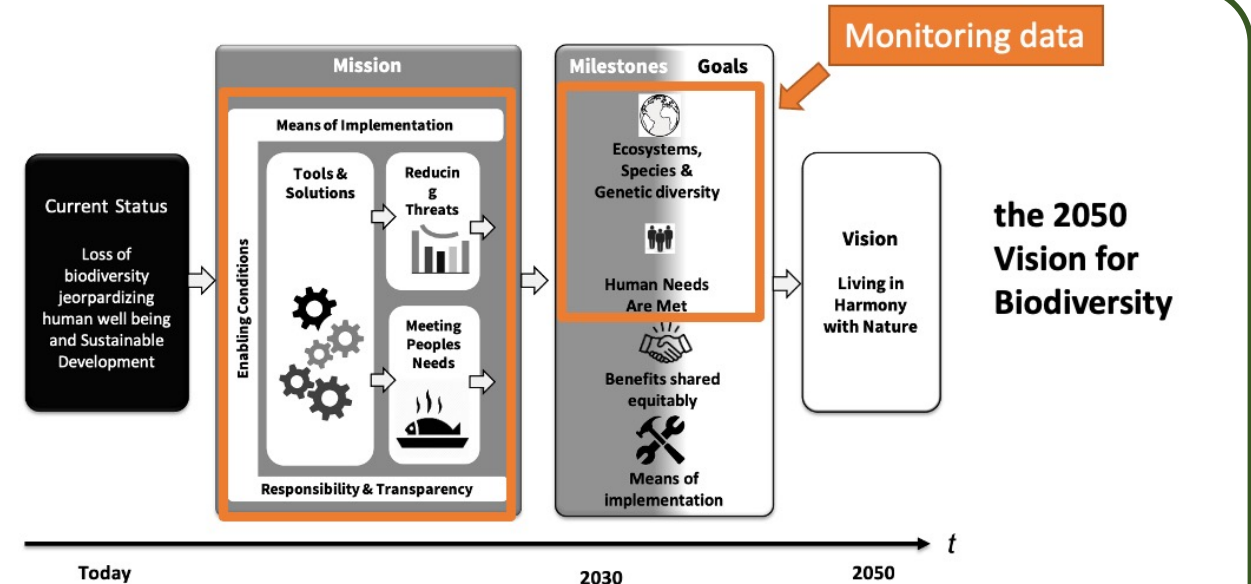


Figure 1. Theory of change of the framework

# The 13<sup>th</sup> APBON Workshop

Date/Time: 19<sup>th</sup> October 2021, 11:00 – 17:00 JST

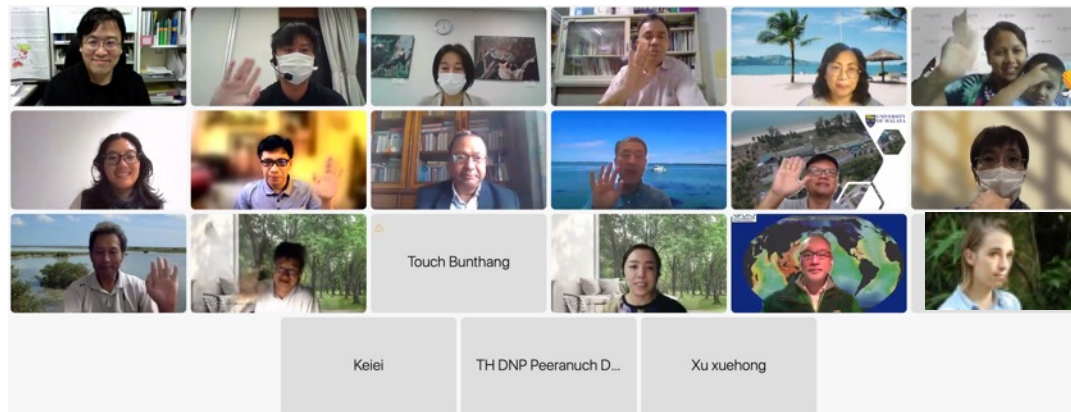
## Objectives of the Workshop

The 13<sup>th</sup> APBON Workshop will be organized by interactive discussions by bringing ideas from participants for generating plans of integrative collaborations with the clear objectives below.

