Creation and Sustainable Governance of New Commons through Formation of Integrated Local Environmental Knowledge

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Knowledge base for solutions of complex issues related to societal transformation toward sustainability

★degradation of ecosystem services, adaptation to climate change

emerges in parallel at diverse local areas in the world

common root causes (globalization, climate change, demography)

needs of solutions corresponding to each local settings

★actions for societal transformation toward sustainability

collaborative actions of diverse stakeholders

linking mechanisms of different scales and levels from local to global

★diversity of stakeholders with different values

need of supporting knowledge base for decision making and action among diverse stakeholders maintaining differences

Issue-driven and solution oriented transdisciplinary science providing knowledge base for decision making and actions among diverse stakeholders toward sustainability

Beyond the deficit model
Science-society interaction

Questions: Scientifically valid ideas and tools for management of local social ecological systems are often not adopted by the local stakeholders.

• • • Lack of scientific literacy among stakeholders?

Or, problems of science and scientists?

● Scientists may produce knowledge with little applicability in the real local setup.
● Knowledge production processes often ignores local value systems and decision making processes,
● Locally applicable science are not acknowledged in conventional academism.

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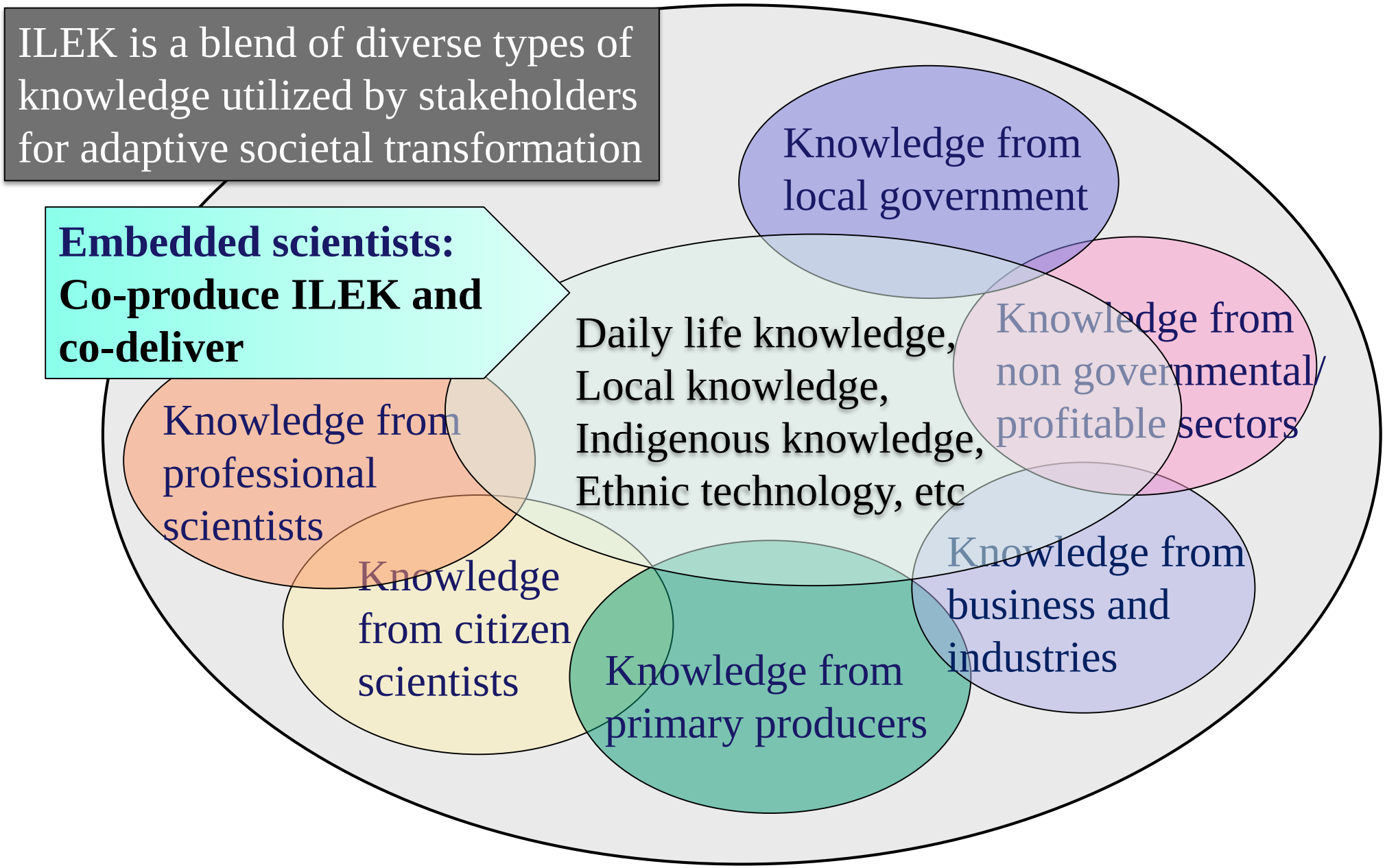
Structure of Integrated Local Environmental Knowledge (ILEK)



