

Next generation monitoring of biodiversity and ecosystem: toward further understanding of responses and improvement of resilience for ecosystem functions in changing environments

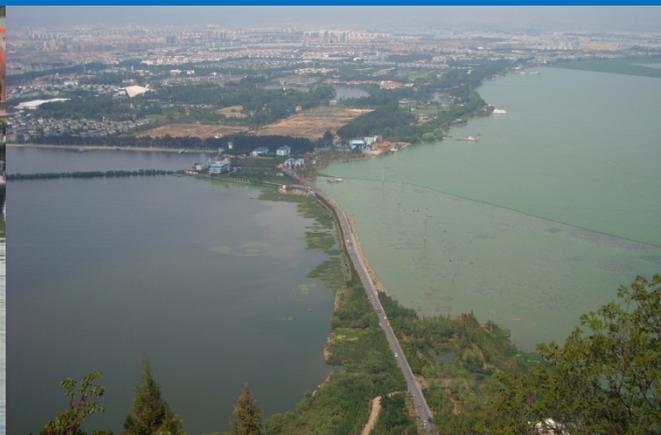
Prepared by:

- Center for Ecological Research, Kyoto Univ.
- Japan Long-Term Ecological Research Network (JaLTER)
- Ecological Sciences Special Committee, Science Council of Japan



Master Plan, Science Council of Japan (SCJ):

- Large facility, large scale research projects selected by SCJ every 3 years.
- SCJ publicizes Master Plan every 3 years to show the direction of science to the public, to promote cutting-edge science, and to strengthen and broaden the base of Japanese science.
- Each scientist community or a federation of scientific societies prepares its own Master Plan proposal(s), and those proposals are evaluated by SCJ.
- Our proposal has been registered in Master Plan 2014 (and 2017).



GBO4, at the half way point of the 2011–2020 Strategic Plan for biodiversity

Strategic Goal E, Target 19: Enhance implementation through participatory planning, knowledge management and capacity-building.

Recent trends, current status:

Data and information on biodiversity are being shared much more widely,,,,,, however, much data and information remain inaccessible and capacity is lacking to mobilize them in many countries.

Key potential actions:

Establishing or strengthening monitoring programmes, including monitoring of land-use change, providing near-real time information where possible, in particular for “hotspots” of biodiversity change.



TARGET 19

Knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved



Significant effort on delivery of information and knowledge relevant to decision makers is being made, and relevant processes and institutions are in place

Biodiversity knowledge, the science base and technologies are widely shared and transferred and applied



Improvements in analysis and interpretation of data gathered from disparate collecting and monitoring systems. However, coordination to guarantee models and technologies that can integrate this knowledge into functional applied systems needs to be improved

We are interested in Asian Green Belt (AGB), because:

- Many of AGB countries, such as India, Malaysia, Indonesia, Philippines, Papua New Guinea, China, and Australia, are so-called “**Megadiverse countries**”.
- At this stage, **about 60% of world population** inhabits in AGB (or Monsoon Asia).
- Biodiversity in AGB is thus threatened, followed by **deterioration of its ecosystem service**.
- From lake varve researches, it is well known that the responses in ecosystems of AGB after subtle changes in environmental conditions due to global climate change **are more quickly and remarkably emerge**.

- Center for Ecological Research, Kyoto University
- Japan Long Term Ecosystem Research Network (JaLTER)

