

20 June 2011
Roma Campidoglio

SIF 2011 – Sustainability International Forum

**Rebuilding after
the Great Eastern Japan Earthquake:
the Role of Sustainability Science**

Kazuhiko Takeuchi

Vice-Rector, United Nations University;

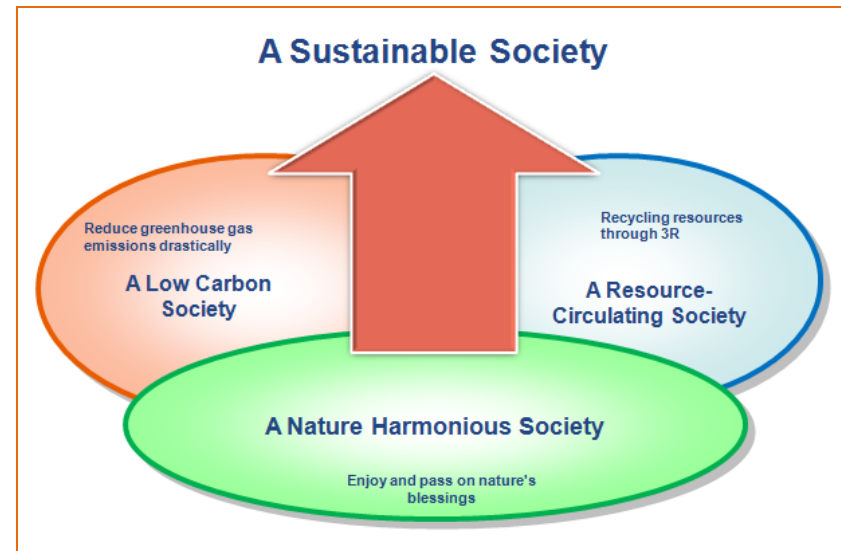
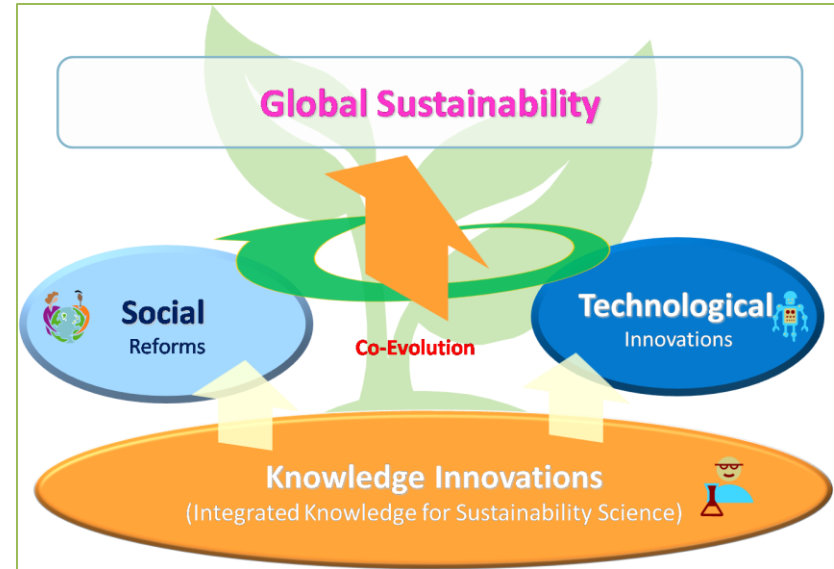
Deputy Executive Director,

