

Meeting on Energy, Environment and Ecosystems (3E) Nexus
Initiative for Sustainable Development in Asian Countries

Transdisciplinary Approaches for Building a Sustainable and Resilient Society

Dr. Kazuhiko TAKEUCHI

Director and Professor, Integrated Research System for
Sustainability Science (IR3S), The University of Tokyo
Senior Vice-Rector, United Nations University

26 February 2015, Bali, Denpasar, Indonesia

The Progress and Development of Sustainability Science

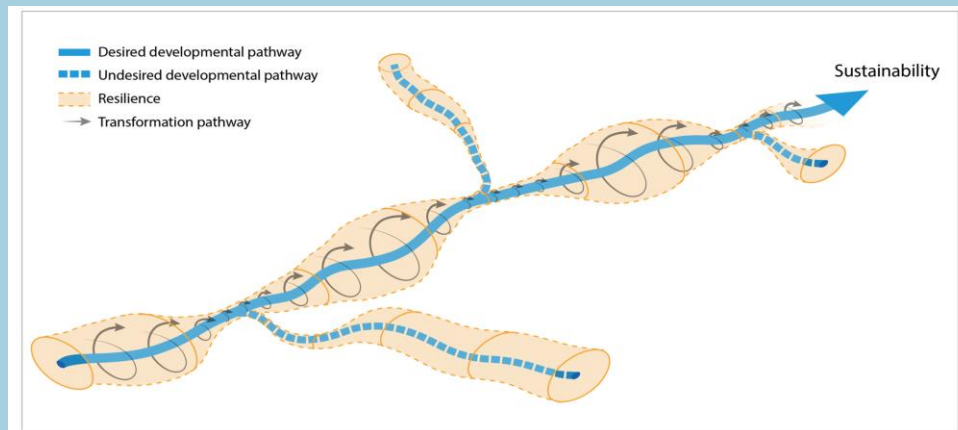
- Systems perspective: links **natural and social systems**
- From complex thinking to **transformational change**
- Transdisciplinary focus, **solution-oriented** transformative research
- **Co-design and co-creation** of knowledge, promotes partnerships and collaborative action
- Need for **education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



Sustainability Science Journal

Complementary Relationship between Sustainability and Resilience

- Debates concerning the relationship between **sustainability and resilience** have become increasingly complex.
- However, they **complement each other** and defining their relationship is important for beneficial progress.
- The concept of sustainability is a “**normative goal**”, while resilience is “**the capacity**” of a system to absorb disturbance. (Elmqvist et al., unpublished)
- The concept of resilience includes not only the capacity to recover from disturbances, but also the **capacity to adapt to a new situation**.
- By considering the capacity of transformations, each of which have various optional interventions, **resilience will be better linked with sustainability**.



(Elmqvist et al., unpublished)

Future Earth

Strategic Research Agenda 2014

A Dynamic Planet

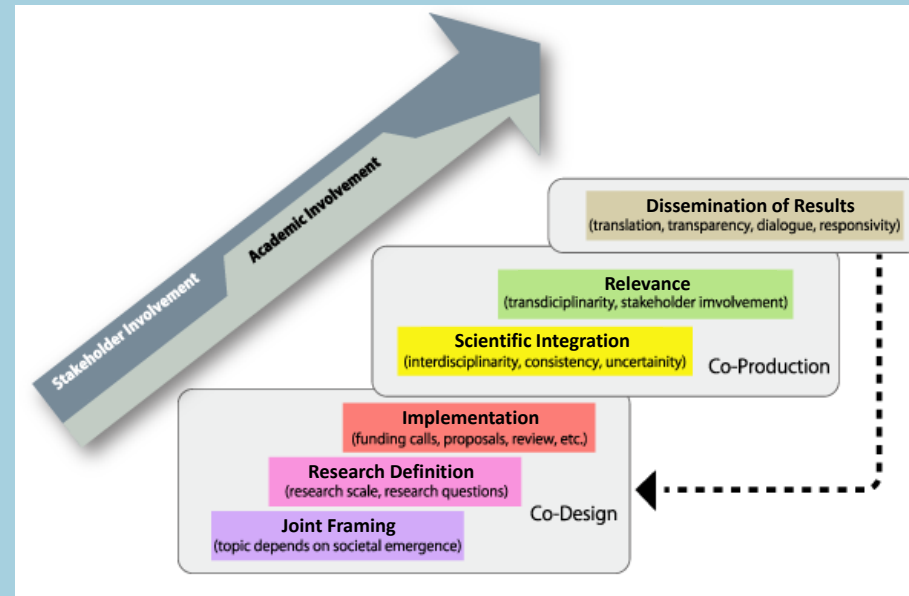
- a1 Observing and attributing change
- a2 Understanding processes, interactions, risks and thresholds
- a3 Exploring and predicting futures