- A) Scoping collaborative work plan of APBON in the next ca. 4 years (~2025), which is the first half of APBON's strategic plan toward 2030.
- B) Preparing inputs/deliverables to the 14<sup>th</sup> AOGEO Symposium (10-12 November 2021) for discussing biodiversity-related issues and for scoping 2023-2025 AOGEO Implementation Plan document, and a short presentation at the GEO Week 2021 side event (AOGEO highlights, tbc).

## Focus of the sessions

1. Identifying Integrated knowledge and research/synthesis design (cf., baseline data for detecting change; socio-ecological boundaries; conservation guideline; joint climate-biodiversity targets; ecosystem service analysis; respond to Post-2020 Global Biodiversity Framework)
2. Analyzing data availability and accessibility, and exploring data sharing (through networking)
3. Collaboration with partners (e.g., Key Biodiversity Areas, AOGEO)
4. Engagement with stakeholders (→ contribution of APBON to society: e.g., contribution to National Biodiversity Strategies and Action Plans (CBD), IPBES assessments, etc.)



11:00 – 11:30 (JST)	<b>Session 1: Opening and Scene setting [30 minutes]</b> Moderator: APBON Co-chairs <ul style="list-style-type: none"> <li>Opening remarks</li> <li>Objectives, expected outcomes, working hypothesis [Hiroyuki Muraoka]</li> </ul>			
11:30 – 13:30 (JST)	<b>Session 2: Breakout group session [2 hours]</b> <ul style="list-style-type: none"> <li>Identifying knowledge to respond to national, regional, and global needs (e.g., national reporting to CBD; Nbs; joint climate-biodiversity targets; post2020; 30by30)</li> <li>Brainstorming design of collaborative research and synthesis (e.g., refining EBVs for Asia-Pacific; etc.)</li> <li>Analyzing data availability and accessibility</li> <li>Reviewing APBON's contribution to SDGs, Paris Agreement, Sendai Framework (to be submitted to the 14<sup>th</sup> AOGEO Symposium in November)</li> <li>Next steps</li> </ul> <table border="1"> <tr> <td> <b>Terrestrial WG and Freshwater WG</b>            Effective biodiversity monitoring for post-2020 biodiversity target and policy-relevant agenda           <ul style="list-style-type: none"> <li>Integrated observation of forests by satellite and in-situ survey [Osamu Ochiai@JAXA]</li> <li>Cutting edge monitoring technologies and informatics [Shin Nagai]</li> <li>Environmental DNA monitoring [Manabu Onuma]</li> <li>Fish abundance and diversity monitoring along Mekong River and its tributaries in Cambodia [Putrea Solida (IFREDI)]</li> </ul> </td> <td> <b>Marine WG</b> <ul style="list-style-type: none"> <li>UN Decade of Ocean Science and ML2030 (Massa Nakaoka)</li> <li>Establishing Asian network of blue carbon research and eDNA (Venus Leopardas / Tadashi Kajita)</li> <li>Current status of OBIS: how to increase its contents and accessibility (Tadashi Hosono / Kit Elloran)</li> <li>How to achieve 30by30 in marine regions of AP? (Qinshuo Zao / Yasuhiro Kubota)</li> </ul> </td> </tr> </table>		<b>Terrestrial WG and Freshwater WG</b> Effective biodiversity monitoring for post-2020 biodiversity target and policy-relevant agenda <ul style="list-style-type: none"> <li>Integrated observation of forests by satellite and in-situ survey [Osamu Ochiai@JAXA]</li> <li>Cutting edge monitoring technologies and informatics [Shin Nagai]</li> <li>Environmental DNA monitoring [Manabu Onuma]</li> <li>Fish abundance and diversity monitoring along Mekong River and its tributaries in Cambodia [Putrea Solida (IFREDI)]</li> </ul>	<b>Marine WG</b> <ul style="list-style-type: none"> <li>UN Decade of Ocean Science and ML2030 (Massa Nakaoka)</li> <li>Establishing Asian network of blue carbon research and eDNA (Venus Leopardas / Tadashi Kajita)</li> <li>Current status of OBIS: how to increase its contents and accessibility (Tadashi Hosono / Kit Elloran)</li> <li>How to achieve 30by30 in marine regions of AP? (Qinshuo Zao / Yasuhiro Kubota)</li> </ul>
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13:30 – 14:30 (JST)	<b>Break</b>			
14:30 – 15:30 (JST)	<b>Session 3: Group reporting and joint discussion [60 minutes]</b> Moderator: Runi Sylvester Pungga and Yongyut Trisurat <ol style="list-style-type: none"> <li>Reporting group discussion findings &amp; outcomes [WG leads]</li> <li>Open discussion for planning joint-WG research, data integration, etc. (e.g., landscape approach: land-river-coast) [all participants]</li> </ol>			
15:30 – 16:45 (JST)	<b>Session 4: Collaboration with partners and plans for stakeholder engagement [75 minutes]</b> Moderator: Yongyut Trisurat and Hiroyuki Muraoka <ol style="list-style-type: none"> <li>Collaboration plan with Key Biodiversity Areas (KBA) [40 min: Yongyut Trisurat]             <ul style="list-style-type: none"> <li>KBA perspective and contribution to biodiversity conservation (Dr. Andrew J. Plumptre) [15min]</li> <li>Data support from APBON and biodiversity database from Thailand (Yongyut Trisurat) [10min]</li> <li>Interest of Department of National Parks, Wildlife and Plant Conservation (Preeranuch Dulkul) [5min]</li> <li>Discussion – APBON and KBA collaboration and contribution to AP region (moderator: Yongyut Trisurat, panelists: Andrew and APBON members) [10min]</li> </ul> </li> <li>Collaboration with Task Groups of Asia-Oceania GEO for nexus study, filling data gaps. [20 min: Alice Hughes, Hiroyuki Muraoka]</li> <li>OECM [15 min: Sunita Chaudhary]</li> </ol>			
16:45 – 17:00 (JST)	<b>Wrap-up and closing [15 minutes]</b> Moderators: APBON Co-chairs <ul style="list-style-type: none"> <li>Summary and next steps</li> <li>Closing remarks</li> </ul>			

