Integrated systemic knowledge

Úrsula Oswald Spring
CRIM-UNAM, U. Chulalongkorn
UNU-EHS, Project PAPIIT 300213
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1. New scientific questions

A new emergent research field in the social sciences deals with

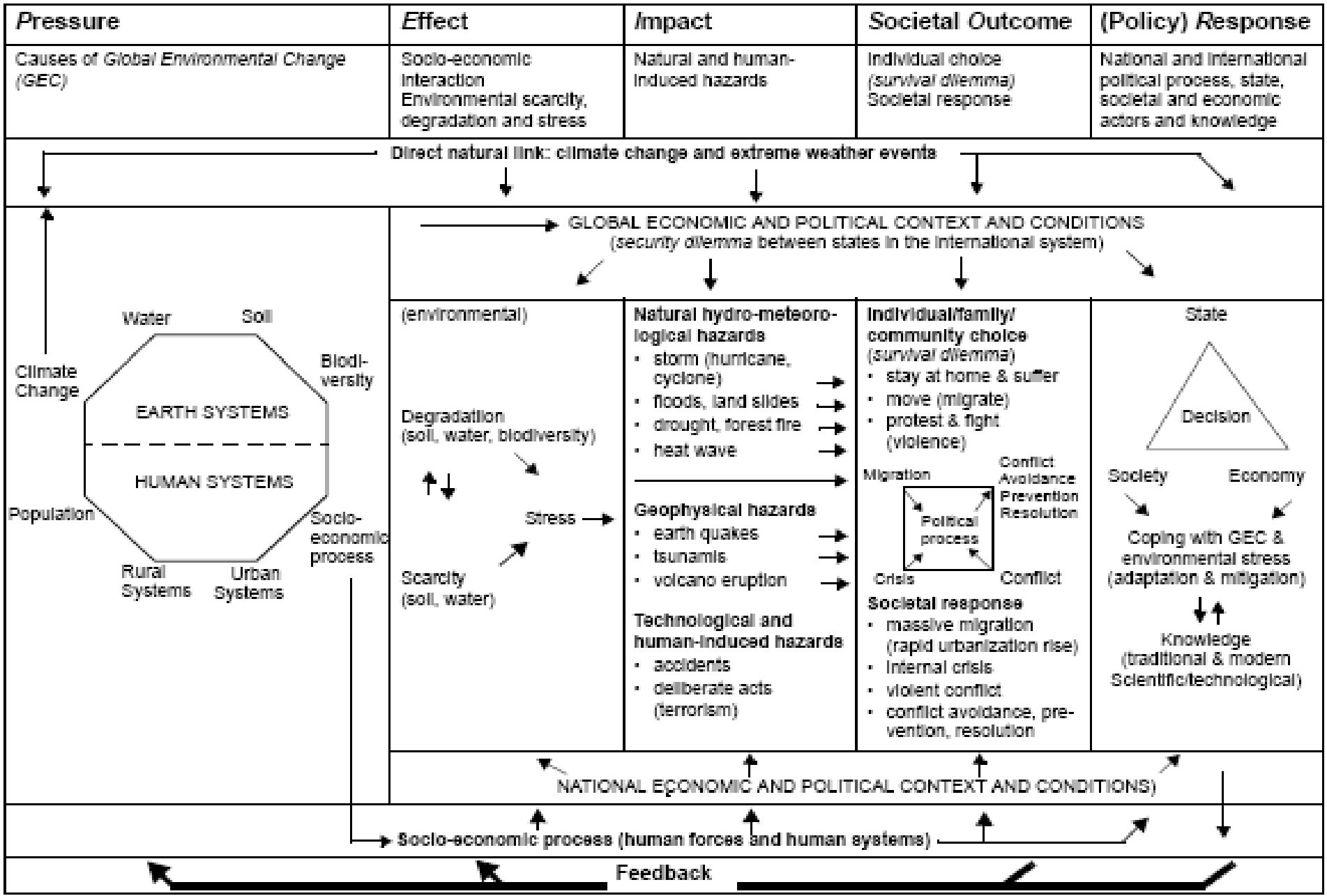
- theoretical and empirical approaches and strategies of a long-term transformative change towards sustainability (Grin, Rotman, Schot 2010)
- processes of sustainable transition with gender perspective (Oswald 2011)
- reduction of risks, adaptation, resilience, poverty alleviation, food sovereignty and social equity (Beck, 2011, Brauch et al. 2011, Oswald, 2011)

