2021/10/19 11:30-13:30

APBON workshop @ online

wrap-up session

Effective biodiversity monitoring for post-2020 biodiversity target and policy-relevant agenda

Terrestrial & Freshwater WGs

Post-2020 biodiversity target

- 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.

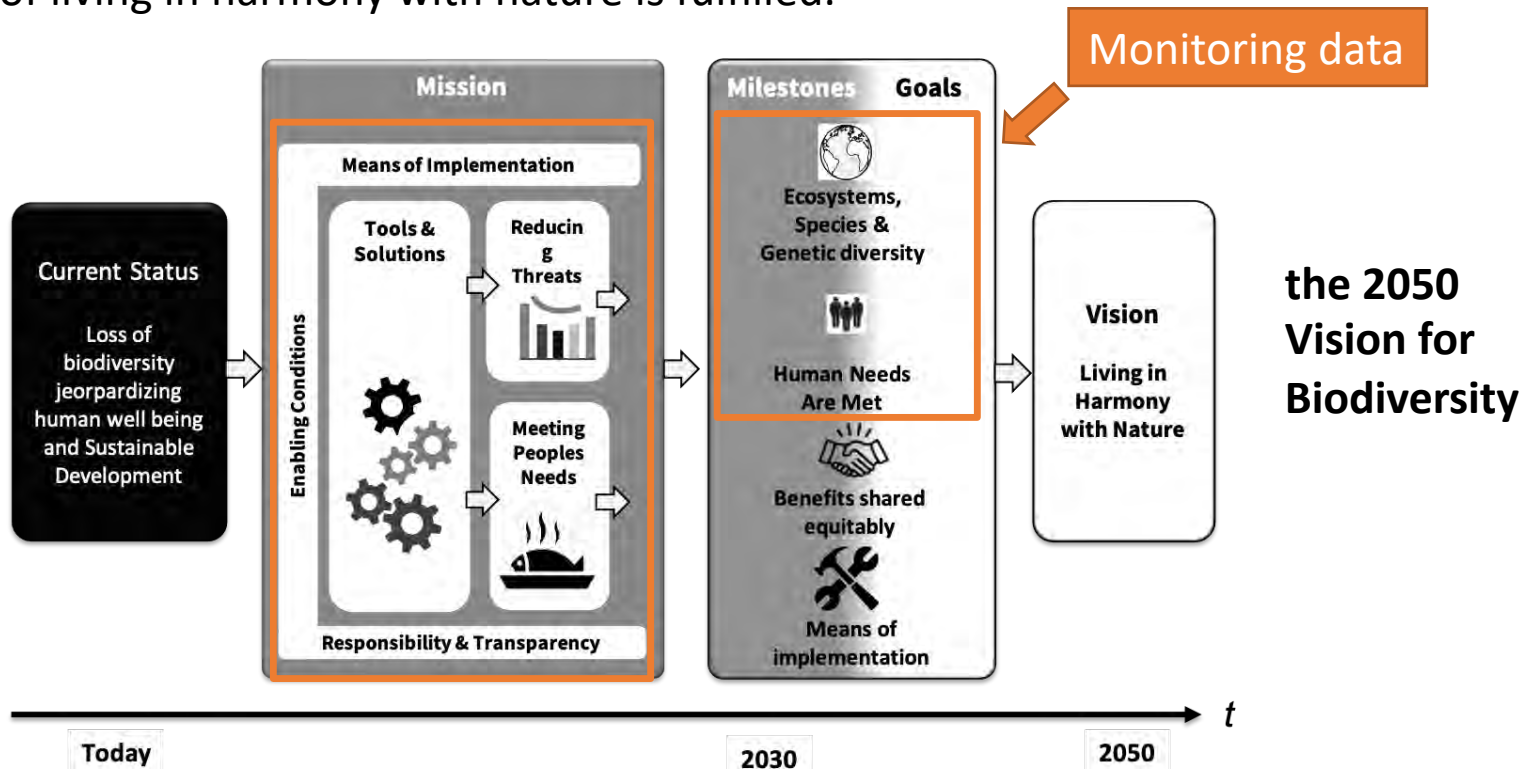
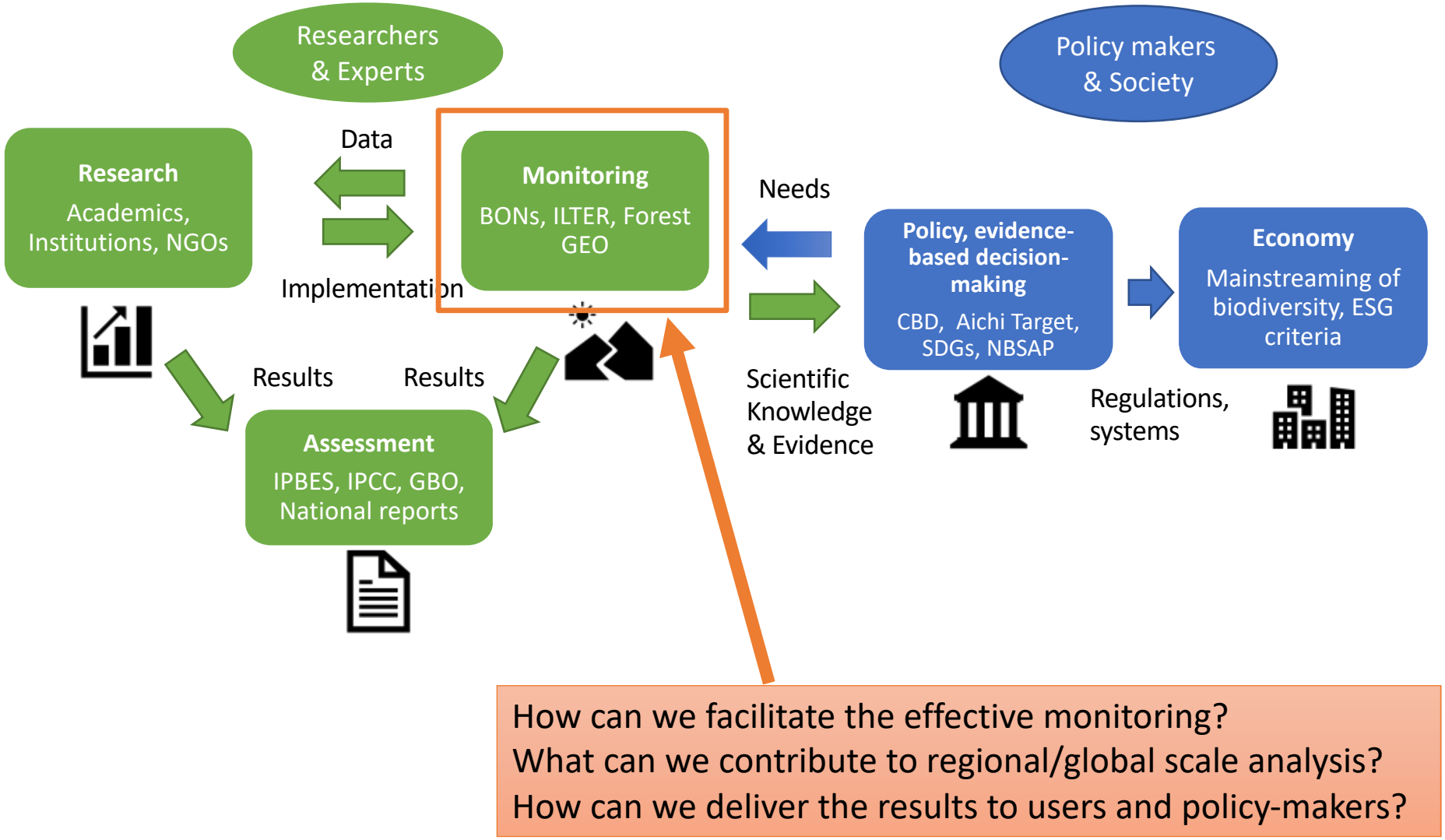