Integrated Research System for Sustainability Science,

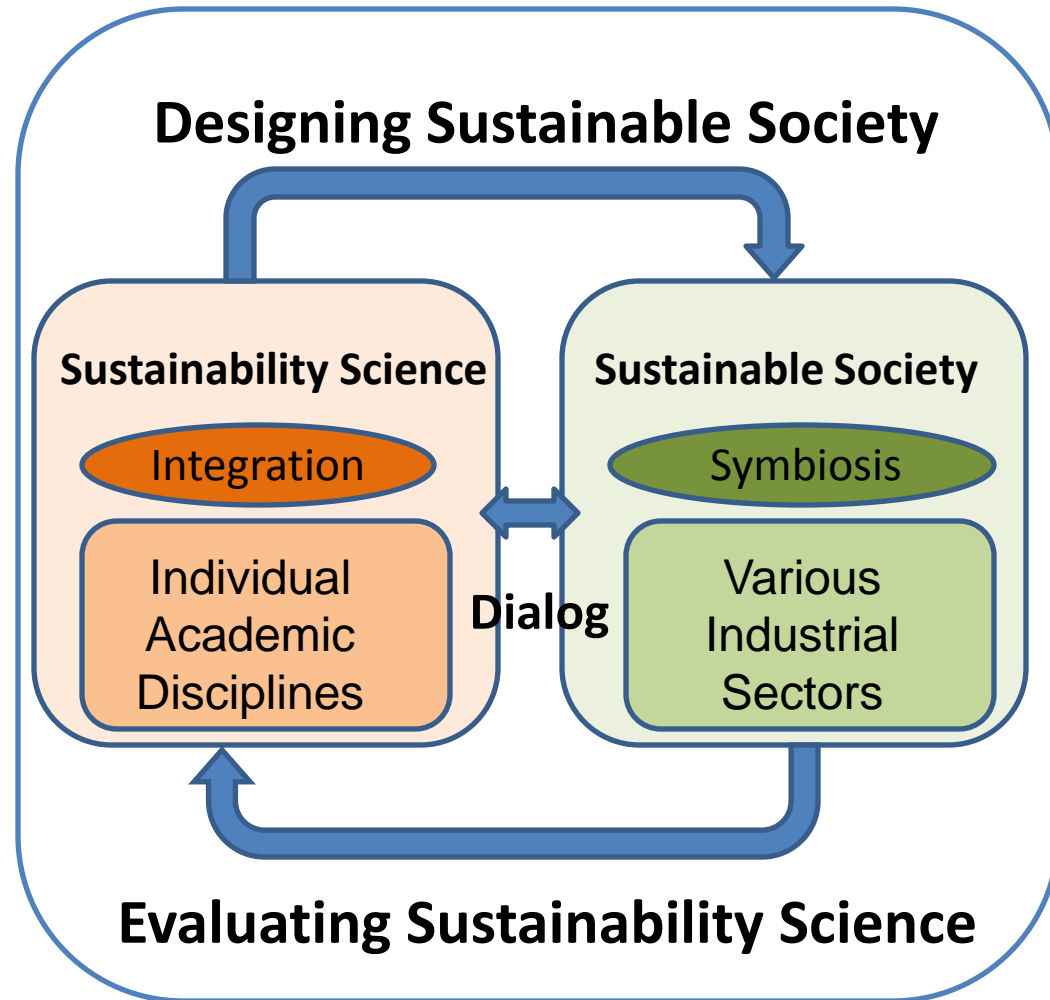
The University of Tokyo

Building a New Discipline - Sustainability Science -

- ❖ Holistic approach for **solving complex global challenges** such as climate change and biodiversity loss
- ❖ **Knowledge innovation**, technological innovation and social reform for achieving global sustainability
- ❖ Establishing a sustainable society through **optimization of energy, resource and ecosystems use**