# Terrestrial & Freshwater Working Group

## Forest Observations by satellite + *in-situ*

Integrated observation of forests by satellite and in-situ survey by Osamu Ochiai@JAXA

AFOLU Dataset updates - Land Cover

- Satellite monitoring for forests contributes to Paris agreement (global stocktake) and IPCC (AFOLU)
- Wide-range of satellite sensors which observe landuse change, forest height sometime with high spatial resolutions
- Importance of ground data for securing accuracy of remote sensing observation

New GEO Activity: GEO-TREES

A Forest Biomass Reference System from Tree-by-Tree Inventory Data

Updated Reference Data Are Critically Important for Improved Biomass Mapping. GEO-TREES supports collection of new high-quality reference measurements for validation of biomass products.

International action for Biomass Research

JointFor: Global forest cover & biomass reference system

University Forests, JAXA-FRIST, JAXA-FRIST

HAAP - NASA and ESA works for Forest Biomass Research

## Social sensing of ecosystem services

Cutting edge monitoring technologies and informatics by Shin Nagai@JAMSTEC

- Social sensing – SNS, search engines, geo-location data; real-time and geographical trends of plant phenology and cultural ecosystem services (leisure activities)

Utility of SNS (twitter)

Search engine: Google Trends [https://trends.google.com/trends/]

Text mining of tweets regarding leaf coloring.

Bigram network graph of tweets including the Japanese terms for peak (見頃, 見ごろ and ビュー) from 16 November to 20 November 2019.

## eDNA for wildlife monitoring

Environmental DNA for wildlife monitoring in a tropical forest by Manabu Onuma @NIES

- Merits of camera traps and eDNA for wildlife monitoring
  - Cost and labor effective
  - Detecting unseen species in the camera trap
- Limitations
  - Reliable database of DNA barcoding
  - Technical issues related to NGS

Method	Number of sampling sites	Duration of sampling (day)	Number of detected species	Coverage	Cost and others
Camera trap	47	~150	58	Mainly ground level	USD 30,000 + Some experts
eDNA	9	10	7 (**73)	Canopy to ground	USD 3,200 + NGS and operators + Reliable database

## Fish diversity in the Mekong River

Fish abundance and diversity monitoring along Mekong River and its tributaries in Cambodia by Putrea Solida @IFReDi, Cambodia

- Long-term fish community monitoring since 2007 by fishermen in Mekong river basin
- Database -- fish diversity (>240 spp.) and dynamics
- Long-term fluctuation of fish species abundance, species composition

Year	Indigenous	Exotic
2007	99.9	0.05
2008	99.8	0.10
2009	99.9	0.05
2010	99.8	0.10
2011	99.9	0.05
2012	99.8	0.10
2013	99.9	0.05
2014	99.8	0.10
2015	99.9	0.05
2016	99.8	0.10
2017	99.9	0.05
2018	99.8	0.10
2019	99.9	0.05
2020	99.8	0.10

## Q. How can we facilitate the effective monitoring?

→ Cutting-edge technologies and citizen science will cover broad spatial and temporal scales and compensate for monitoring costs.