Figure 1. Theory of change of the framework


Researchers & Experts
Policy makers & Society
Research
Academics, Institutions, NGOs
Data
Implementation
Monitoring
BONs, ILTER, Forest GEO
Needs
Policy, evidence-based decision-making
CBD, Aichi Target, SDGs, NBSAP
Economy
Mainstreaming of biodiversity, ESG criteria
Results
Results
Assessment
IPBES, IPCC, GBO, National reports
Scientific Knowledge & Evidence
Regulations, systems
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?

Speakers

- Integrated observation of forests by satellite and in-situ survey [Osamu Ochiai@JAXA]
- Cutting edge monitoring technologies and informatics [Shin Nagai]
- Environmental DNA monitoring [Manabu Onuma]
- Fish abundance and diversity monitoring along Mekong River and its tributaries in Cambodia [Putrea Solida (IFREDI)]

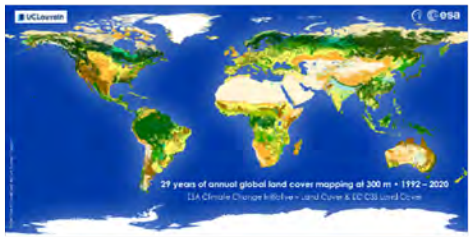
Integrated observation of forests by satellite and in-situ survey by Osamu Ochiai@JAXA

- 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

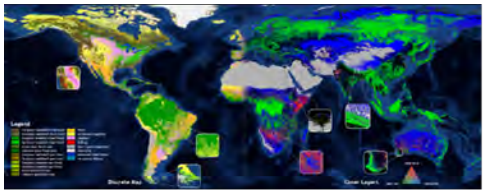
AFOLU Dataset updates - Land Cover

ESA WorldCover

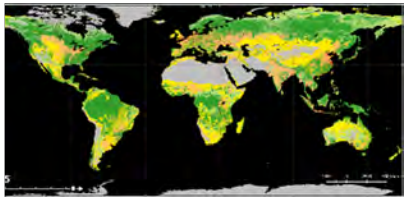
CCI



Copernicus



HILDA+



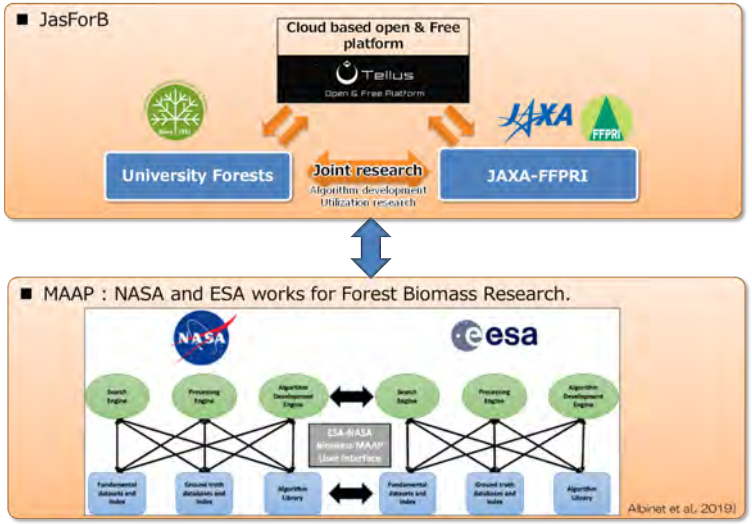
New GEO Activity: GEO-TREES

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.

GEO GROUP ON EARTH OBSERVATIONS

International action for Biomass Research



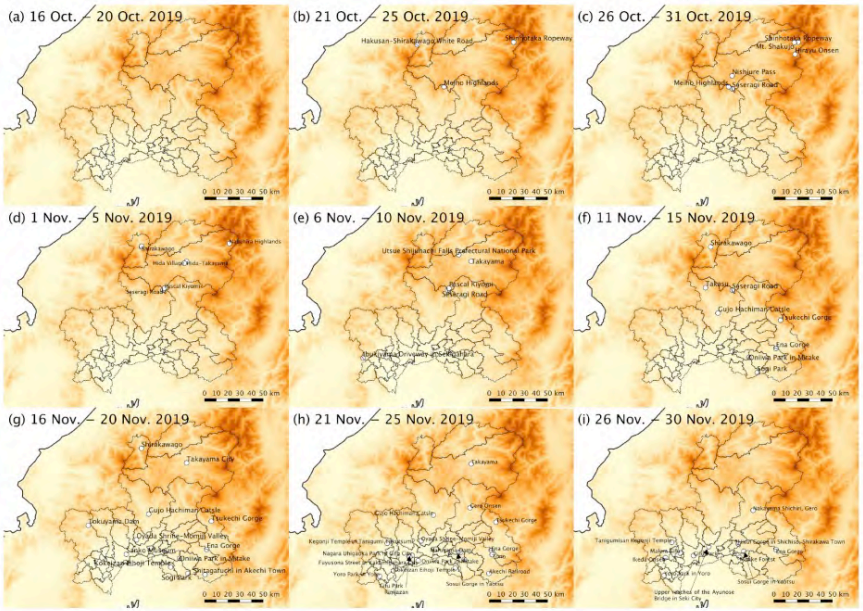
Cutting edge monitoring technologies and informatics by Shin Nagai@JAMSTEC