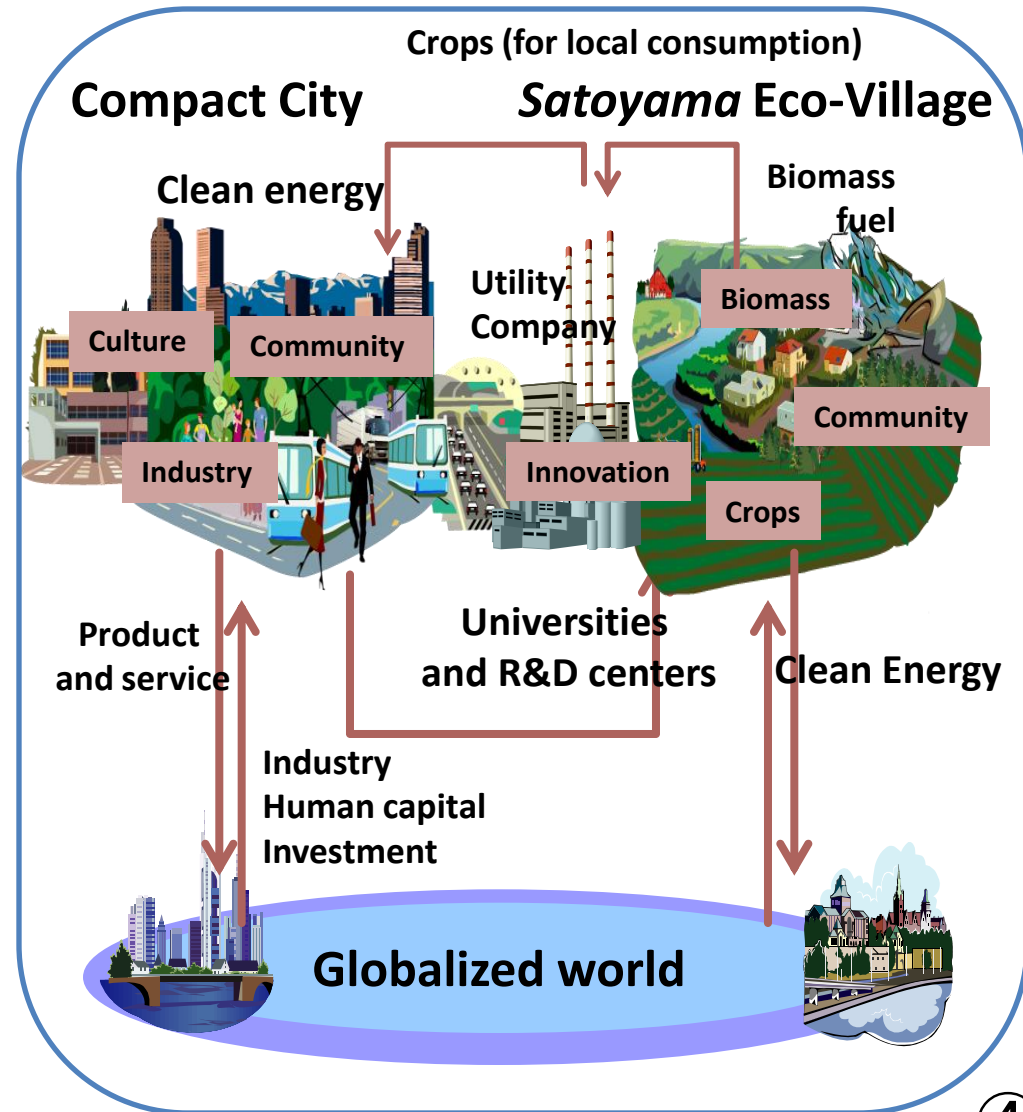


- ❖ Physical and social designs proposed by sustainability science need to be **evaluated by industry and society**
- ❖ Dialog between scientists, industry and civil society should be interactive, bringing **co-evolution of scientific understanding and social action**
- ❖ Therefore, industry and society must be considered **part of the sustainability science community**



Establishing Human-Made Ecosystems

- ❖ The ultimate goal of sustainability science is to create an ideal relationship for humans and nature to coexist
- ❖ It is very important to **unify the artificial world with the natural world**. We proposed establishing a sustainable society by integrating a low-carbon society, a resource-circulating society and a nature-harmonious society
- ❖ We need to develop "**Social System Technologies**" which consider system interactions, contribute to **ecosystem resilience**, and fulfill the needs of a **sustainable and ageing society**



The Threats and Blessings of Japan's Natural Environment

- ❖ The recent earthquake and tsunami have served as a reminder of the threat that natural disasters pose
- ❖ Much of the damage **exceeds the capacity of existing engineering measures**, and therefore there is a need to review such measures
- ❖ It has become increasingly important to **build greater regional resilience**, including within social systems
- ❖ We must **rethink at a deeper level**, what constitutes an ideal relationship between people and nature
- ❖ We must aim to construct a society which is **in harmony with nature, while also strengthening security**