- Satellite monitoring of biomass, ecosystems, landuse change – needed the ground truth through monitoring networks
  - ✓ Need to synthesize biodiversity data in monitoring sites and biomass data by remote sensing
- Social sensing: analyzing SNS reveals real-time and geographical trends of plant phenology, cultural ecosystem services
- Camera traps and eDNA technologies for biodiversity monitoring; eDNA reveals unseen species diversity in wildlife
  - ✓ Need to enhance DNA barcoding database
- 15 yrs monitoring of fish community in Mekong basin: Citizen scientists contributes to long-time monitoring

## Q. What can we contribute to regional/global scale analysis?

→ Mobilization of local data and database accessibility

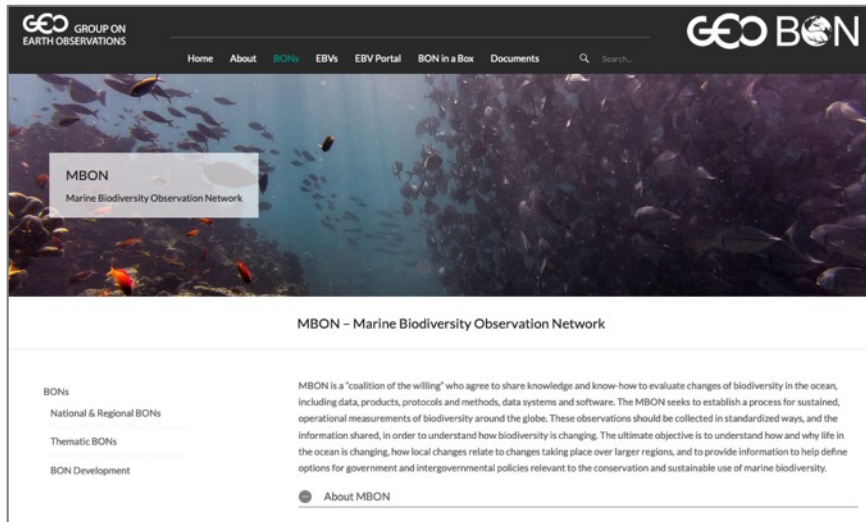
- Open data, link to the global database (GBIF, etc.)
- Combination of *in-situ*, airborne and satellite observations at particular ecosystem research sites ('master sites')


## Q. How can we deliver the results to users and policy-makers?

→ Facilitating dialogue with policy-makers

- Strengthen the functions of science-policy interface: APBON, AOGEO
- Need the indicators to communicate with policy-makers such as EBVs and ECVs
- Scientific summary or policy brief for policy-makers

# Marine Working Group & AP-MBON





MBON WEBINARS

MBON WEBSITE


## AP-MBON

AP-MBON furthers the development of marine biodiversity science in the Asia – Pacific region, as a sub-group of the MBON and Asia-Pacific BON networks of GEO BON. Its Secretariat is hosted at GODAC in JAMSTEC and can be contacted to: [j-obis\\_jam@jamstec.go.jp](mailto:j-obis_jam@jamstec.go.jp). To join, please sign up to GEO BON here, and then select AP-MBON as your group of interest.


The geographic scope of AP-MBON extends from pole to pole through Asia and the western Pacific, including the Pacific islands and the Indian Ocean. It includes the deepest ocean trenches, and the Coral Triangle, the highest density of marine species on Earth, as well as the highest densities of human populations.

AP-MBON activities focus on networking researchers in the region, encouraging staff and student exchanges between laboratories, and fostering a community of practice in marine biodiversity monitoring. We welcome specialist subgroups, such as focusing on particular ecosystems (e.g., coral reefs), biomes (e.g., seagrass), habitats, taxa (e.g., seaweeds), and thematic topics (e.g., invasive and threatened species, marine reserves). Our vision is to enable reporting of trends in marine biodiversity from local to regional scales to better inform society of the state of biodiversity and how to benefit from and conserve it.