Integrated Local Environmental Knowledge (ILEK)

- transdisciplinary blends of diverse knowledge system corresponding to complexity of local social-ecological issues
- issue-driven, solution-oriented production of knowledge, clearly different from conventional curiosity-driven science
- dynamically produced and transformed in local collaborative actions among diverse stakeholders and scientists to solve environmental issues
- local daily-life knowledge and scientific knowledge integrated and blended through science-society interactions
- diverse producers of ILEK including skilled workers of primary industries, local government, companies, NGOs
- shared knowledge base for decision making and actions of local stakeholders

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Important actors of ILEK production and circulation
Residential Researcher : Bilateral Translator of Knowledge

Residential Researchers supporting stakeholder-driven local actions as scientists and community members

- scientists living in and embedded to local communities
- transdisciplinary knowledge production as a stakeholder
- contributing solutions of local environmental issues (Sato 2009)

Bilateral Knowledge Translators facilitating circulation of ILEK

- translate scientific knowledge into local communities by evaluation and reconstruction of knowledge from the framing of knowledge users (stakeholders)
- translate local knowledge and skills among stakeholders in the community into scientific languages to produce broader impacts

These actors dynamically mobilize local communities through production and circulation of ILEK

Integrated Local Environmental Knowledge (ILEK) project (from April 2012, 5 years)

●ILEK is produced and utilized in collaborative actions toward sustainable local communities by blending scientific knowledge and local wisdom. The project clarify mechanisms how it happen.

●Global visions and institutions flow into local communities and local actions influence broader systems through activities of bilateral knowledge translators. The project clarify mechanisms of knowledge-based cross-scale interaction promoting transformation of society.

●Adaptive societal transformation is achieved by dynamic decision making and action supported by ILEK. The project clarify how local actors play major roles to construct sustainable societies by this process.

science for society・society making full use of science
clarify way forwards to bottom up solutions

Case Study Sites（March 2013）

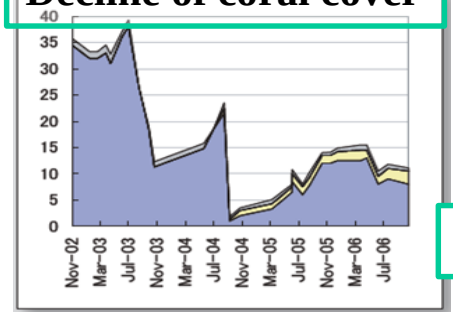
East Asita (32)、Europe/North America (12), Developing Countries (17)

Transforming roles of a residential researchers to catalyze societal transformation processes; WWF Coral reef Conservation and Research Centre （Masahito KAMIMURA）

- accumulation and translation of knowledge on coral reefs and local traditional cultures/skills as a research centre
- construction of local network playing a hub role through local visionary processes in the community
- establishing links with diverse visiting researchers to function as a hub of local research network
- core facility of creating local products and industries using natural resources
- promoting local activities by mining of stakeholders' interests (Tidal stone weir, tridacna clam)

