Chulalongkorn University

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Towards the Establishment of a Sustainable and Resilient Society

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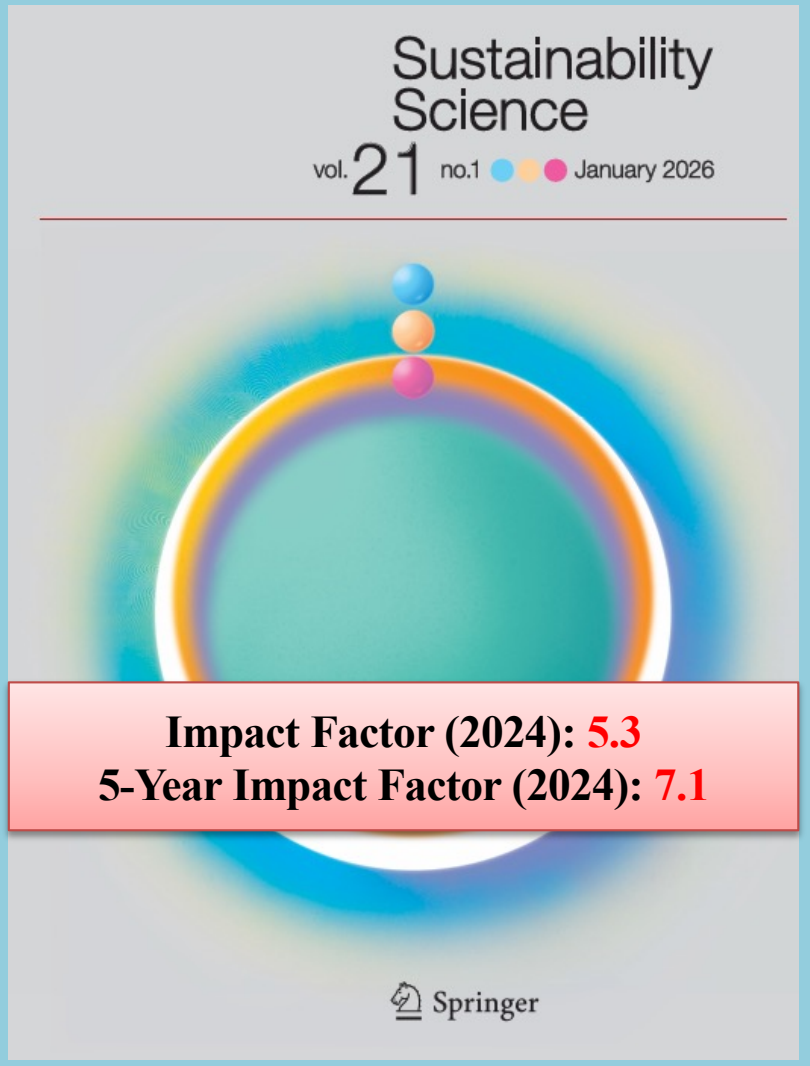
A Brief Overview of My Academic Background

- Dr. Kazuhiko TAKEUCHI is a Project Professor of the Institute for Future Initiatives (IFI), The University of Tokyo and President of the Institute for Global Environmental Strategies (IGES). He was the Senior Vice-Rector of United Nations University (UNU) and currently Visiting Professor at UNU Institute for the Advanced Study of Sustainability (UNU-IAS). He has served, inter alia, as Editor-in-Chief of the journal Sustainability Science (Springer Nature).
- He specializes in landscape ecology, environmental studies, and sustainability science. He engages in research and outreach activities on creating eco-friendly environments for a harmonious coexistence of people and nature, especially focusing on Asia and Africa.
- Recently, he has been working toward establishing a global foundation for developing the field of sustainability science aiming to build a sustainable society.

The Progress and Development of Sustainability Science

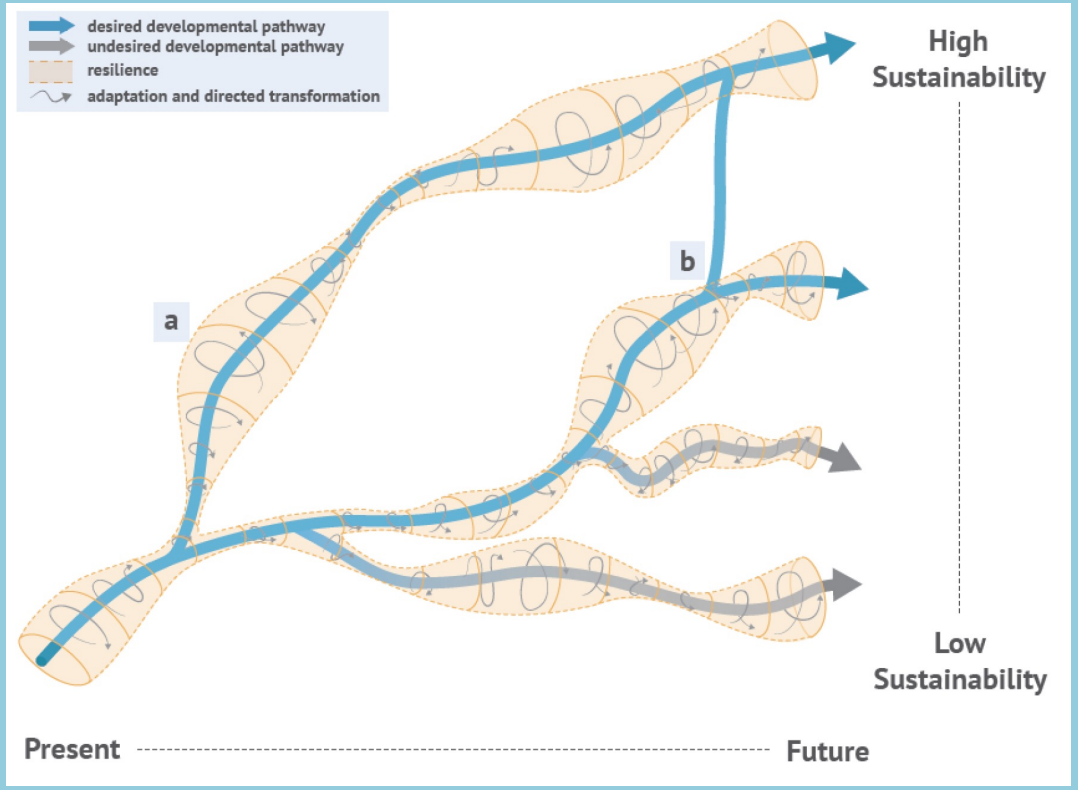
- Systems perspective: links global, social and human systems
- From complex thinking to transformational change
- Transdisciplinary focus, solution-oriented transformative research
- Co-design and co-creation of knowledge, promotes partnerships and collaborative action
- Need for education and capacity development for global sustainability



Sustainability Science Journal

Sustainability and Resilience: Complementary Concepts

- Sustainability is a “normative goal”, while resilience is the “capacity” of a system to absorb disturbances.
- The concept of resilience includes not only the capacity to recover from disturbances, but also the capacity to adapt to a new situation.
- As concepts, sustainability and resilience complement each other. Defining their relationship is important for beneficial societal progress.
- By considering the capacity of transformations, each of which have various optional interventions, resilience will be better linked with sustainability.