Blessings of nature

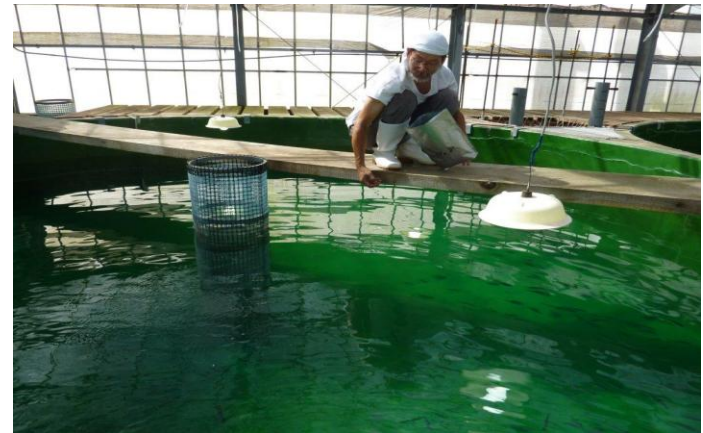


Damage caused by the natural disasters

- ❖ Many agricultural and fishing villages are located in the disaster-affected areas, and therefore the **recovery of agricultural, forestry, and fishery industries** has become the foremost task at hand
- ❖ Fishing villages in particular have endured catastrophic damage, and a **fundamental review of land use** must be conducted in affected areas
- ❖ Revival of agricultural, forestry, and fishery industries cannot be carried out without measures to address the **lack of human resources and the ageing population**
- ❖ There is a need to adopt the perspective of post-disaster **reconstruction as an industry** as part of a wider process for rebuilding agricultural, forestry, and fisheries industries
- ❖ Revival of agricultural, forestry, and fishery industries leads to the restructuring of the country as a whole



Well-managed forest areas



Development of fish farming

Regional Rebuilding on the Basis of Satoyama and Satoumi Linkages

- ❖ Much of the disaster-stricken area contains a range of typical Satoyama and Satoumi regions
- ❖ Through material flow, the **linkage of forest–river–sea** provides the community with the bounty of nature
- ❖ There is a need to construct rural and fishing communities that consider the **link between Satoyama and Satoumi**
- ❖ Safe and secure community building must also consider the **natural environment and landscape** issues
- ❖ Revitalization of the landscape will contribute to the **promotion of green and blue tourism**



Satoyama



Satoumi

Post-Disaster Rebuilding and Environmental Security and Recovery

- ❖ Much of the Sanriku coast boasts many national parks, abundant with natural landscapes
- ❖ Expansion of Rikuchu Kaigan National Park and inclusion of Satoyama and Satoumi for the **creation of a "Sanriku Rebuilding National Park"**
- ❖ Raise the issue of the close relationship between man and nature on the basis of the **threats and blessings of nature**
- ❖ Promotion of the development of a "Sanriku Geopark" that aims to preserve the **memory of the great earthquake and tsunami** and provide education on geology and geography
- ❖ Examination of possibilities for **developing sustainable and renewable energy** including solar, wind, biomass, and geothermal, in harmony with national parks and environmental protection

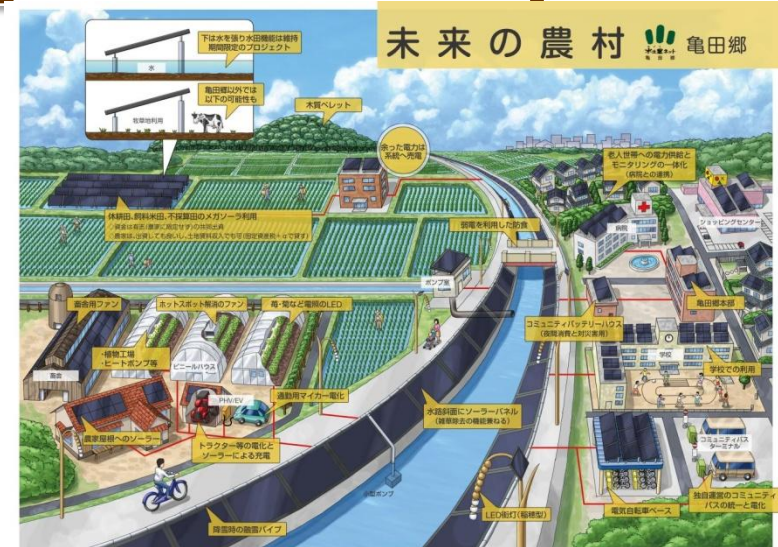


Image of Solar Village



**Sanriku
Rebuilding
National
Park**

Post-Earthquake Rebuilding and the Revival of Regional Communities

- ❖ Transfer of housing to higher ground, and the opportunity for compacting the rezoning of damage-affected areas
- ❖ This is important to deal with population decline and the ageing of the population
- ❖ The need to include diverse actors, on an equal basis, in the development of a mechanism for a co-management system
- ❖ Revival of regional communities in which support of one another strengthens ties
- ❖ The above will lead to the creation of new prosperity in Japan in the 21st Century



**Housing to higher ground
(Mr. Hatakeyama's house)**



Temporary housing

The Diversity of the Region and Post-Disaster Rebuilding

- ❖ The regions affected by the Great Eastern Japan Earthquake have experienced varying degrees of damage
- ❖ It is important to conduct a detailed examination of the **link between the degree of damage and natural and social factors**
- ❖ There is a need to highlight the **diversity the region offers** within the process of post-disaster rebuilding
- ❖ Therefore, a **bottom-up approach** is needed in the construction of a vision for rebuilding the region
- ❖ **Participation of citizens** is key due to their experience in their local community development