### Co-leads



**Masahiro Nakaoka**  
Hokkaido University, Akkeshi Marine Station



**Takehisa Yamakita**  
Japan Agency for Marine-Earth Science and Technology

## UN Decade of Ocean Science and ML2030 (Massa Nakaoka, Hokkaido Univ.)

- Lead institution: Smithsonian
- Collection of on-going activities, a way to link networks and to link the networks to stakeholders and decision makers
- Project time period: July 2021 - Dec 2030
- Integrate MBON and OBIS for more effective biodiversity monitoring
- Endorsed by the UN Decade of Ocean Science
- Ongoing activity: UN Ocean Decade kick off conference for Western Pacific and its adjacent areas; AP-MBON session accepted in the incubation session for Nov 25-26 <https://www.ioc-westpac.org/decade-kickoff-conference/>

## Current status of OBIS (Kit Elloran, ASEAN Centre for Biodiversity)

- Increasing contents and accessibility is a challenge to fill biodiversity data gaps
  - Most data are from national museums and landing sites and there is a gap in ASEAN countries.
  - Most data coming from ASEAN Countries are in various formats
  - Taxonomic, temporal and geographical gaps
  - Multi-partnership engagement

## Research Network toward Global Scale Biodiversity monitoring of Mangrove Ecosystem by Using eDNA Metabarcoding (Tadashi Kajita, Univ. of the Ryukyus)

- eDNA metabarcoding method will be an effective tool to study diversity of fishes and crustaceans in the mangrove environment

## Actions for further biodiversity monitoring and assessment

- Linking ocean with its source rivers, mountain and Himalayas
- Reaching out and engaging wider marine communities (young researchers and conservationist)
- Capacity building in digitization of Marine Biodiversity Data
- Identifying the knowledge gap and the need for capacity building in data poor region



# Collaboration with Partners



## Collaboration plan with Key Biodiversity Areas (KBA)

- ❑ **KBA** perspective and contribution to biodiversity conservation (**Andrew J. Plumptre**)
- ❑ **Data support** from APBON and biodiversity database from Thailand (**Yongyut Trisurat**)
- ❑ **Interest** of Department of National Parks, Wildlife and Plant Conservation (**Preeranuch Dulkul**)
- ❑ **Discussion**



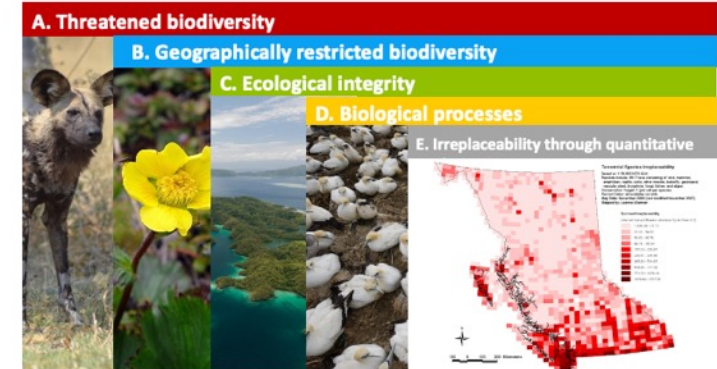
**KBAs are defined as:**

*“sites contributing significantly to the global persistence of biodiversity”*

### KBA Criteria

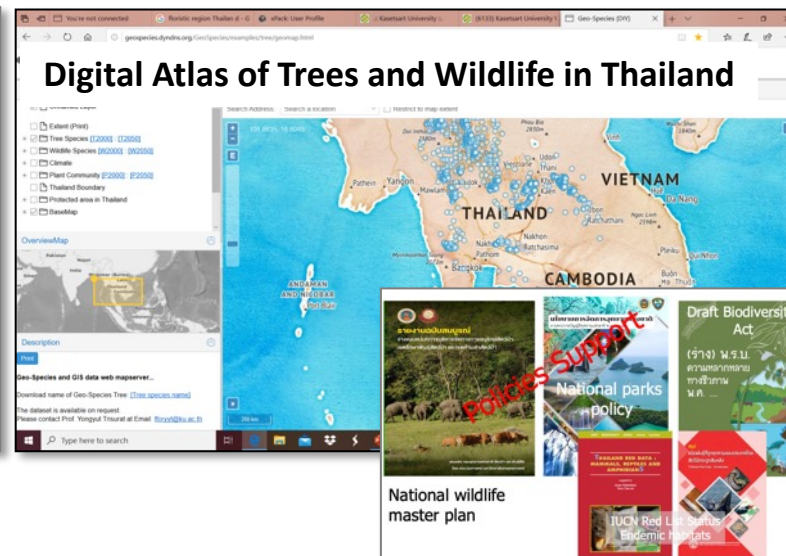
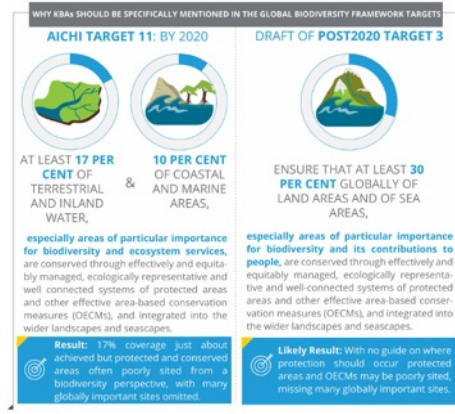
KBA criteria are designed to capture biodiversity at genetic, species and ecosystem levels