B Global Sustainable Development

- b1 Meeting basic needs and overcoming inequalities
- b2 Governing sustainable development
- b3 Managing growth, synergies and trade-offs

C Transformations towards Sustainability

- c1 Understanding and evaluating transformations
- c2 Identifying and promoting sustainable behaviours
- c3 Transforming development pathways

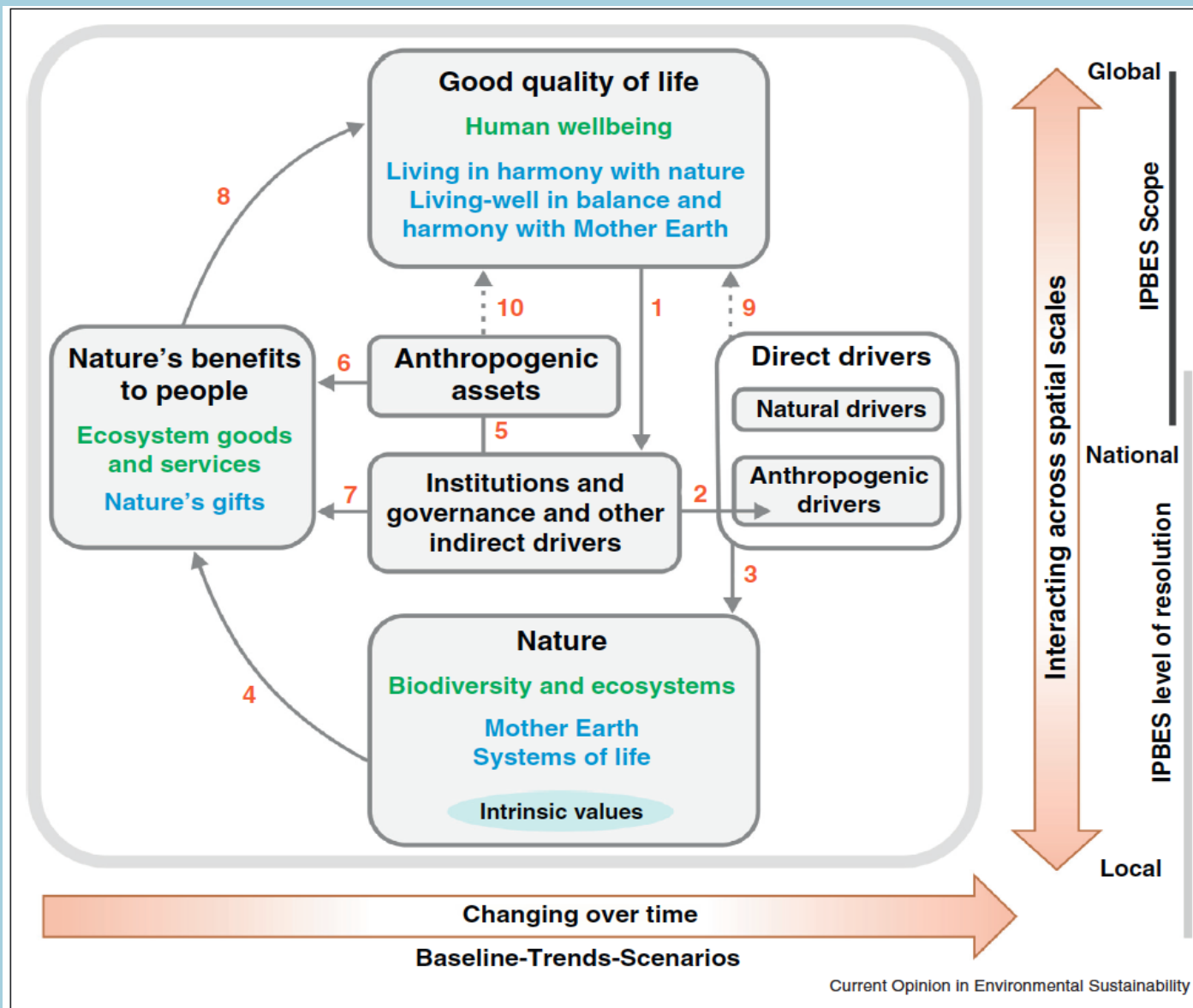


Future Earth (2014) Future Earth Strategic Research Agenda 2014. Paris: International Council for Science (ICSU)