Science

Decline of coral cover



Community vision meeting

Sunday market

Planted clam

residential researchers acting as catalysts to mobilize local networks, through transforming and expanding their roles as an actor, forming new links, and bringing transdisciplinary knowledge and skills to the network

Cross-scale translators

Top-down type

Global

★UNESCO BR, World Heritage
★International Certification of Resource Management (FSC, MSC, ASC)
★GIAHS (FAO)
★SATOYAMA Initiative
★Ramsar Convention

Regional, National

★WWF Yellow Sea Ecoregion Program

Bottom-up type

Global

★ICCAs (Indigenous and Community Conserved Areas)
★UNDP Equator Initiative, Equator Prize

Regional, National

★MPA Network for coral reef conservation（LMMA)
★Barefoot Ecologists Models (Fisheries Resource Management)

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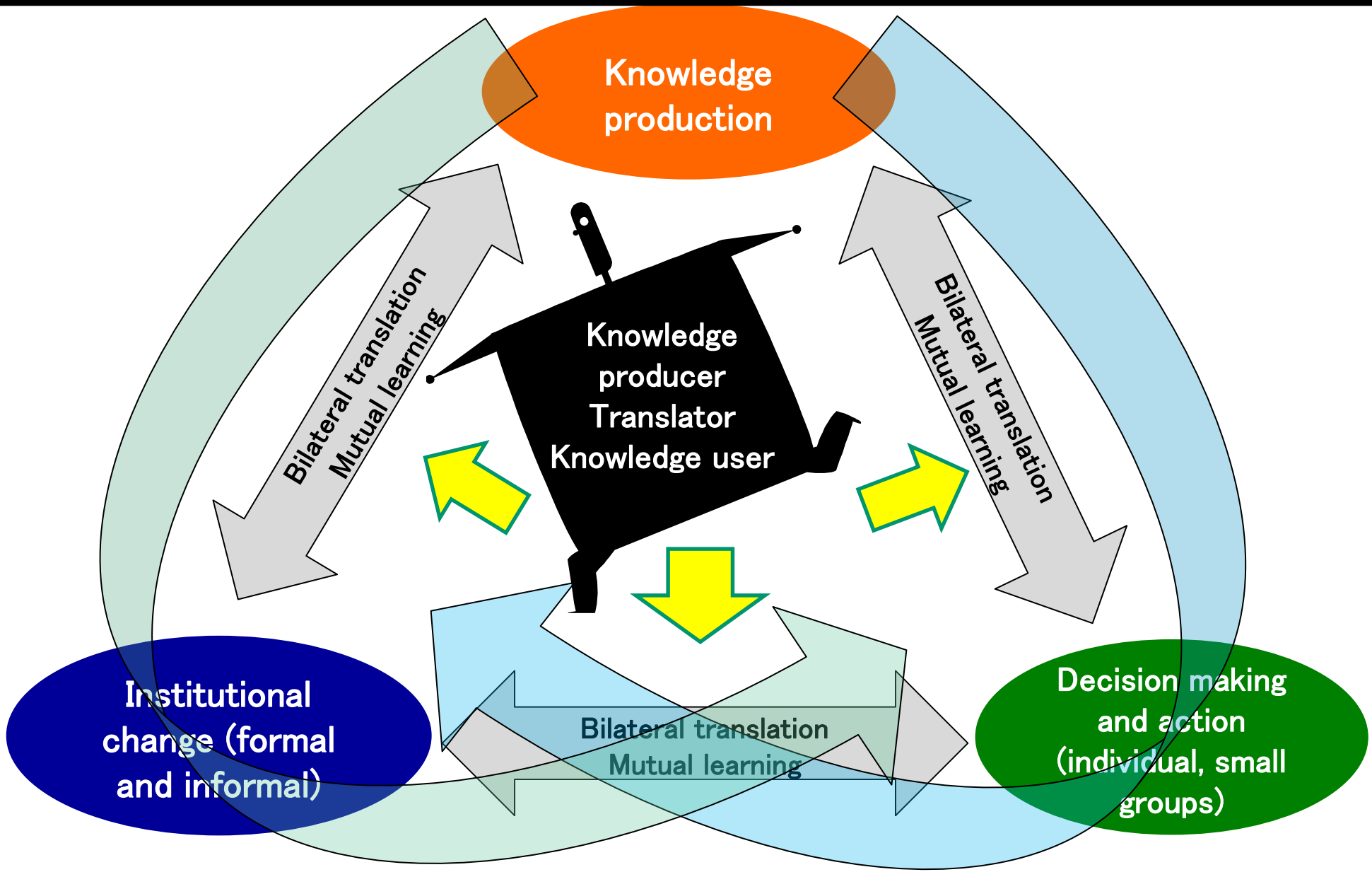
Conceptual model of knowledge-based adaptive societal transformation (ILEK Triangle)