Stakeholders

Visualization

Communication

Scenario

Our new system

Scenario creation

● Department of resilience & scenario

Analyses of data

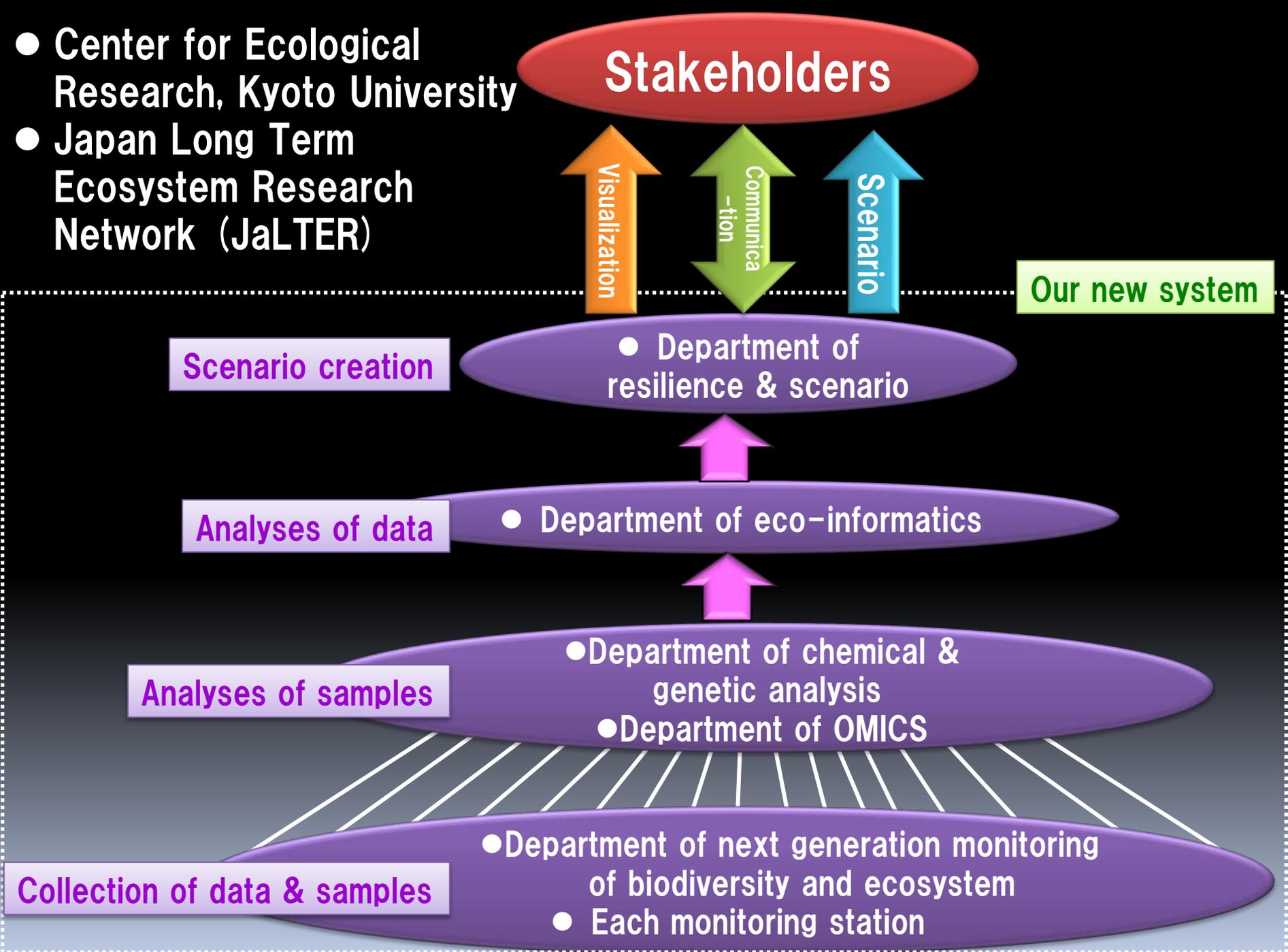
● Department of eco-informatics

Analyses of samples

● Department of chemical & genetic analysis
● Department of OMICS

Collection of data & samples

● Department of next generation monitoring of biodiversity and ecosystem
● Each monitoring station