Proposed Sustainable Development Goals to be attained by 2030

- Goal 1. **End poverty** in all its forms everywhere
- Goal 2. **End hunger**, achieve food security and improved nutrition, and promote sustainable agriculture
- Goal 3. Ensure **healthy lives** and promote **well-being** for all at all ages
- Goal 4. Ensure inclusive and equitable quality **education** and promote **life-long learning** opportunities for all
- Goal 5. Achieve **gender equality** and empower all women and girls
- Goal 6. Ensure availability and sustainable management of **water and sanitation** for all
- Goal 7. Ensure access to affordable, reliable, sustainable, and modern **energy** for all
- Goal 8. Promote sustained, inclusive and **sustainable economic growth**, full and productive employment and decent work for all
- Goal 9. Build **resilient infrastructure**, promote inclusive and sustainable industrialization and foster **innovation**
- Goal 10. **Reduce inequality** within and among countries
- Goal 11. Make **cities and human settlements** inclusive, safe, resilient and sustainable
- Goal 12. Ensure **sustainable consumption and production** patterns
- Goal 13. Take urgent action to combat **climate change** and its impacts*
**Acknowledging that the UNFCCC is the primary international, intergovernmental forum for negotiating the global response to climate change.*
- Goal 14. Conserve and sustainably use the **oceans, seas and marine resources** for sustainable development
- Goal 15. Protect, restore and promote sustainable use of **terrestrial ecosystems**, sustainably manage **forests**, **combat desertification**, and halt and reverse land degradation and **halt biodiversity loss**
- Goal 16. Promote **peaceful and inclusive societies** for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
- Goal 17. Strengthen the **means of implementation** and revitalize the **global partnership** for sustainable development

IPBES Conceptual Framework



Partnerships and Multi-level Environmental Governance

- The relationship between humans and nature, referred to as a **Social-Ecological System**, is subject to resilience and sustainability.
- **Improving human well-being** based on the reconstruction of a Social-Ecological System is essential to achieve a sustainable society.
- At the same time, the **new governance structure** known as “**New Commons**” should be considered to encourage the reconstruction of a Social-Ecological System.
- It is necessary to build **multi-level environmental governance**, which is led by various stakeholders at the global and local levels.
- At the same time, the **new business model of the Green Economy**, which is connected to sustainable economic development, is important.