Hypothetical enablers of ILEK-based societal transformation
（latest version as of November 2014）

Enabler category	Description
1. create and visualize values	Produced knowledge creates or visualizes new sharable values in local communities to mobilize collaborative actions.
2. create new linkages (cross-scale)	Produced knowledge creates new linkages among actors within and outside the community, including actors addressing broader issues.
3. provide options and opportunities	Produced knowledge expand options and opportunities for sustainable actions among stakeholders and mediates changes in environmental perception.
4. create collective actions	Produced knowledge creates collective actions, transforming existing local institutions or creating new ones.
5. appropriate translation	Knowledge translators (individual or organizational) mediate changes in individual actions or formal and informal social systems by appropriate selection, modification and reconstruction of knowledge

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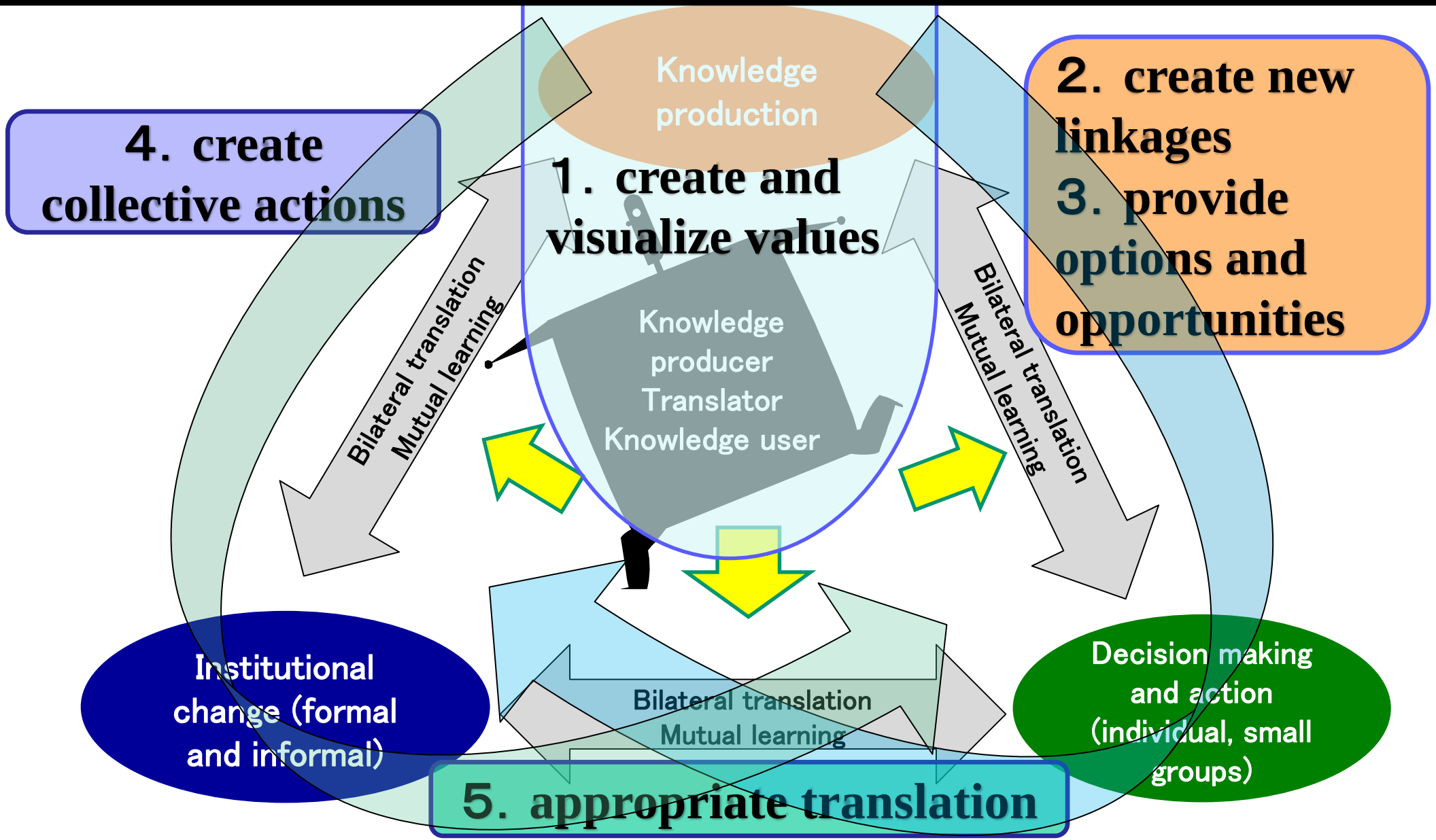
Conceptual model of knowledge-based adaptive societal transformation (ILEK Triangle)