Collectively, the criteria aim to capture the various ways in which a site can be important for the global persistence of biodiversity



### Current language in post2020 GBF

- Proposed Language of Target 3 of new Global Biodiversity Framework is almost identical to Aichi target 11
- Need to guide governments on what ‘**areas of particular importance for biodiversity**’ should be



## KBAs and APBON

- ✓ Biodiversity data generated by AP-BON can be used to identify KBAs
- ✓ Provision of more accurate range and Suitable Habitat Maps for species to help identify KBAs
- ✓ KBAs provides a means of turning biodiversity data into concrete conservation results at a national level
- ✓ AP-BON efforts can help monitor KBAs and their trigger elements
- ✓ Professor Y. Trisurat (APBON co-chair) – KBA Community Representative for Asia

# APBON Achievements and Plan for 2022 and Beyond

## Biodiversity observation is essential for addressing multiple environmental issues -- “Nature-based Solutions”

- ❑ Sustainability, resilience and services of ecosystems [→ Post 2020 Global Biodiversity Framework]
- ❑ Healthy nature and human society – ‘**OneHealth**’ (cf. IUCN, IPBES WS on Biodiversity and Pandemics 2020)
- ❑ Climate change mitigation and adaptation [→ UNFCCC Paris Agreement, SDGs]
- ❑ Ecosystem-based DRR [→ Sendai Framework for DRR]

## Advancement of biodiversity and ecosystem service observations / assessments

- ❑ Long-term monitoring at various key places over the region to capture temporal trends, assess impacts of climate and societal changes, and predict the future changes
  - Cutting-edge technologies -- eDNA, social sensing, camera traps, etc.
  - Integration with remote sensing for forests, mangrove, coasts, landuse change -- satellite, airborne, shipborne to cover broad spatial and temporal scales
- ❑ Joint targets for **Biodiversity × Climate** are crucial for addressing the issues (cf. IPBES-IPCC WS Biodiversity and Climate Change)

## Data sharing and integration are essential for addressing broad environmental issues

- ❑ Urgent assessment of biodiversity in the region for informing society and policy
- ❑ Defining/refining Essential Biodiversity Variables and Essential Climate Variables for the region
- ❑ Broad engagement of biodiversity observations for gap area and for tackling cross-cutting issues
- ❑ Collaboration with **AOGEO TGs** should be fostered for interdisciplinary approach