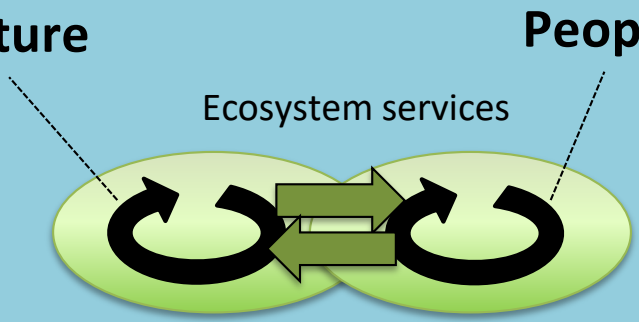


（Elmqvist et al., Nature Sustainability, 2019）

Changing Relationships between People and Nature

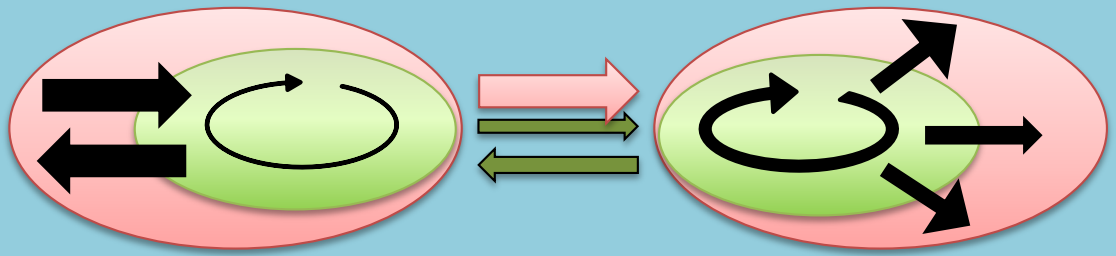
(Takeuchi *et. al.*, 2016)

Past **Closed and coupled social-ecological system**



Natural resource management

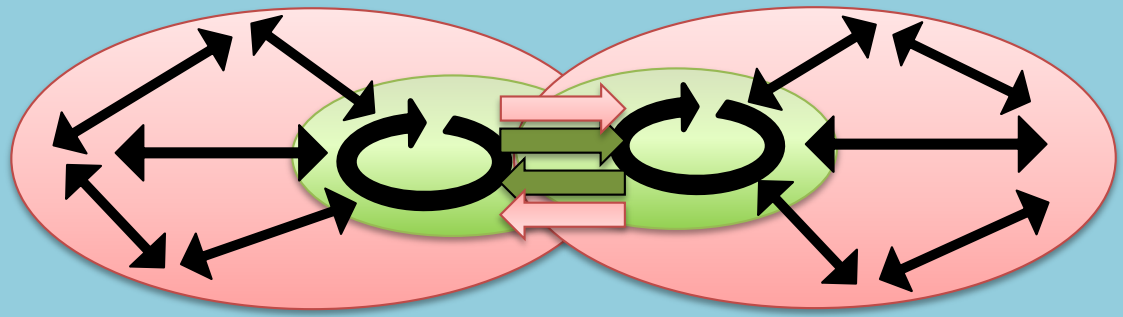
Present **Open and decoupled systems**



i.e., Intensification of monoculture

i.e., Migration to urban areas

Future **Towards multi-level governance: Cross-scale, connected and coupled social-ecological system**

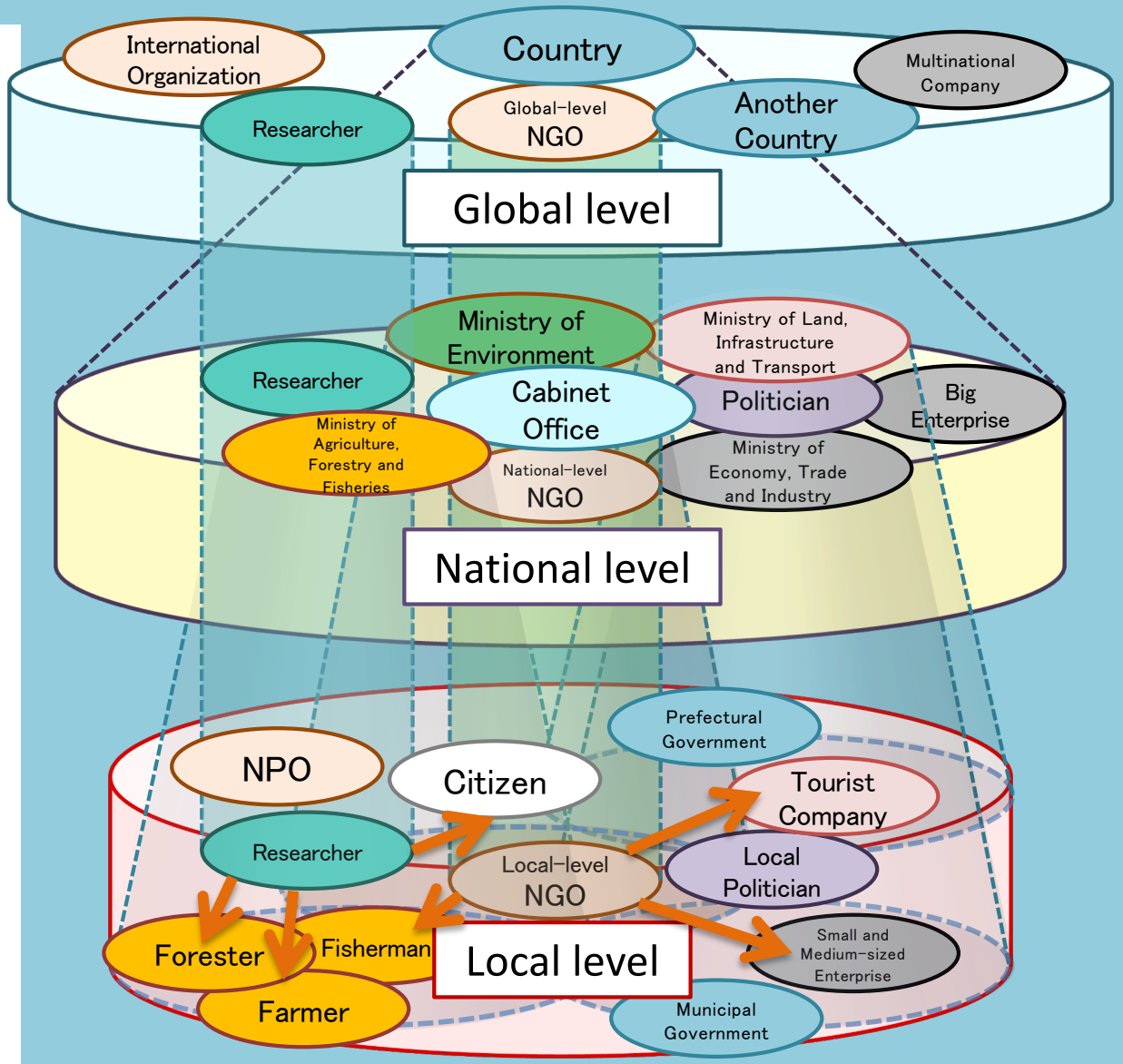


Ecological System **Social System**

Multi-level Nested Governance of Natural Capital

- Multi-level Governance is defined as the political coordination system or institution where the interdependent situation of natural capital goes beyond each administrative jurisdiction.