Biosphere Reserve Network in Japan (October 2013)

Create new linkages (cross scale)

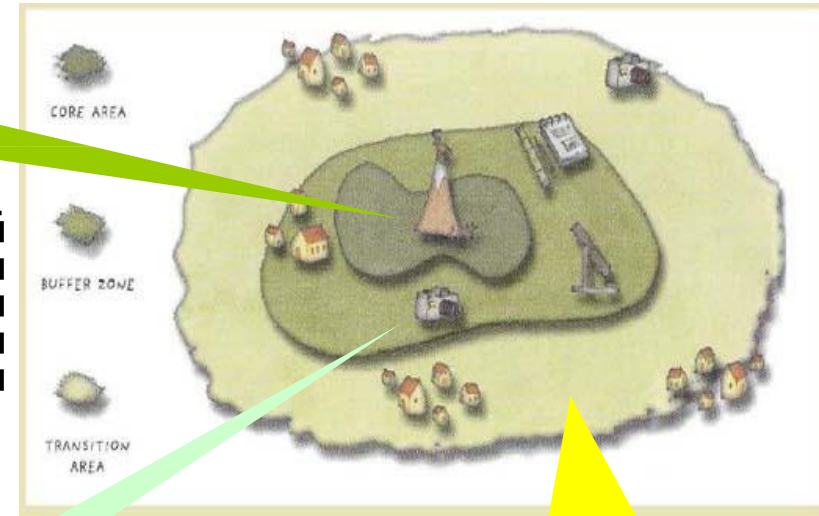
●Framing and systems developed by UNESCO (top-down)
● Local community play major roles (bottom-up)

BR activities in Japan revitalized through ILEK Project

- BR network promote mutual interactions among stakeholders from participating communities
- Local and cross-scale collaborative actions