Strategy for Establishing a Sustainable and Resilient Society

Lead the world
with global policies



Develop new paradigms through environment new diplomacy

Develop and disseminate relevant technologies which support ideal future

Increase value of national land as stock of assets

Realize a healthy and spiritually rich life

Expand local economic cycles

Realize a virtuous circle for environment and economy

Technological innovation

Social system innovation

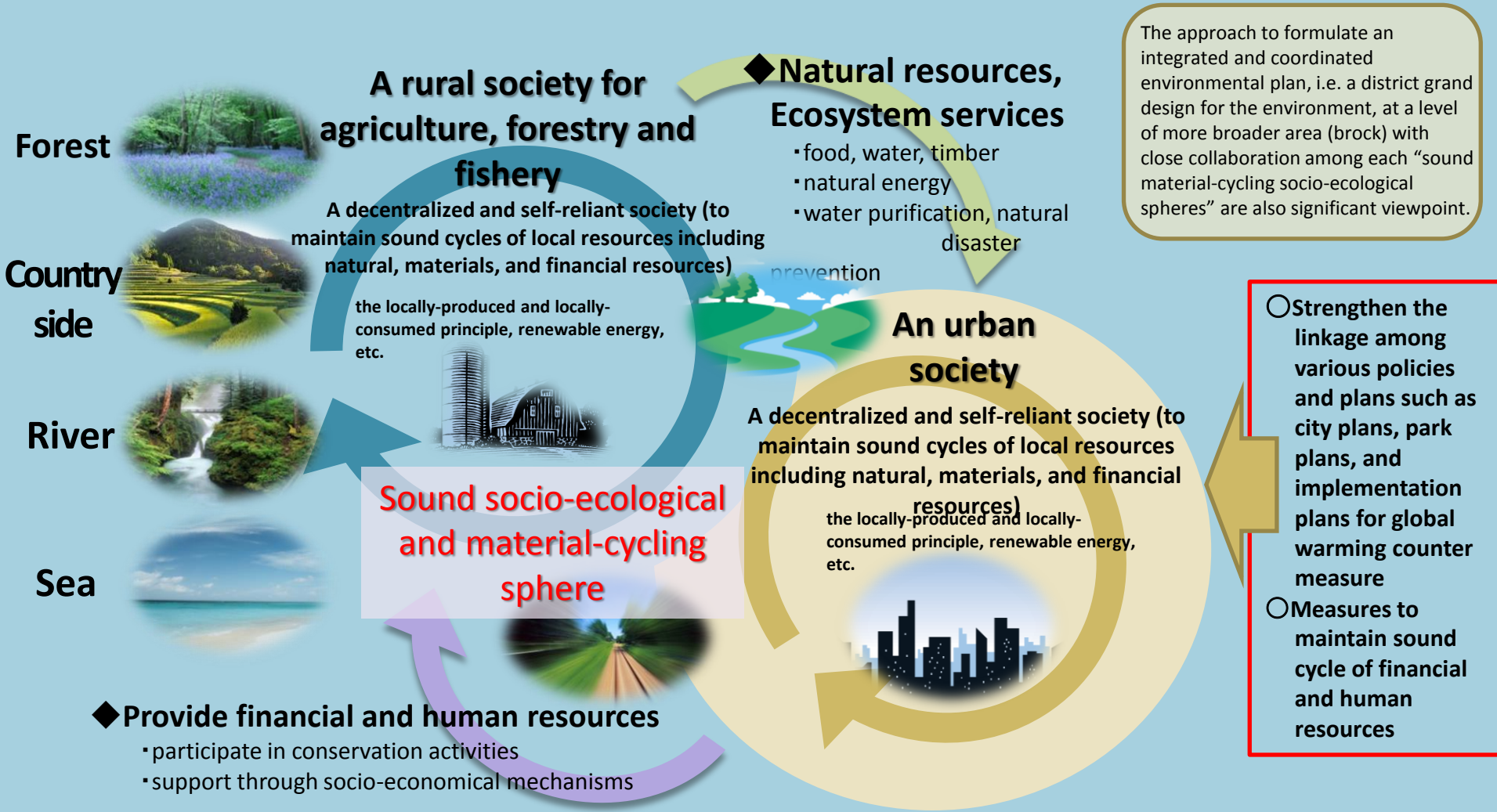
Lifestyle innovation

Regional Revitalization by

creating a vibrant and attractive local society

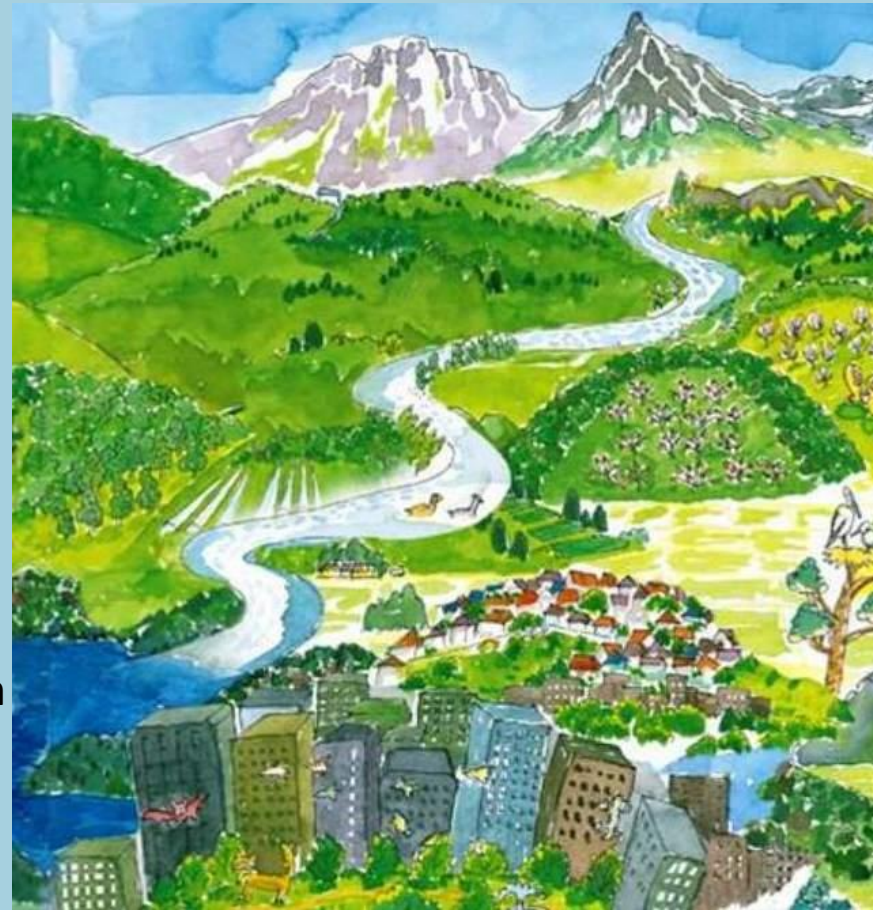


Sound Socio-Ecological and Material- Cycling Sphere



Social-Ecological Restoration after the Great East Japan Earthquake (Takeuchi et al., 2014)

- Building social/ecological resilience will **increase security** and contribute to an enhanced **quality of life**
- Building resilience in the affected area requires a transformation to **sustainable agriculture, forestry and fisheries**
- **Satoyama and satoumi landscapes** can contribute to the revitalization of primary industries and strengthen the relationship between **local residents and the landscape**
- Decision makers at local, regional and national levels need to take a holistic approach based on sustainability science to develop a **robust rebuilding plan** for the affected communities
- **Satoyama and satoumi** linkages can be a **model for building resilient rural and urban communities** throughout the world



Satoyama and satoumi linkages