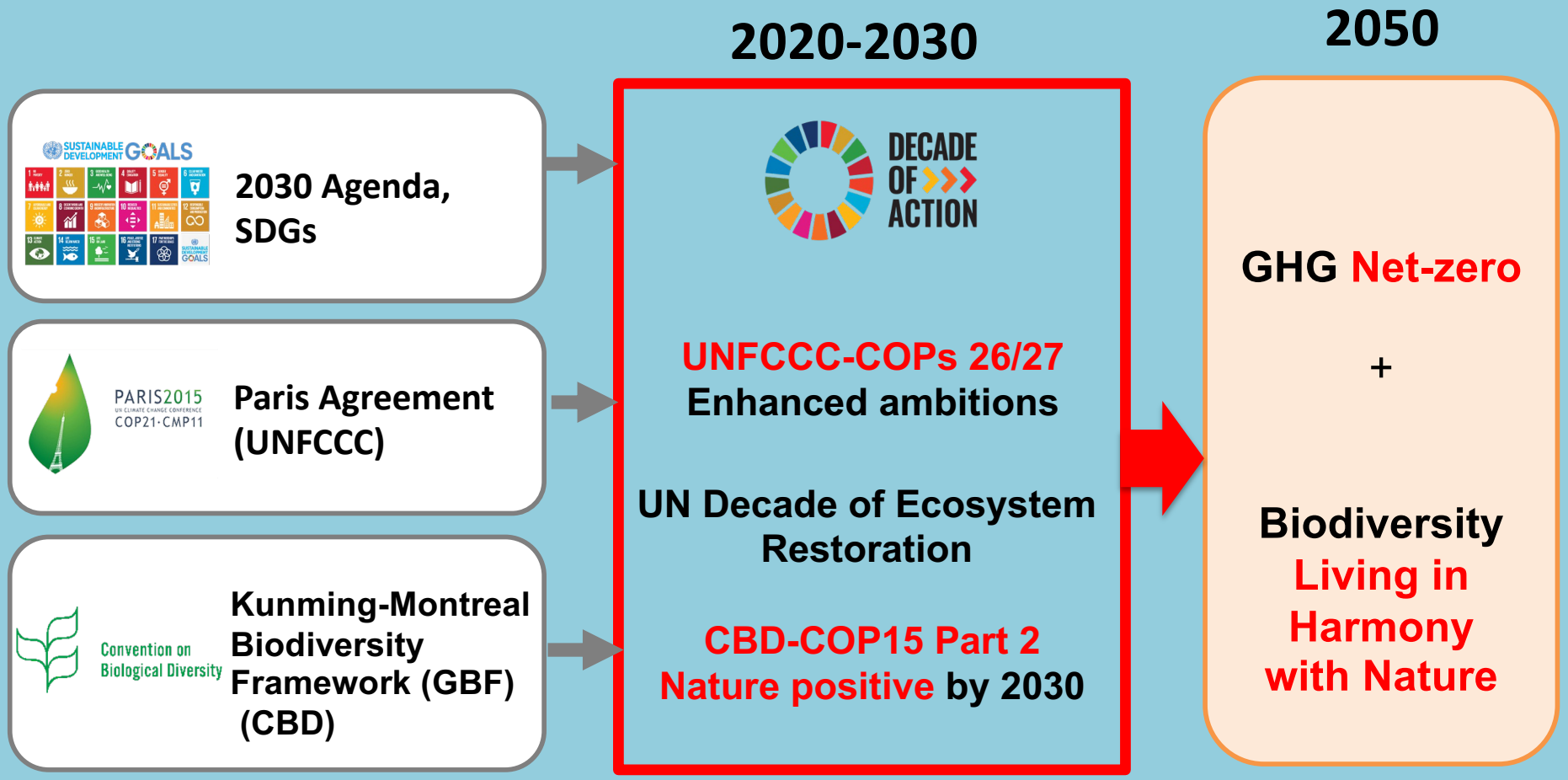
- Coalitions of governments and environmental experts act across each level, taking the actual situation of the local site and trying to penetrate the biodiversity policy based on scientific assessment such as GBO and IPBES.



(PANCES Project; Oyama, K. et al, 2018)

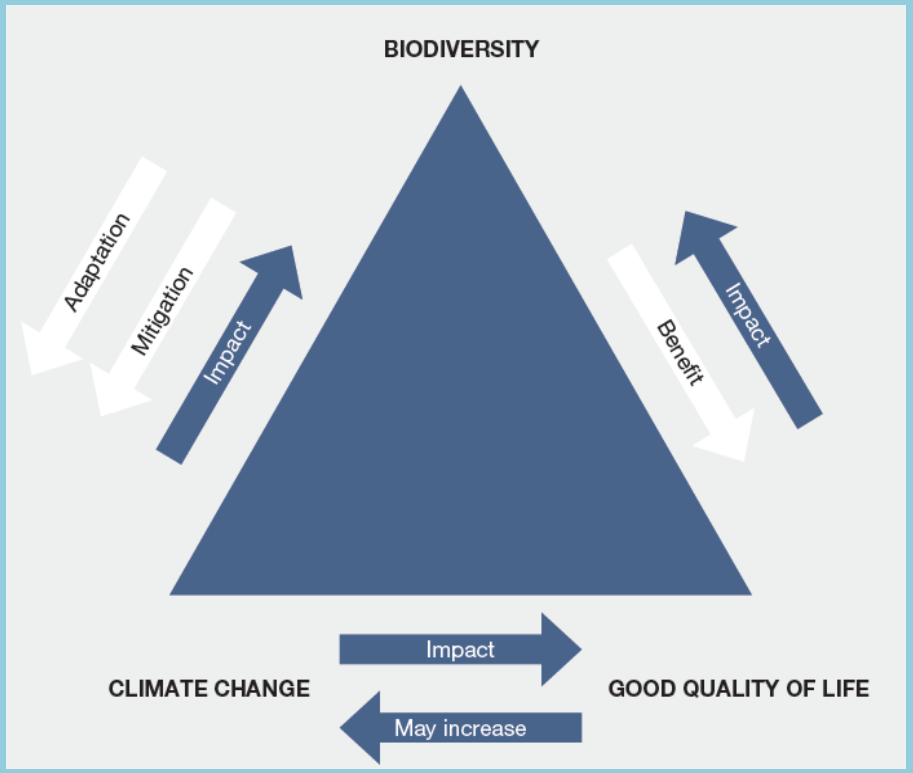
The Decisive Decade for a Sustainable Future

- Envisioning a sustainable world in 2030 and 2050
- Green recovery from the COVID-19 crisis
- Integrated approach to climate, biodiversity and other global challenges



Climate Change and Biodiversity

- Climate and biodiversity goals are **mutually supportive**
- Treat climate, biodiversity and human wellbeing as **coupled systems**
- **Synergies** between climate and biodiversity actions

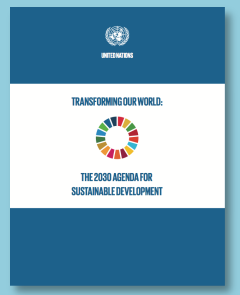


Source: IPBES and IPCC, 2021

Calls for Transformative Change

- **"The people of the world … are demanding transformative change that is fair and sustainable"** - UN Secretary-General António Guterres at the High-Level Political Forum in July 2019
- **"We are determined to take the bold and transformative steps which are urgently needed to shift the world on to a sustainable and resilient path"** - 2030 Agenda for Sustainable Development
- **"Limiting warming to 1.5°C above pre-industrial levels would require transformative systemic change, integrated with sustainable development"** - IPCC Special Report on Global Warming of 1.5 ºC
- **"Goals for conserving and sustainably using nature and achieving sustainability … may only be achieved through transformative changes …"** – IPBES Global Assessment Report
- **"The framework aims to galvanize urgent and transformative action by Governments and all of society"** – Kunming-Montreal Global Biodiversity Framework, Convention on Biological Diversity

Image Credit: Twitter(@antonioguterres)



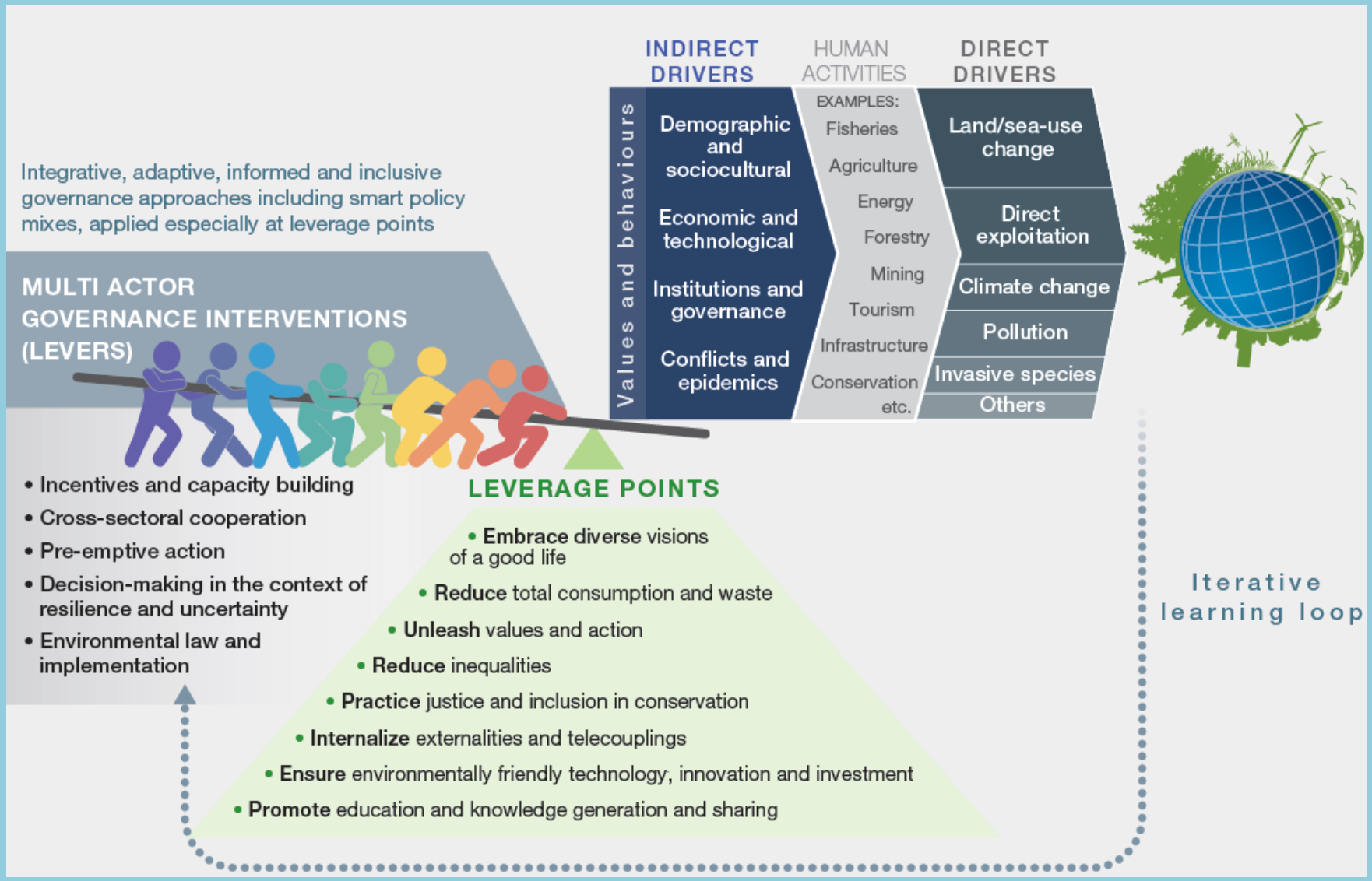
ipcc
INTERGOVERNMENTAL PANEL ON climate change