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

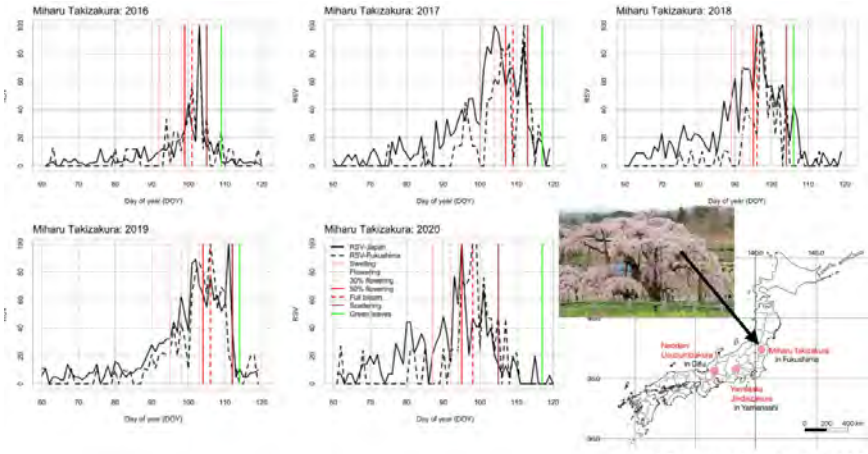
Utility of SNS (twitter)

- Text mining of tweets regarding leaf coloring.

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



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

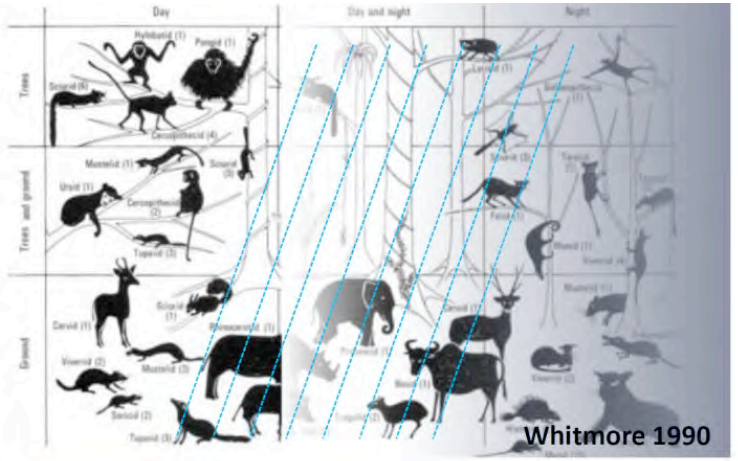


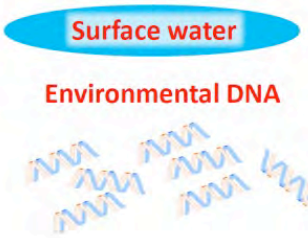
[Shin et al. submitted-b]

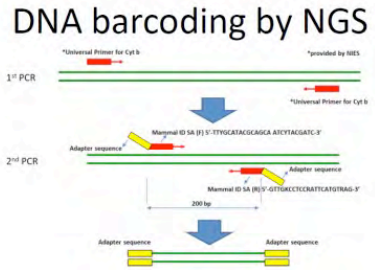
Environmental DNA for wildlife monitoring in a tropical forest by Manabu Onuma @NIES