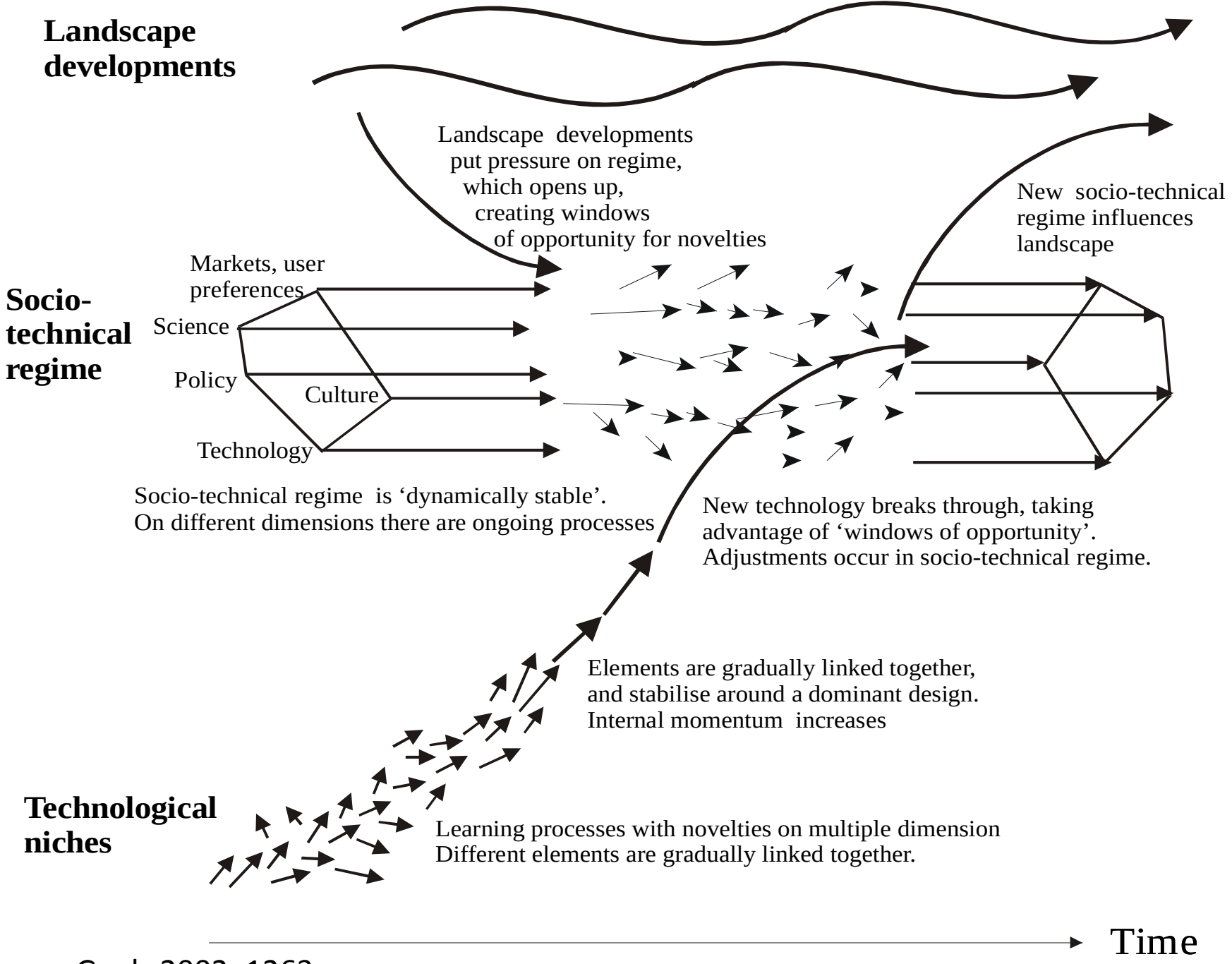
due to climate change that has created new risks, uncertainty and disasters