ipbes

Convention on Biological Diversity

Transformative Change toward Global Sustainability

Fundamental, system-wide reorganisation across technological, economic and social factors, including paradigms, goals and values

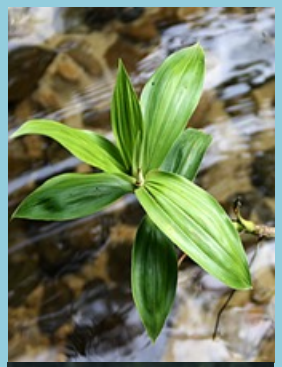


(IPBES 2019)

Biodiversity shows the Need for Synergies

- Since the CBD COP-10 in 2010 in Japan, countries have used the Strategic Plan for Biodiversity and its Aichi Biodiversity Targets as a guide to national and local biodiversity planning
- In December, 2022 the Strategic Plan was replaced by a "Kunming-Montreal Global Biodiversity Framework" at CBD COP-15 Part2 in Montreal
- The Framework emphasises the relevance of the SDGs, climate change, disaster risk reduction and other elements of sustainability to biodiversity conservation
- Revisiting the relationship between human health and biodiversity as indicated by zoonosis after COVID-19
- Multiple organisations are already working towards supporting the New GBF. For example: Revision of National Biodiversity Strategy Action Plans (NBSAPs)

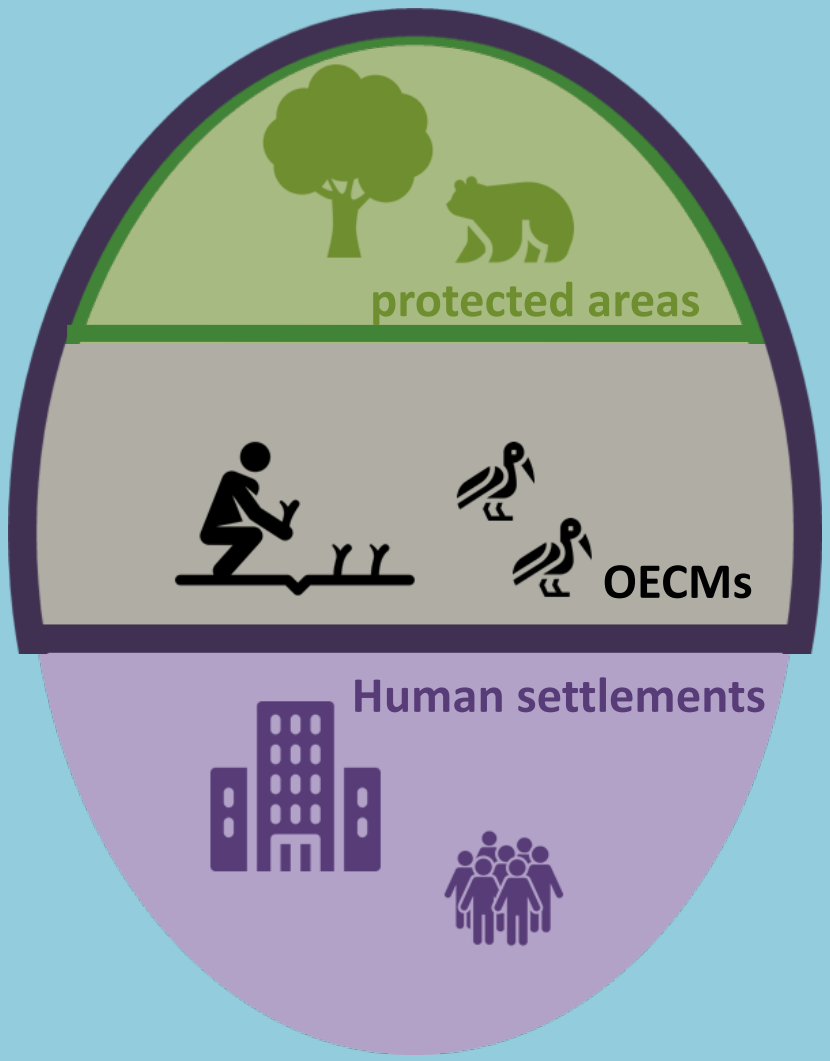
Challenges for the Post-2020 Period



Efforts required to:

- **Pay further attention to sustainable use of biodiversity**
  - **A skewed focus on protected areas (PAs) hides the importance of biodiversity outside the PA systems**
  - **The concept of "Other Effective area-based Conservation Measures" (OECMs) was introduced in the Aichi Biodiversity Targets, but has been poorly documented (only recent establishment of definition and guidelines)**
  - **Effective management of PAs and conserved areas needs to be promoted and ensured**
- **Better align different initiatives for synergies**
  - **Competing demands, contrasting interests, diverse values held among different sectors and stakeholders**
  - **Good initiatives and practices are not necessarily streamlined or scaled up**
  - **Business-as-usual activities hinder transformative changes**

Use OECM to Meet "30 x 30" Target



- Japan met the Aichi Target 11 on protected areas by the expansion and management of National Parks
- The conceptual change is necessary to achieve the post-Aichi Biodiversity target: 30 x 30
- Creating spaces where people and nature can interact: Recognize Satoyama/Satoumi as OECMs

The Satoyama Initiative

- Global effort towards "societies in harmony with nature"
- International Partnership for the Satoyama Initiative (IPSI) established in 2010 to implement the Satoyama Initiative
- Cooperation towards "Socio-Ecological Production Landscapes & Seascapes" (SEPLS)
- Case study:
  Environmentally friendly rice production for the conservation of Crested Ibis in Sado island, Japan