- 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

Camera trapping



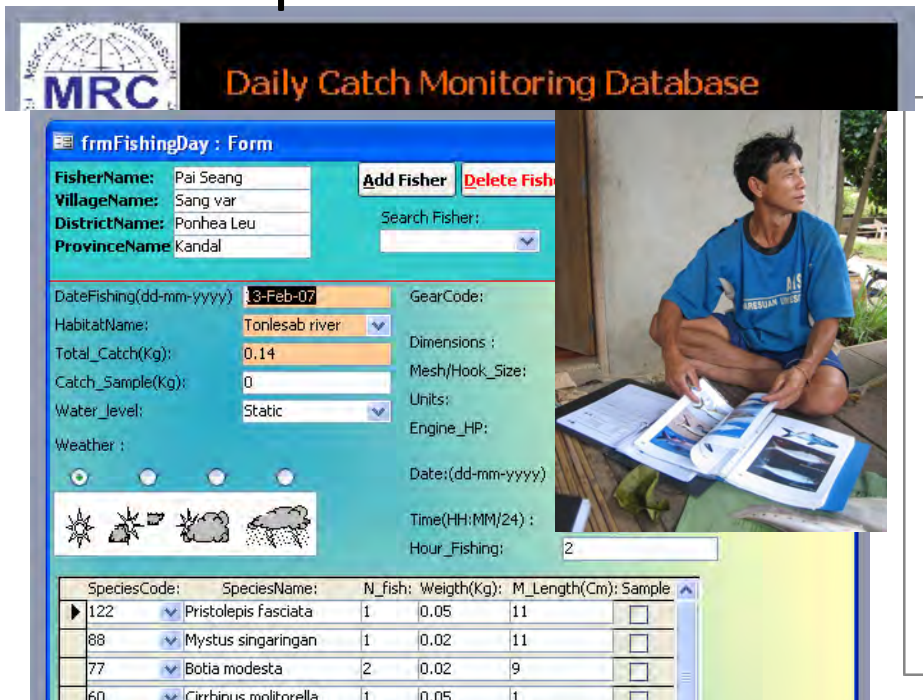


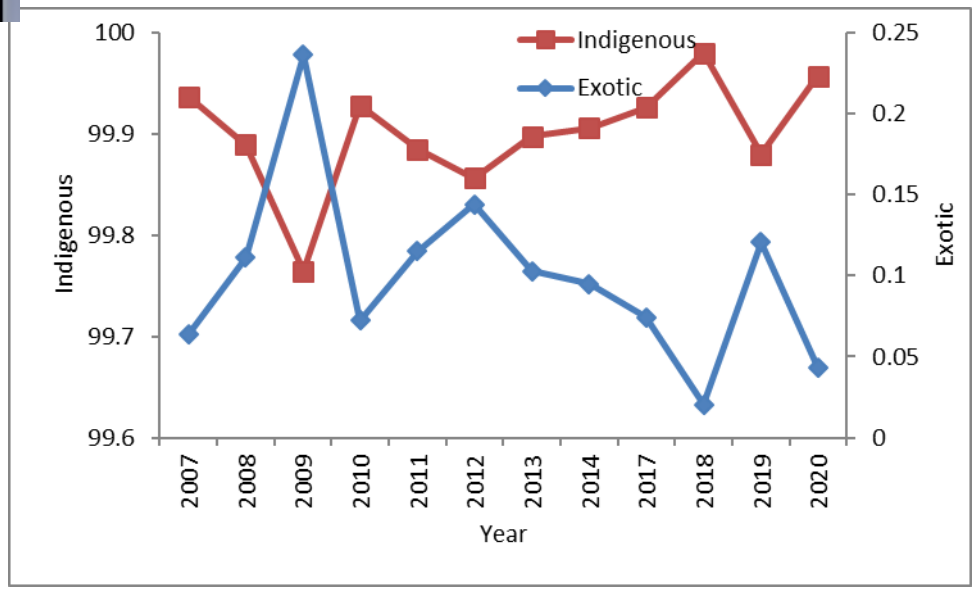


Method	Number of sampling sites	Duration of sampling (day)	Number of detected species	Coverage	Cost and others
Camera trap	47	*>150	58	Mainly ground level	USD 30,000 + Some experts
eDNA	9	10	7 (**79)	Canopy to ground	USD 3,200 + NGS and operators + Reliable database

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





Q. How can we facilitate the effective monitoring?

Cutting-edge technologies and citizen science will compensate of time and labor cost.

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

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

Facilitating the dialog 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