Transition research

1. **Multiple levels** as a nested hierarchy (Geels, 2002: 16) in time and space.
2. **Co-evolution** between multiple trajectories in a socio-technical regime (Geel, 2004: 912): technological innovations; production networks of industry structures; users practices and markets; policy interventions and control mechanism; socio-cultural visions and actions
3. **Dynamic** interactions at **multi-level** with **feed-backs**

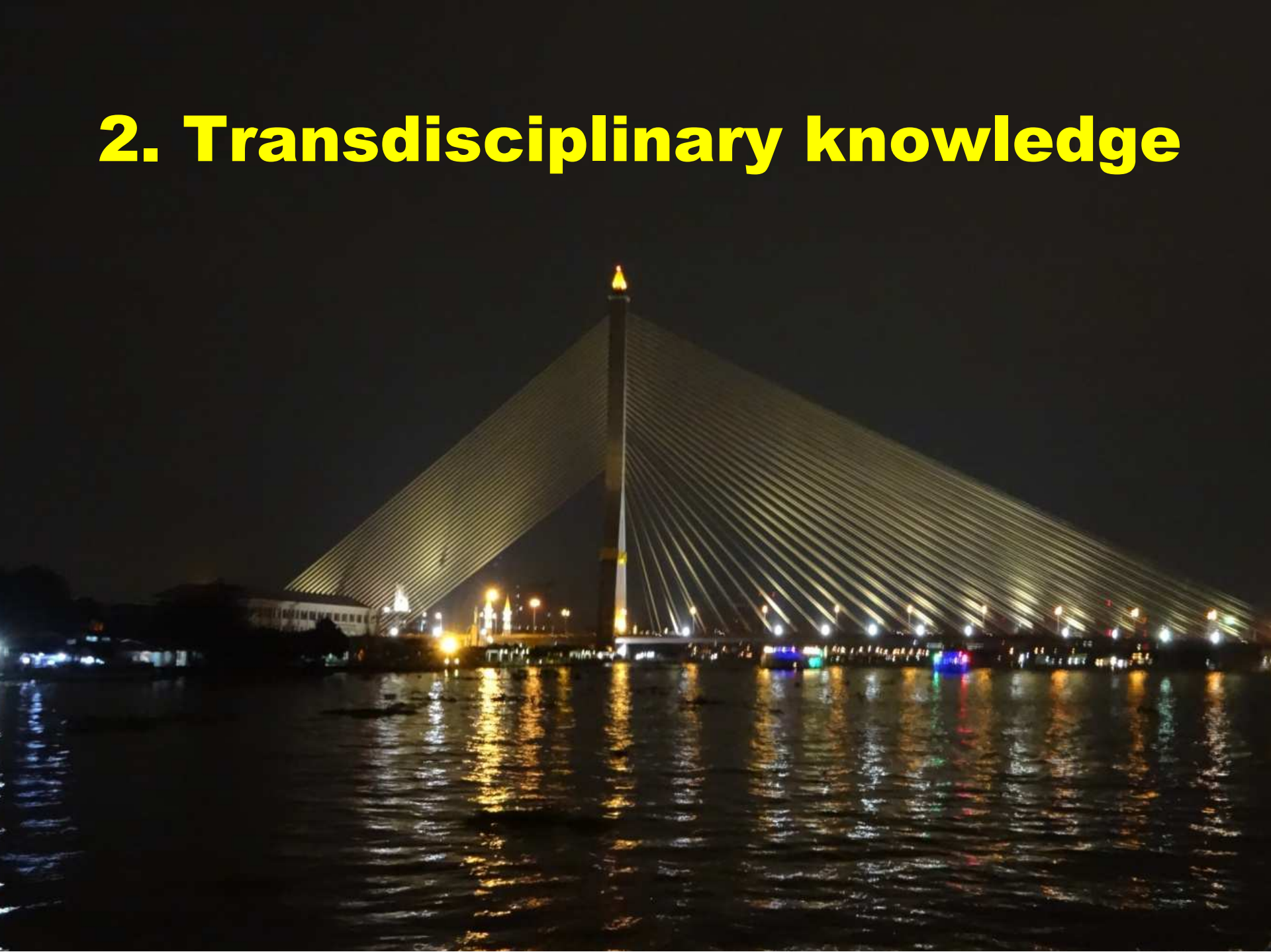
PEISOR Model (Brauch/Oswald Spring 2009:9)