Global Agreements related to NbS

Sendai Framework for Disaster Risk Reduction
2015 - 2030

PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

Convention on
Biological Diversity

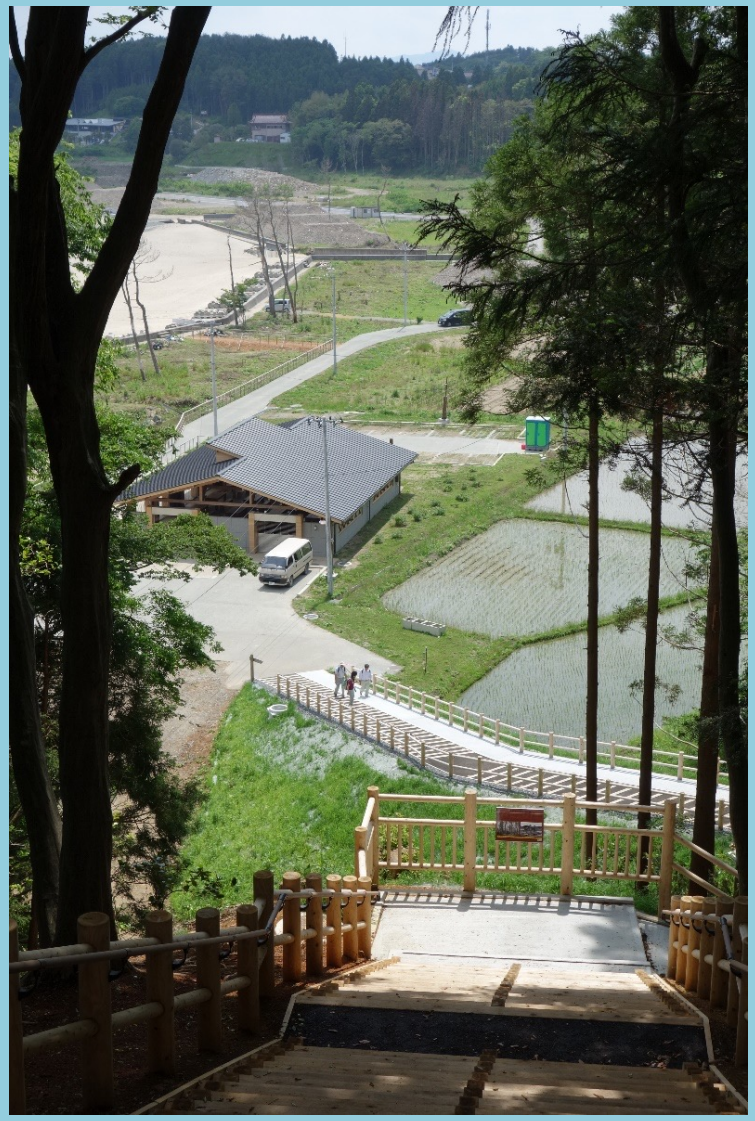
Japan's initiatives

- Eco-DRR
- Use OECM to meet "30 x 30" target
- The Satoyama Initiative

Ecosystem-based Disaster Risk Reduction (Eco-DRR)

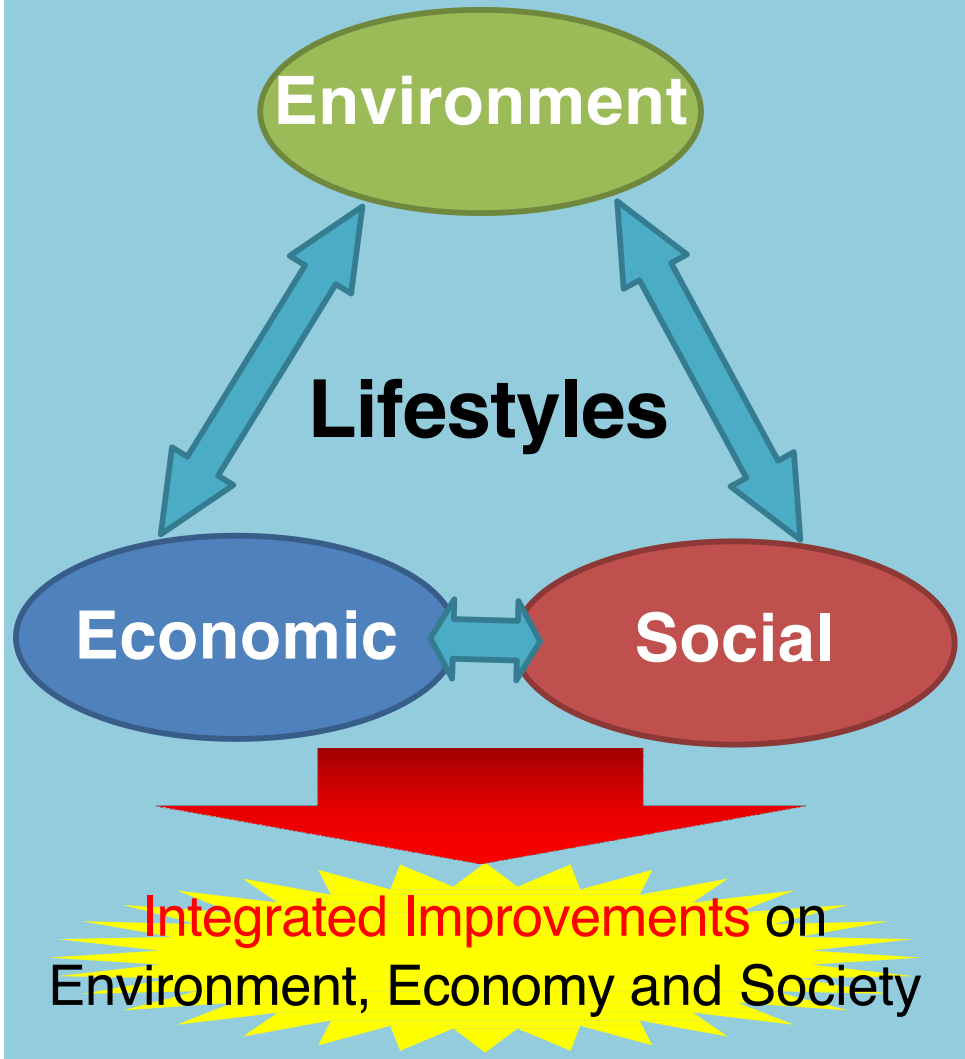
- Maintain/restore ecosystems for enhanced resilience against disasters and for multiple ecosystem services
- Promoted in Japan with dedicated laws and policies on DRR and biodiversity
- Case study:

  Restoring Coastal Ecosystems for Disaster Resilience:
  Kesennuma Oshima Island in the Sanriku Fukko National Park



Japan's 5th Basic Environment Plan (2018.4)

Challenges Facing Japan



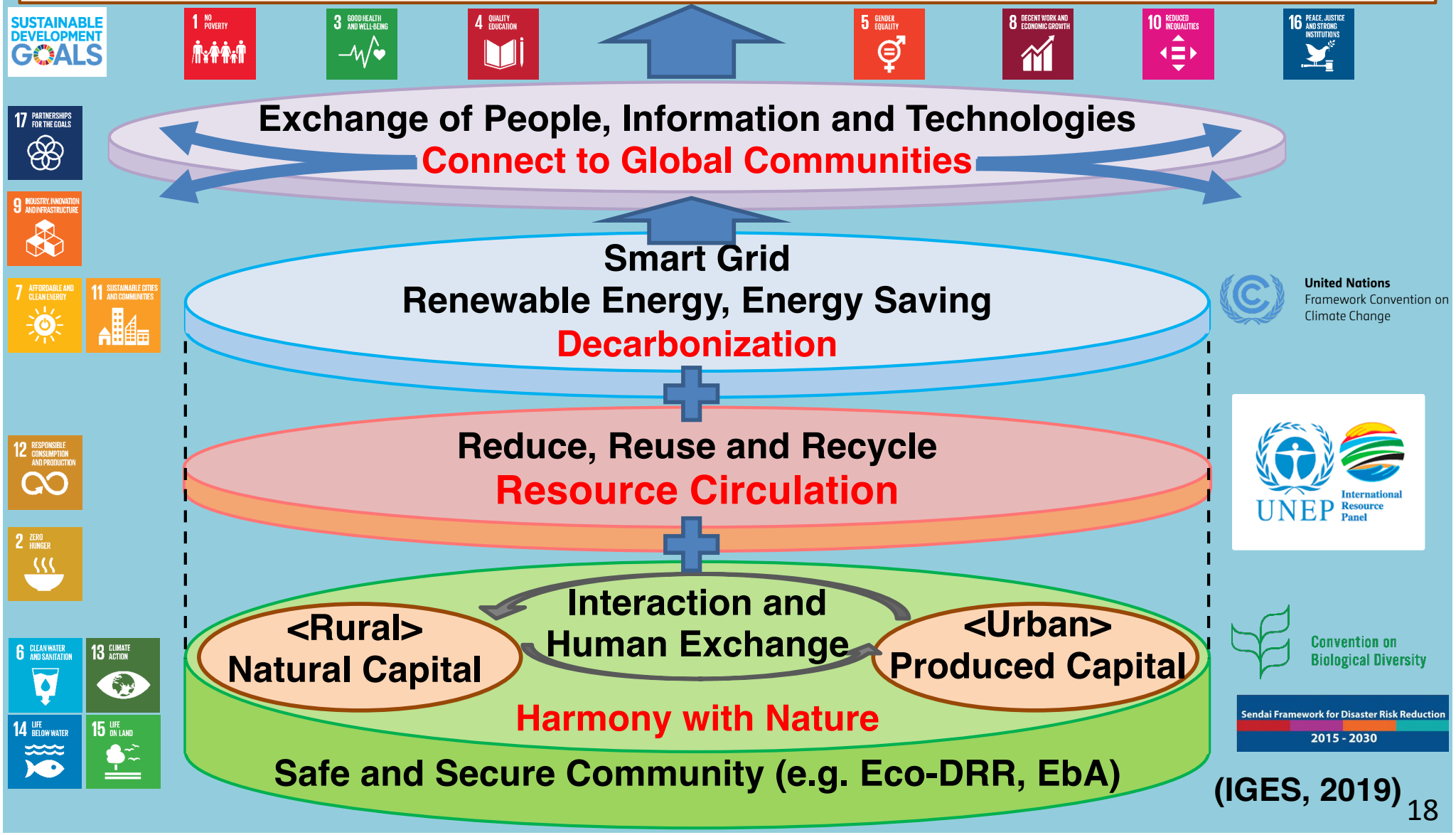
Source: Ministry of the Environment, Japan