# Mapping AOGEIO TG Activities with GEO Priorities

Mar 5th 2021

GEO Priorities	Cross-Cutting Areas	TGs											
		TG1	TG2	TG3	TG4	TG5	TG6	TG7	TG8	TG9	TG10	TG11	TG12
1.NO POVERTY		3	2	0	0	3	2	0	2	0	1	1	1
2.ZERO HUNGER		3	3	0	0	3	2	0	1	1	1	1	2
3.GOOD HEALTH AND WELL-BEING		1	3	1	1	1	1	3	1	0	1	1	1
4.QUALITY EDUCATION		2	2	2	2	1	0	1	0	0	0	0	1
5.GENDER EQUALITY		2	2	0	1	1	1	1	0	1	1	1	2
6.CLEAN WATER AND SANITATION		3	3	2	1	1	2	2	1	0	2	2	3
7.AFFORDABLE AND CLEAN ENERGY		1	2	2	0	1	1	3	0	0	1	1	1
8.DECENT WORK AND ECONOMIC GROWTH		1	1	1	1	2	2	1	0	0	1	1	1
9.INDUSTRY, INNOVATION AND INFRASTRUCTURE		2	1	1	2	2	0	1	2	0	1	1	1
10.REDUCED INEQUALITIES		1	2	0	2	2	1	0	0	0	1	1	1
11.SUSTAINABLE CITIES AND COMMUNITIES		3	2	2	2	1	2	3	2	0	1	1	3
12.RESPONSIBLE CONSUMPTION AND PRODUCTION		1	2	0	1	0	1	1	0	0	1	1	1
13.CLIMATE ACTION		3	3	3	3	3	2	3	0	1	1	1	3
14.LIFE BELOW WATER		1	3	2	3	0	1	1	0	0	1	1	1
15.LIFE ON LAND		3	3	2	1	3	3	3	0	2	1	1	2
16.PEACE, JUSTICE AND STRONG INSTITUTIONS		2	2	0	2	0	2	0	0	0	0	0	1
17.PARTNERSHIP FOR THE GOALS		3	3	2	3	3	3	3	2	0	1	1	3
Adaptation		3	3	2	1	3	3	1	1	0	1	1	2
Loss & Damage		3	3	1	1	0	3	3	3	0	1	1	2
Capacity Development/Technology Transfer		3	3	2	2	0	3	2	2	3	2	2	3
National Reporting/Global Stocktake		1	3	3	1	0	2	3	0	0	2	2	1
Mitigation		2	2	3	1	0	3	1	0	0	1	1	1
Understanding disaster risk		3	3	3	1	1	3	2	3	2	2	2	2
Strengthening disaster risk governance to manage disaster risk		3	3	0	1	1	3	1	2	0	1	1	2
Investing in disaster risk reduction for resilience		3	2	0	1	1	3	1	1	0	2	2	2
Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction		3	2	0	0	0	3	1	2	2	2	2	2
Data Sharing Infrastructure		3	3	3	3	3	3	3	2	2	3	3	3
User Engagement and Communication		3	3	2	3	3	2	3	3	2	3	3	3
<b>Total:</b>		<b>65</b>	<b>69</b>	<b>39</b>	<b>40</b>	<b>39</b>	<b>57</b>	<b>47</b>	<b>30</b>	<b>16</b>	<b>36</b>	<b>36</b>	<b>51</b>

## Mapping AOGEIO Initiative TG Activities with GEO Priorities

Task Group 2: AP BON (at 11th AP BON meeting)