Large scale manipulation experiments

Green Belt

CER



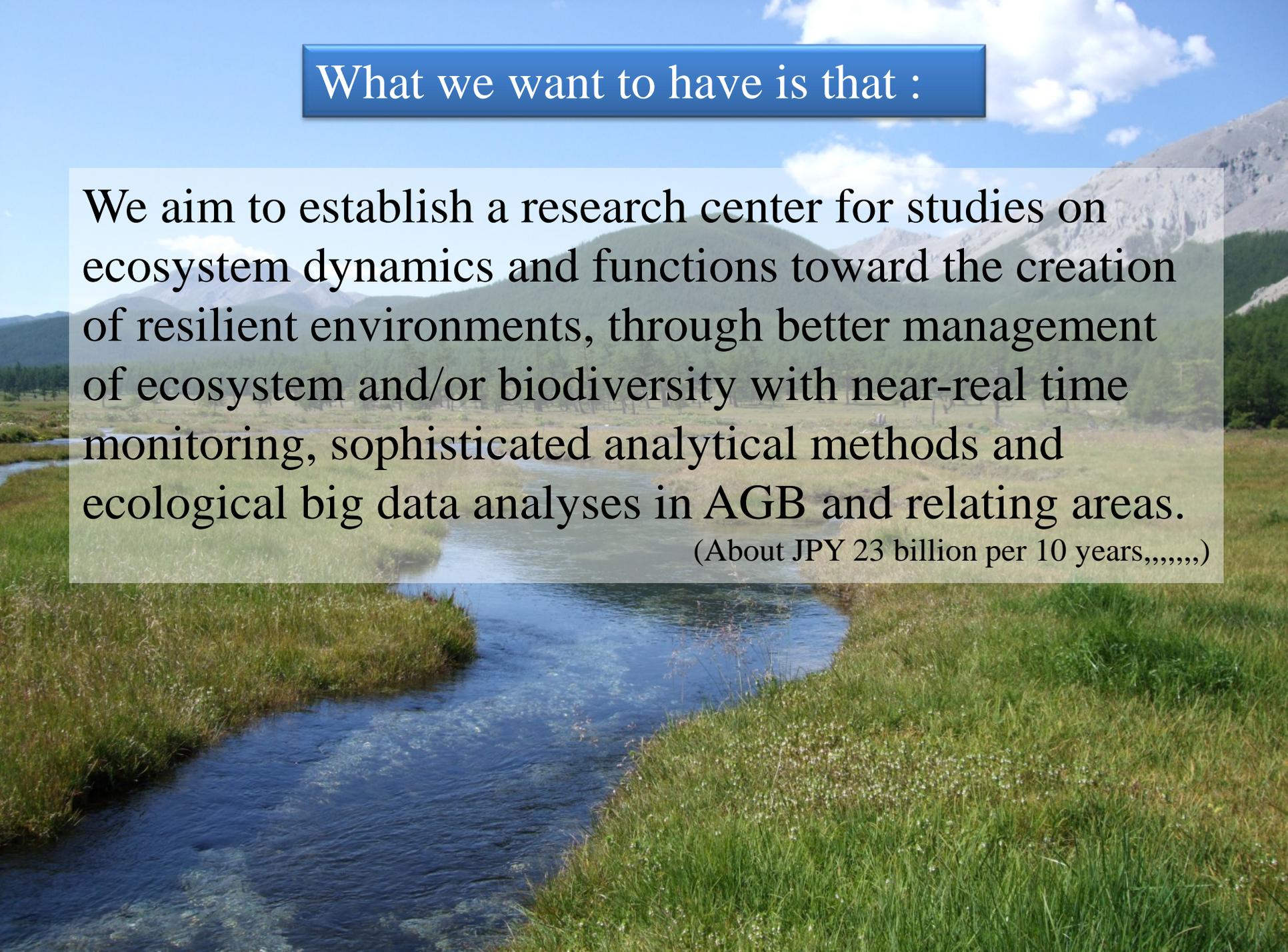
Capacity building

- Long-term multidisciplinary ecosystem monitoring networks in AGB
- Assessment of ecosystem service on ecosystem/biodiversity in AGB

Two key organizations:

- **Center for Ecological Research, Kyoto University:** Registered as a Joint Usage/Research Center by MEXT with high evaluation.
- **Japan Long Term Ecosystem Research Network (JaLTER):** Some of university field stations are registered as Joint Usage/Education Centers, having thousands of students and/or researchers for education and/or researches.