Basic Approach

- Utilizing the concepts of SDGs, realizing the Integrated Improvements on Environment, Economy and Society.
- Innovation of lifestyles towards environmentally-friendly, healthy and high quality life.
- Maximize the sustainable use of regional/local resources for improvements in economic and social activities.
- Promoting Partnerships with a wide range of stakeholders.

Regional/Local Circulating and Ecological Sphere (CES)

Integration of environmental, economic and social dimensions
Integrated response to declining and aging population, Local revitalization
CES to achieve integrated solution for those local issues

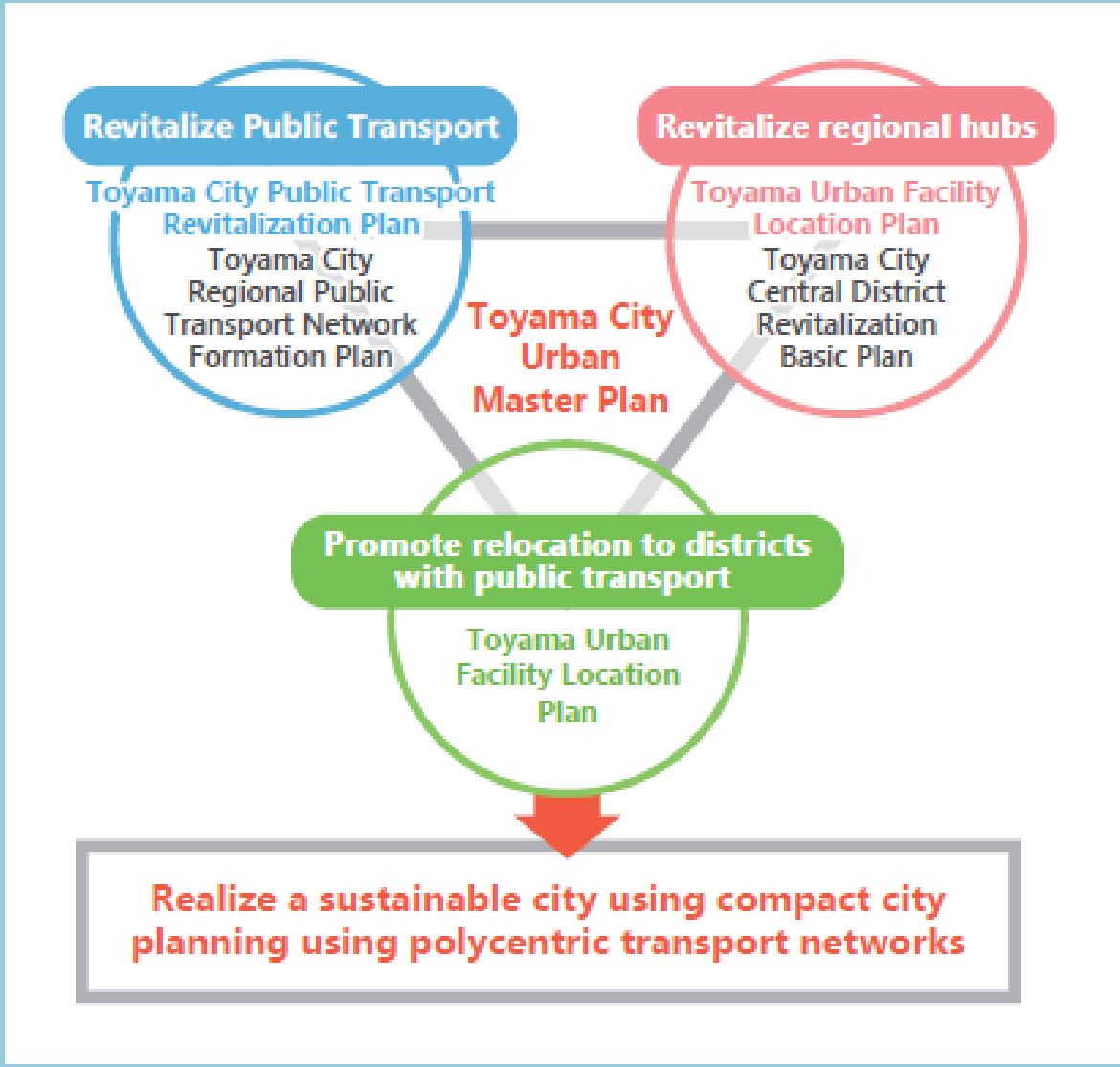


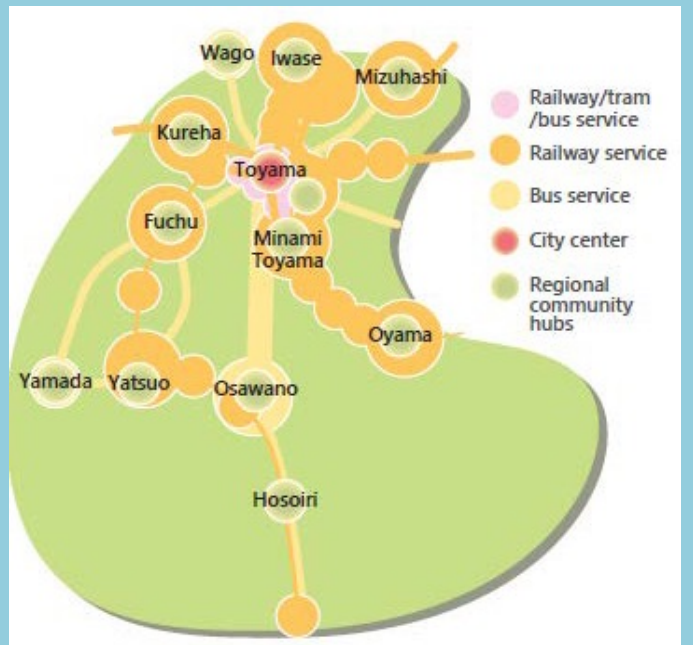
(IGES, 2019)

Measures to Create Sustainable Cities and a Prosperous Aging Society

- Promotion of the use of renewable energy utilizing natural capital and ecosystem services.
- Promotion of compact urban planning without depending heavily on private transportation.
- Creation of a place where residents of all ages can interact for enhancing human wellbeing.
- Establishment of new employment by creating complex-type industry. (for example; integrating agriculture, forestry and fisheries, renewable energy, tourism and environmental education)
- Promotion of collaboration between government, citizens, companies, universities, schools, etc. for forming of the multi-level nested governance.