Extent of Damage in the Wakabayashi, Arahama Area in Sendai City



Before the Tsunami



(Oct 2006)

After the Tsunami



(12 Mar 2011)

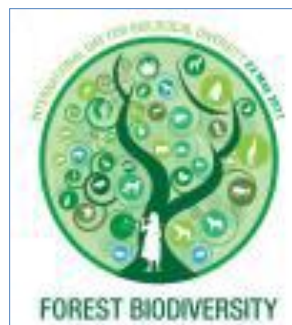
国土地理院

Aerial view of the damage-affected areas



Community development through participation of citizens

- ❖ We must develop a rebuilding plan including revitalization of agriculture, forestry and fisheries
- ❖ Living in harmony with nature and rebuilding resilient rural communities will be essential
- ❖ UNU-ISP organized a “Post-Earthquake Rebuilding Support Symposium” on 22 May 2011, the International Day for Biodiversity, as part of a series of events for the UN Decade on Biodiversity and the International Year of Forests



Otsuchi-cho, Iwate Prefecture



Kesennuma City, Miyagi Prefecture

Post-Earthquake Rebuilding Support Symposium

- ❖ Mr. Shigeatsu Hatakeyama, the founder of the NGO “Mori wa Umi no Koibito” (The forest is longing for the sea, the sea is longing for the forest), has firsthand experience as a practitioner in industries and is also a survivor of the disaster
- ❖ He gave a talk addressing the link between the forest and the sea, human habitats, biodiversity, and the revival of agricultural forestry industries and fisheries
- ❖ Complex disasters need to be addressed through strengthening actions targeting all levels, based on integrated approaches of natural sciences, social sciences and humanities