GEO Priorities	Score	Terrestrial		Freshwater		Marine	
		Keywords	Score	Keywords	Score	Keywords	Score
1.NO POVERTY	1	eco-tourism, local Indigenous people, job opportunity, community forestry	2	aquatic resources, eco-tourism, hydropower	2	Food provision, job opportunity, eco-tourism,	2
2.ZERO HUNGER	1	pollinating services, local Indigenous people, job opportunity, community forestry	3	aquatic resources, drinking water	2	Food provision, job opportunity, Sustainable use of natural resources	2
3.GOOD HEALTH AND WELL-BEING	2	allergy, avian flu, nipah virus, phenology, traditional medicine, clean air, clean water, cooling temperature	3	drinking water, daily life water	2	Higher food quality, happier life due to cultural ecosystem services,	2
4.QUALITY EDUCATION	2	capacity building, citizen science, zoo and botanical gardens, biosphere reserves, long-term data and knowledge for good education and researchers	1	environmental education	1	Outreach and awareness of surrounding nature	1
5.GENDER EQUALITY	1	opportunity to produce goods from natural resources	0	N/A	2	Equal job opportunities and in nature related activities	2
6.CLEAN WATER AND SANITATION	2	water purification, water regulation	3	drinking water, daily life water	1	Regulating Ecosystem Services/Functions	1
7.AFFORDABLE AND CLEAN ENERGY	1	clean energy, hydropower, bio-fuels -- assessment environmental impacts	2	hydropower, micro-hydropower	1	Biofuels (algae)	1
8.DECENT WORK AND ECONOMIC GROWTH	1	sustainable growth - green growth - decoupling economic growth and environmental degradation, environmental accounting	1	sustainable economic growth	1	Community-based management, Strengthening EIA processes; Eco-tourism	1
9.INDUSTRY, INNOVATION AND INFRASTRUCTURE	1	bio-chemical, drug development, bio prospecting, green infrastructure, e-DNA, agro-forestry, biodiversity monitoring using cutting-edge technologies	0	N/A	0	Bio-prospecting; Mainstreaming biodiversity	0
10.REDUCED INEQUALITIES	2	Nagoya protocol ABC, capacity building	1	Nagoya protocol (ABQ)	1	Gender equality in research (e.g., women, children assessment on gleaming activities), Focus on marginalized actors, broad-scale analysis (wide geographic researched)	1
11.SUSTAINABLE CITIES AND COMMUNITIES	2	participatory education, gathering people, protection of biodiversity, MAB project, smart city, green city	1	protection of biodiversity	2	Biodiversity conservation, Recycling programs, Adaptive management options, Sustainable development	2
12.RESPONSIBLE CONSUMPTION AND PRODUCTION	2	biodiversity trade and footprint, fair-trade certificate, reducing plastics	2	biodiversity trade and footprint, fair-trade certificate	1	Reduce wastage, Green energy, green solutions, effective production process, sustainable food systems	1
13.CLIMATE ACTION	3	restoration, carbon sequestration, cooling temperature, monitoring biodiversity	2	reduce CO2 by hydro/microhydro-power	2	Adaptation, Mitigation, Climate smart agriculture	2
14.LIFE BELOW WATER	3	long-term monitoring of species loss, environmental change, species trends, ecosystem fragmentation, phenology, reducing plastics	3	freshwater/Inland-water ecosystem	2	Biodiversity, Ecosystem services, Ecosystem functions, Conservation, Food provisioning	2
15.LIFE ON LAND	3	long-term monitoring of species loss, environmental change, species trends, ecosystem fragmentation, phenology	2	freshwater/Inland-water ecosystem	1	Disaster Risk Reduction, Ridge to Reef / Hilltops to Oceans, Water quality, Coastal Integrity Vulnerability assessment	1
16.PEACE, JUSTICE AND STRONG INSTITUTIONS	1	trans-boundary governance of natural resources, adaptive management	2	transboundary governance of natural resources, especially transboundary rivers	1	United Nations Convention on the Law of the Sea; Responsible coastal governance, Equitable use of resources	1
17.PARTNERSHIP FOR THE GOALS	3	networking science, society and policy	2	networking science, society and policy	3	Regional collaboration, multilateral transboundary arrangements	3
Adaptation	3	Ecosystem-based adaption, protected area, eco-DRR	2	Ecosystem-based adaption, protected area, eco-DRR	2	co-management; risk management	2
Loss & Damage	3	in-situ long-term monitoring of biodiversity and services, prediction of the changes	2	in-situ long-term monitoring of biodiversity and services, prediction of the changes	2	vulnerable countries; recovery planning	2
Capacity Development/Technology Transfer	3	networking research collaborations and deliver the knowledge & information	2	networking research collaborations and deliver the knowledge & information	2	South-south cooperation; training needs assessment	2
National Reporting/Global Stocktake	2	Carbon accounting -- biomass, soil carbon, blue carbon	1	Carbon accounting	2	Biodiversity trends; Drivers of biodiversity loss; Species distribution	2
Mitigation	3	REDD+, restoration, in-situ conservation but limited, preference for in-situ conservation	2	reduce CO2 by hydro/microhydro-power, restoration, in-situ conservation	1	Blue Carbon Accounting/Offsets; Restoration of Ecological Habitats; Coastal restoration and conservation	1
Understanding disaster risk	3	phenology monitoring for early warning of wild fire and drought	3		2	Tsunami, Early warning system, capacity building	2
Strengthening disaster risk governance to manage disaster risk	2	MAB, adaptive governance restoration after the disaster, social capital, social memory	3		2	Early warning system, capacity building	2
Investing in disaster risk reduction for resilience	1	eco-DRR	3		2	Early warning system, capacity building, outreach and education	2
Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction	1	green infrastructure	2		2	Early warning system, capacity building, outreach and education	2
Cross-Cutting Areas	Score	Keywords	Score	Keywords	Score	Keywords	
Data Sharing Infrastructure	3	GBIF, ABCDnet, Data papers and Data repository, ITCR-CEMIS, Data-ONE, Asia CHM, Phenological Eye Network, MAB, GEOSS Portal, Biodiversity Center's portal site	3	GBIF, Data papers and Data repository	3		
User Engagement and Communication	3	GEO BON, Regional BONs, National BONs, ITCR	2	GEO BON, Regional BONs, National BONs	3		
<b>Total</b>	<b>47</b>		<b>47</b>		<b>47</b>		

\*Scoring 0=Do nothing, 1-less active, 2-active, 3=very active