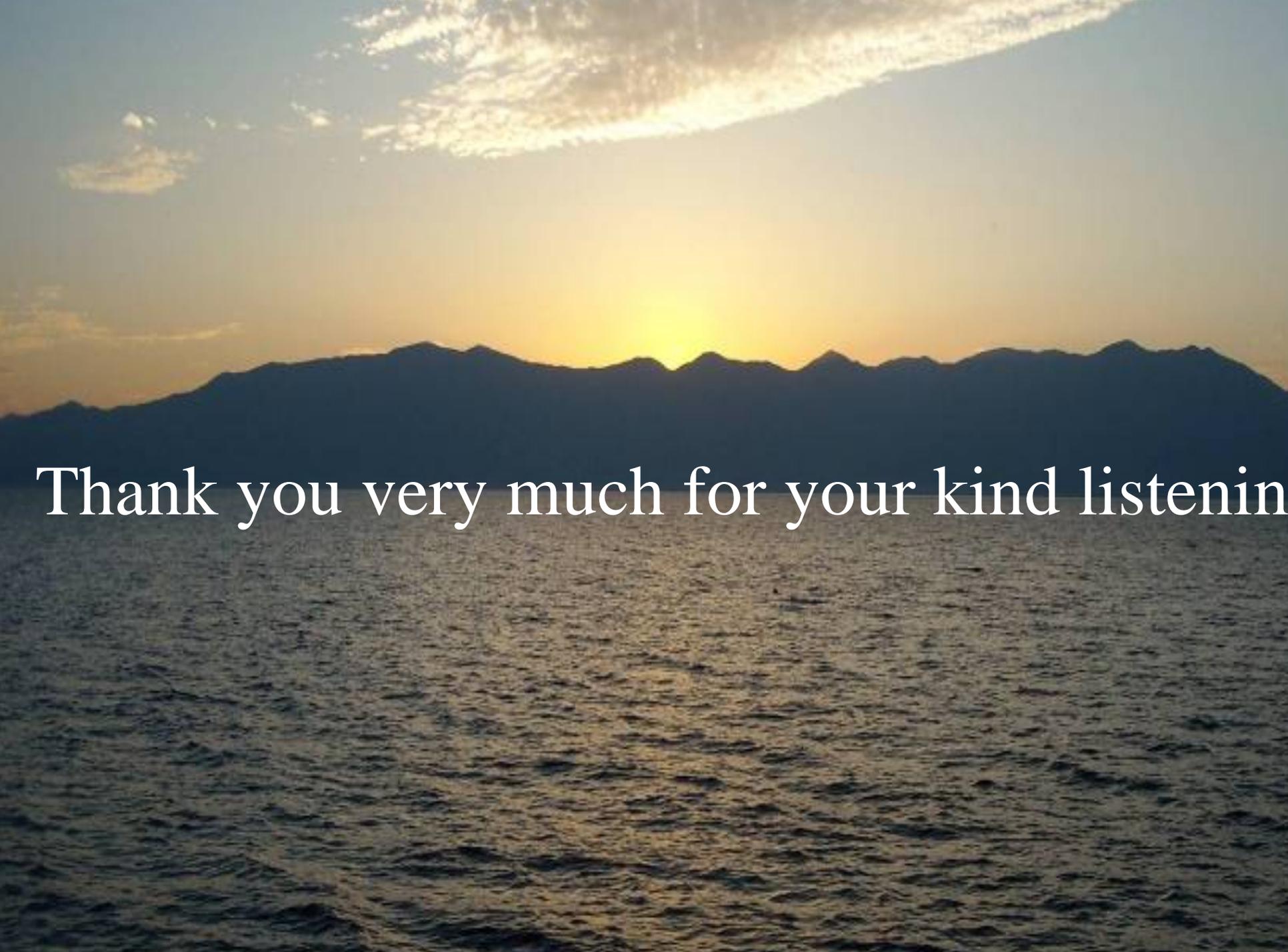




What we want to have is that :

We aim to establish a research center for studies on ecosystem dynamics and functions toward the creation of resilient environments, through better management of ecosystem and/or biodiversity with near-real time monitoring, sophisticated analytical methods and ecological big data analyses in AGB and relating areas.

(About JPY 23 billion per 10 years,,,,,,)



Thank you very much for your kind listening

vi. 国家としての戦略性、緊急性

- 2015年3月に仙台で開催された第3回防災世界会議。「仙台防災枠組2015-2030」において生態系を適切な社会・空間スケールで評価することの必要性。
- 同年8月に閣議決定された「国土形成計画」。「生物多様性の確保及び自然環境の保全・再生・活用」が盛り込まれ、生態系サービスについては「自然生態系を積極的に活用した防災・減災対策」の項目として喫緊の課題。
- 同年11月末に閣議決定された「気候変動の影響への適応計画」。生態系システムの強靱性の構築。
- 国際的には、同年11月末に開催された国連気候変動枠組条約第21回締約国会議（COP21）において採択された「パリ協定」。生態系の強靱性確保。
- IPBESでは、社会学者や経済学者が生態系や生物多様性に関する科学的情報が必要。