Compact City Planning based on Polycentric Transport





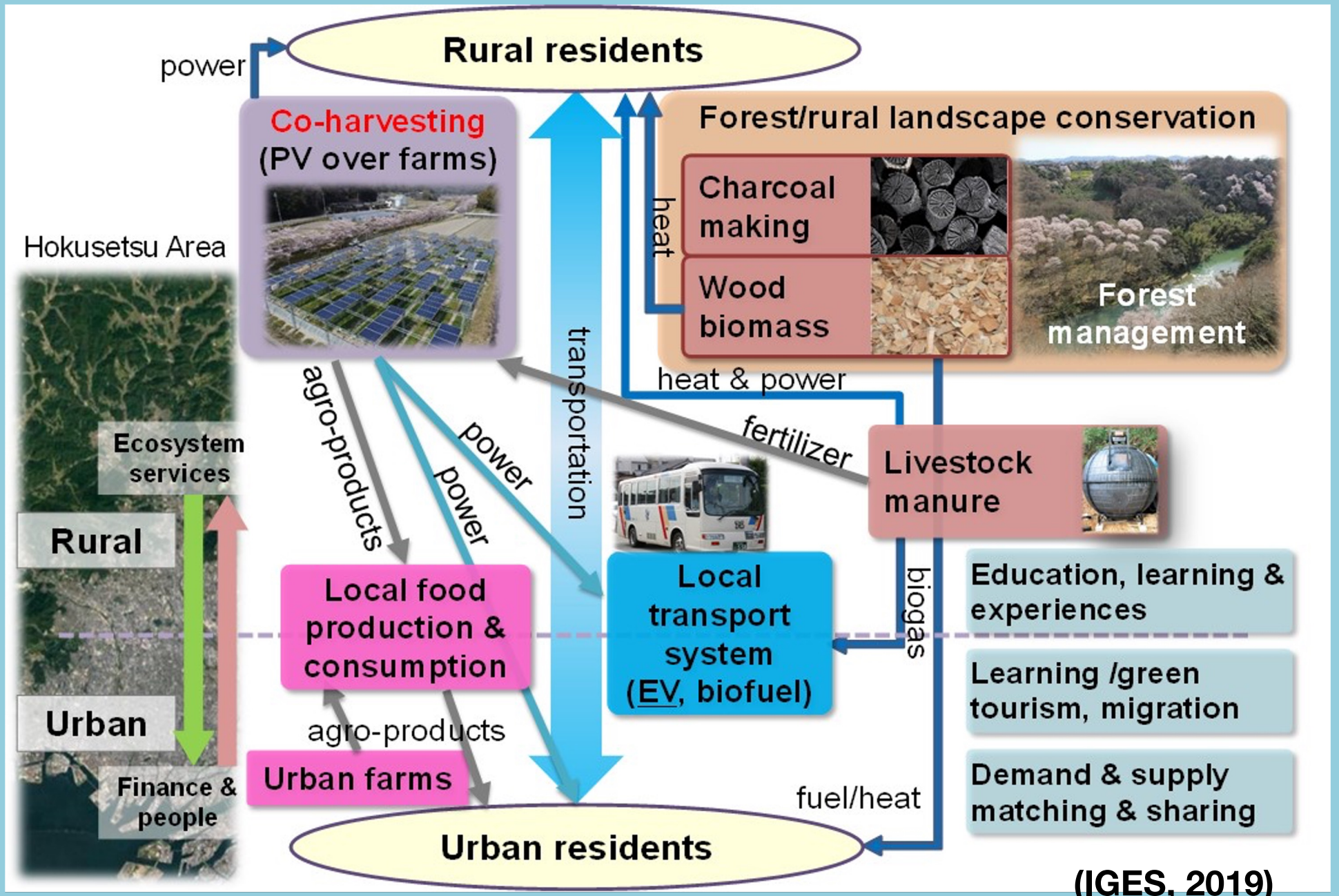
LRT in Toyama

Toyama City: From Urban Sprawl City caused by Motorization to Compact City by using the Electrification of the Transport System

- Urban sprawl caused by motorization and the merging of municipalities in the area.
- Development of a public transport system centred around the Toyama Portram and Centram lines. This system improved the walkability of the city, promoted migration within the city, and increased the value of land in the city center.
- GHG emissions also declined by 16% from 2005 to 2016.

A Toyama Light Rail train running past the Toyama Castle, a symbol of the city (Photo credit: Toyama City)

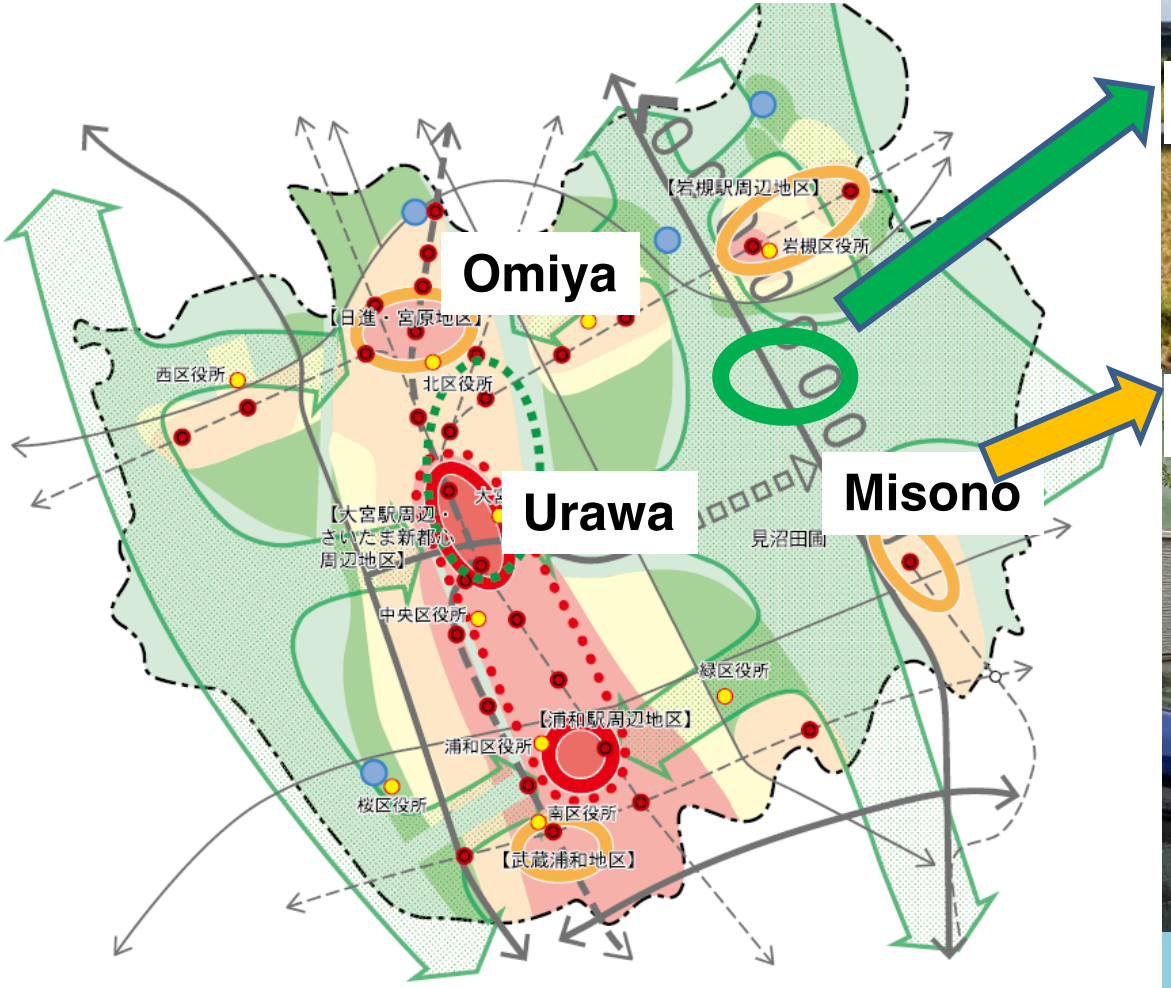
Hokusetsu Satoyama CES Model in Hyogo Prefecture



(IGES, 2019)