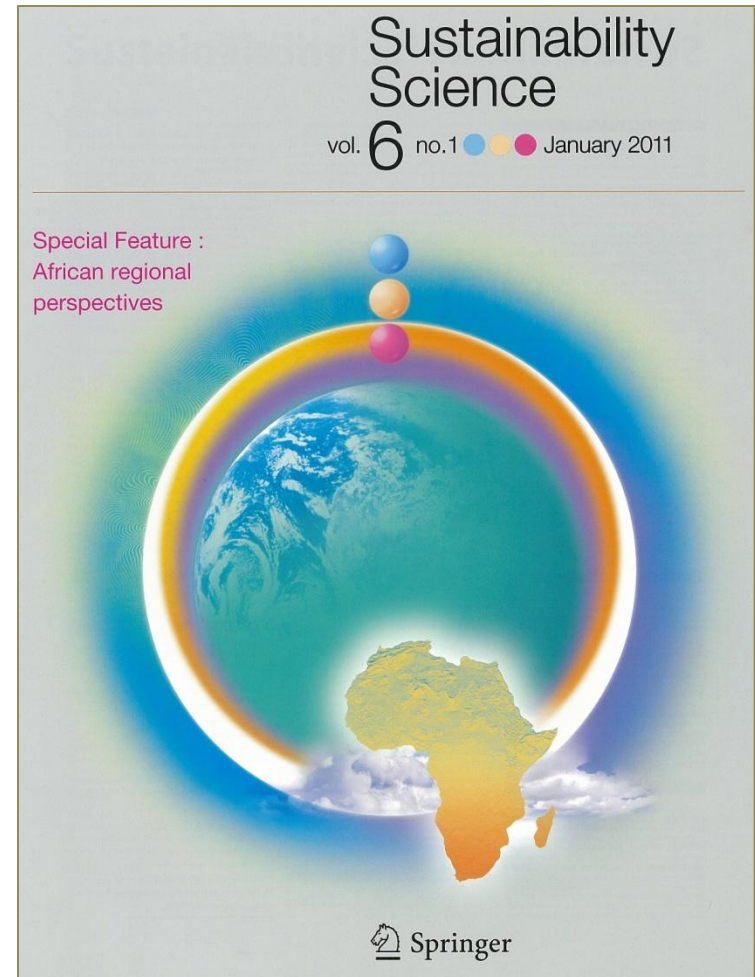
Prof. Hatakeyama



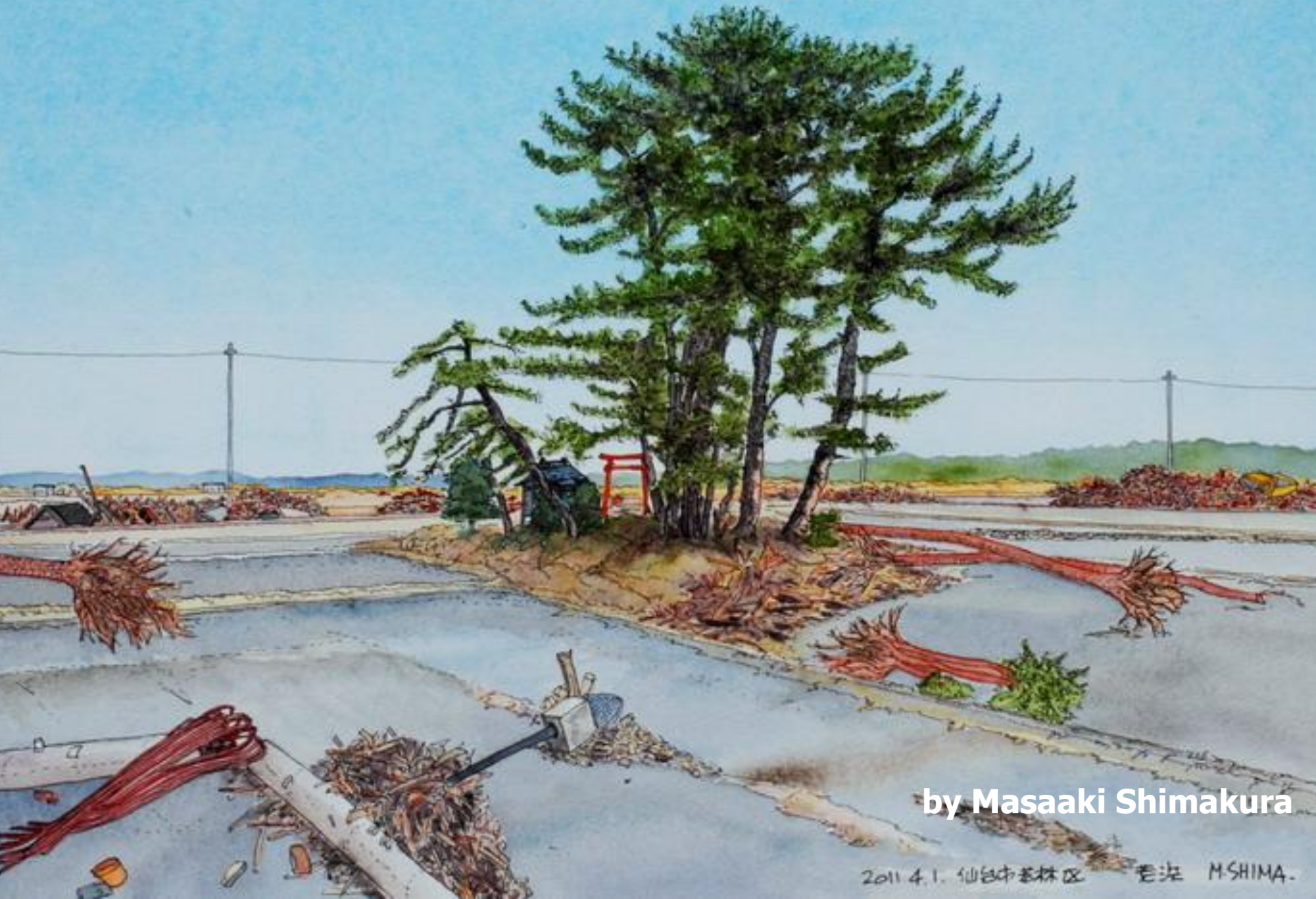
Rebuilding from the Disaster and the Role of Sustainability Science

Sustainability science needs to:

- ❖ contribute **solutions and recommendations** to ongoing complex and difficult problems
- ❖ identify the **resilience of socio-ecological communities** and the harm inflicted on them
- ❖ respond to questions like “What **other visions or scenarios** can we provide to overcome this disaster?” “How can we promote rebuilding of the affected areas **without losing socio-cultural diversity?**”
- ❖ investigate relationships between people and nature by analyzing the impact of the disaster and propose **effective and practical actions on the ground** for rebuilding and preparing for the future



Thank you very much!



by Masaaki Shimakura

2011.4.1. 仙包市基林区 巻浜 M.SHIMA.