Core area

Strict and long-term conservation



Buffer zone

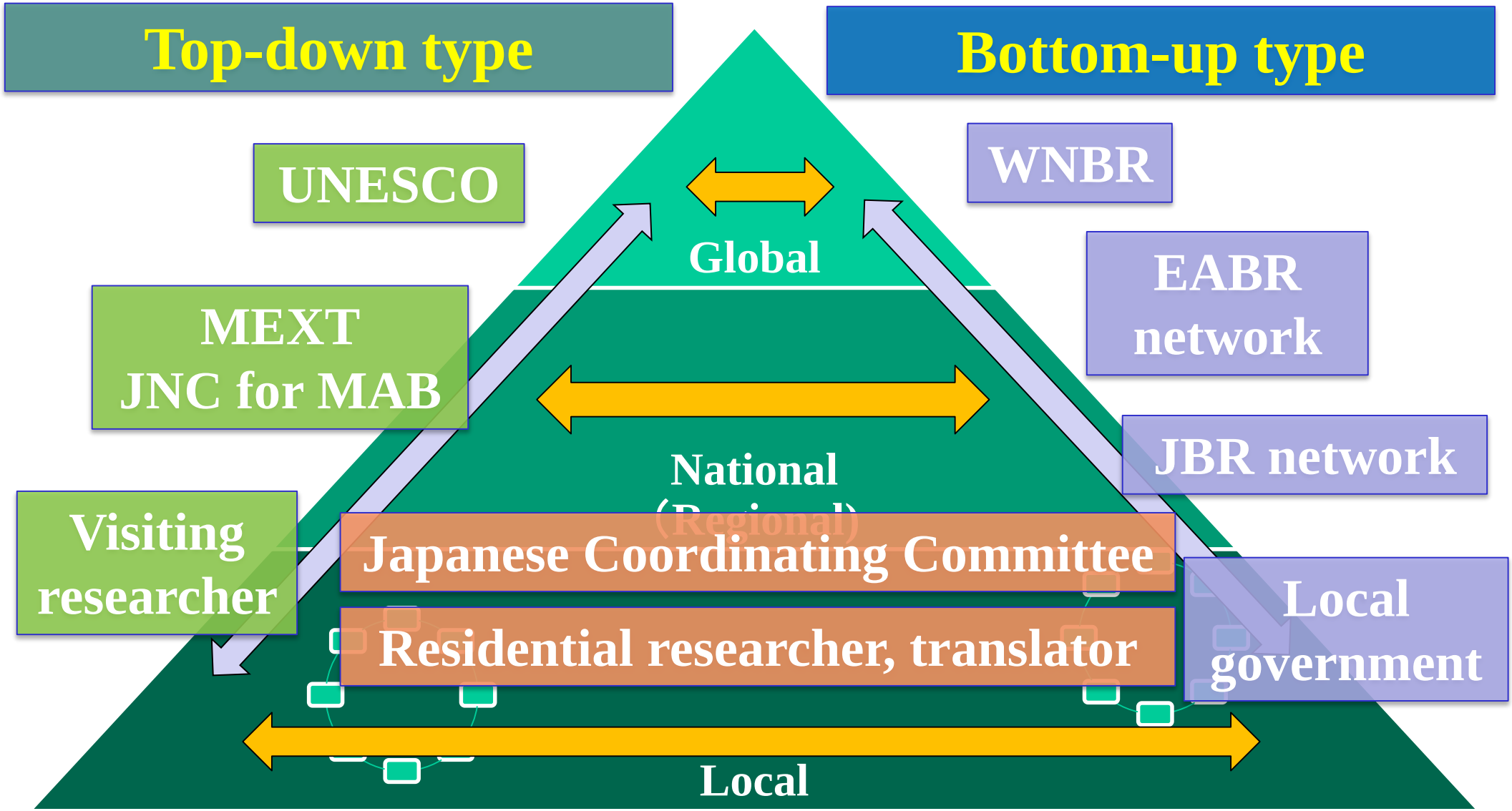
Buffur for the core zone to be used for education and eco-tourism

Transition area

Inhabited area with sustainable economic and community development activities

Sustainable community

Diversity and multiplicity of knowledge translators (Japanese BRs)



Society Making Full Use of Science?: Perspective of local Stakeholders

★Sustainable development and revitalization of communities as the ultimate goals, conservation as the results

⇒Shared vision of local communities

★Collaborate with scientists, both residential and visiting

⇒Identify and build trusts with reliable experts

★Make full use of governments and international actors

⇒Mobilize and utilize their translator functions

★Take advantage of networking and exchange

⇒Enjoy interaction and mutual learning

Science for Society?
TD Research for Societal Transformation: Perspective of Scientists

★Integration of high quality science and various knowledge in society to support decision making and actions

⇒Transdisciplinary science for society

★Trust stakeholders as the major actors

⇒Respect diversity of knowledge productions

★Play responsible roles in communities as a member/visitor

⇒Gain trusts from other stakeholders

★Take advantage of co-creation of knowledge

⇒Scientific innovation through mutual learning