Social and Ecological City Regions in Saitama City

CES of Saitama City: Synergetic Actions between Climate and Biodiversity



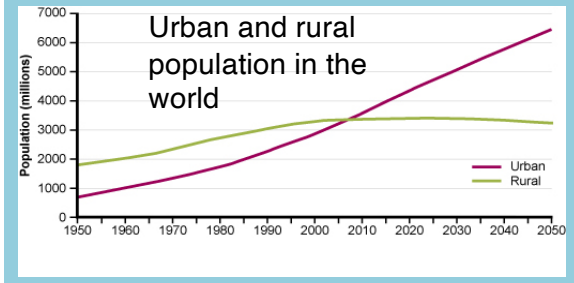
Saitama New Metropolitan

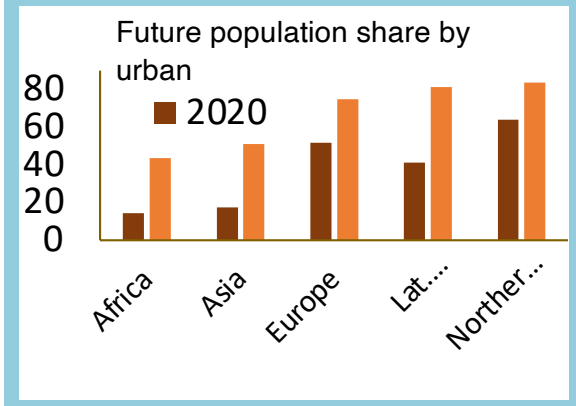
Minuma Paddy Field

Visit to Misono Town

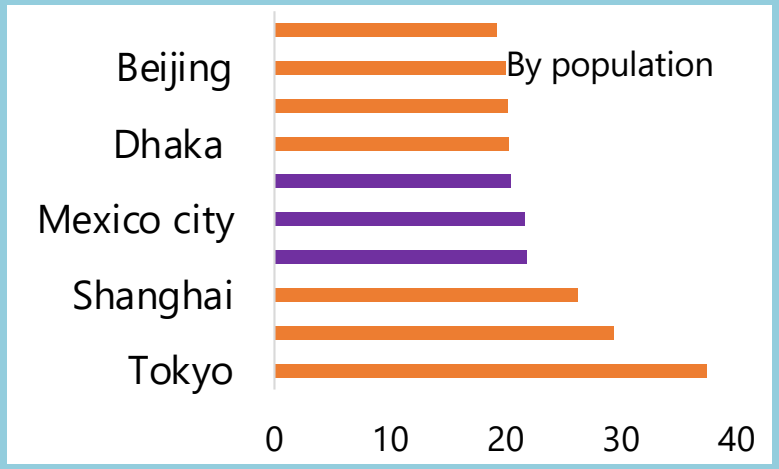
Unsustainable Paths in Developing Asia

Rapid growth of urban population





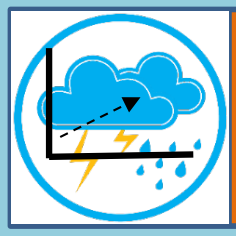
Urban-centric development paths



Out of top 10 largest cities, 7 of them are located in Asia

Unsustainable resource consumption paths

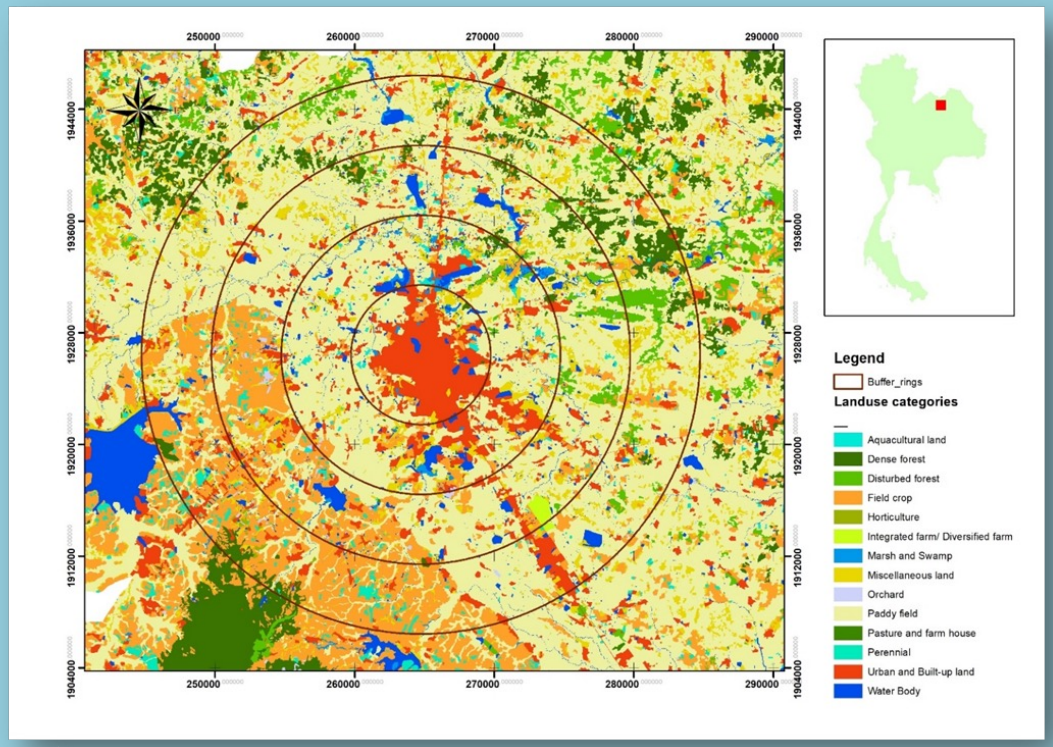

Ecosystem and biodiversity loss

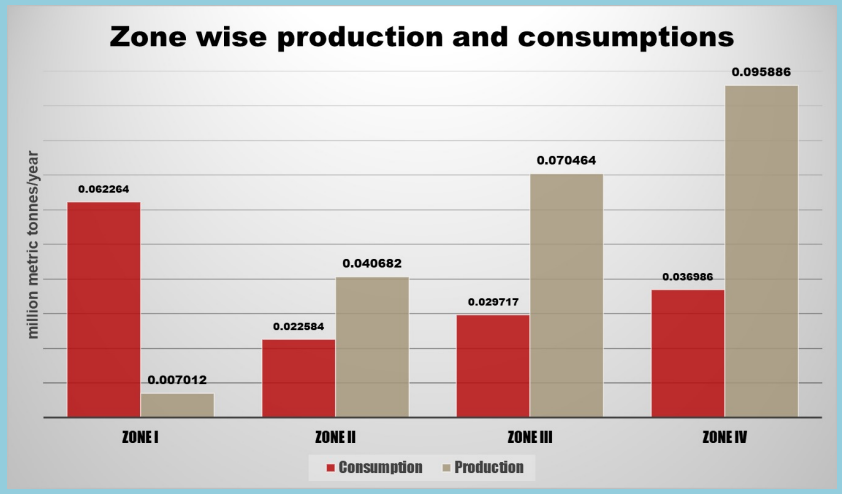

Climate change risk

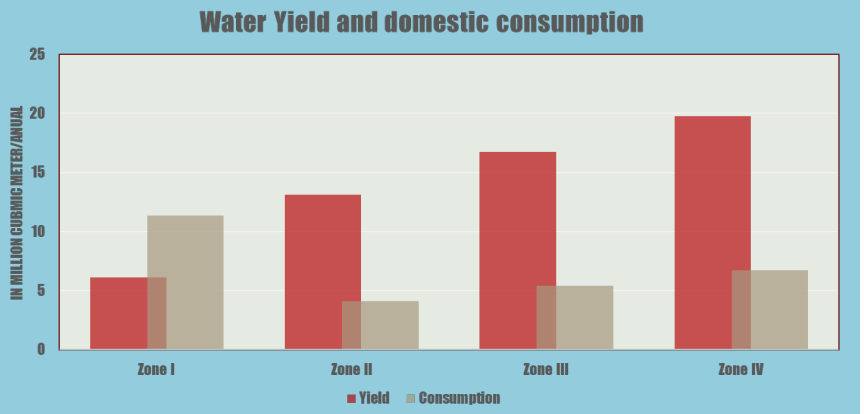

Disaster risk


Pressure on natural resources

CES Approach for Optimizing Ecosystem Services across Urban-Rural Gradient in Thailand







- City center of Udon-Thani. Each circle denotes 5 km radius
- Currently the region is self-sufficient in terms of food and water availability

Thank You for Your Attention