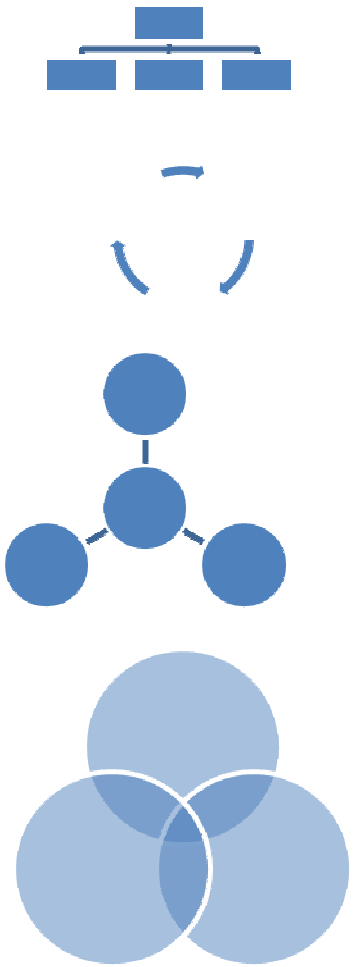
Source: Geels 2002: 1263

2. Transdisciplinary knowledge



Disciplinary vs transdisciplinary

- **Disciplinary:** research of isolated knowledge
- **Multidisciplinary:** Juxtaposition of disciplines in the same project
- **Interdisciplinary:** analysis from different disciplines with a common objective
- **Transdisciplinary:** structural isomorphism or nodes with common concepts and systemic approach at several levels and between disciplines



Transdisciplinary

- **Jean Piaget** introduce transdisciplinary research in 1970 and in 1987 the **International Center for Transdisciplinary Research** (CIRET) adopted with the support of UNESCO the **Charter of transdisciplinary** . The first World Congress of Transdisciplinarity was in Convento da Arrabida, Portugal, in November 1994.
- Transdisiciplinary is not the sum of disciplines, but a new unexpected product; it indicates knowledge which is at once **between** the disciplines, **across** the different disciplines, and **beyond** each discipline. The goal is to understand the **complexity and interrelation** of the present world.
- **Interdisciplinarity**, **multi** or **pluridisciplinarity transfer** methods from one discipline to another, allowing to **spill over** disciplinary boundaries, but staying within the **framework of disciplinary** research. It is the sum of disciplines.
- Transdisciplinary research includes **stakeholders** in defining research objectives and strategies. Collaboration between stakeholders through active collaboration with people affected establishes **research and community-based stakeholders**.
- Transdisciplinary collaboration becomes capable of engaging with different ways of knowing the world, generating **new knowledge**, new activities and technology, helping stakeholders to understand and incorporate the results or **lessons learned** by the research, to **empower vulnerable groups** and to **overcome gender** bias in science and technology.

Relations between disciplinary and transdisciplinary research

- Nicolescu (2002, 2008) includes the existence of levels of reality. The presence of several levels of reality in space and time exists between disciplines and beyond disciplines. **Disciplinary** research concerns mostly on one and the same level of reality, taking into account only fragments of this level of reality.
- **Transdisciplinarity** concerns the dynamics produced by the action of several levels of reality at once. The research of these dynamics passes through **disciplinary knowledge**, while not a new discipline or a new transdisciplinarity is developed by disciplinary research.
- In turn, **disciplinary research** is clarified by transdisciplinary knowledge: disciplinary, multidisciplinary, interdisciplinary and transdisciplinary research: not antagonistic but complementary.

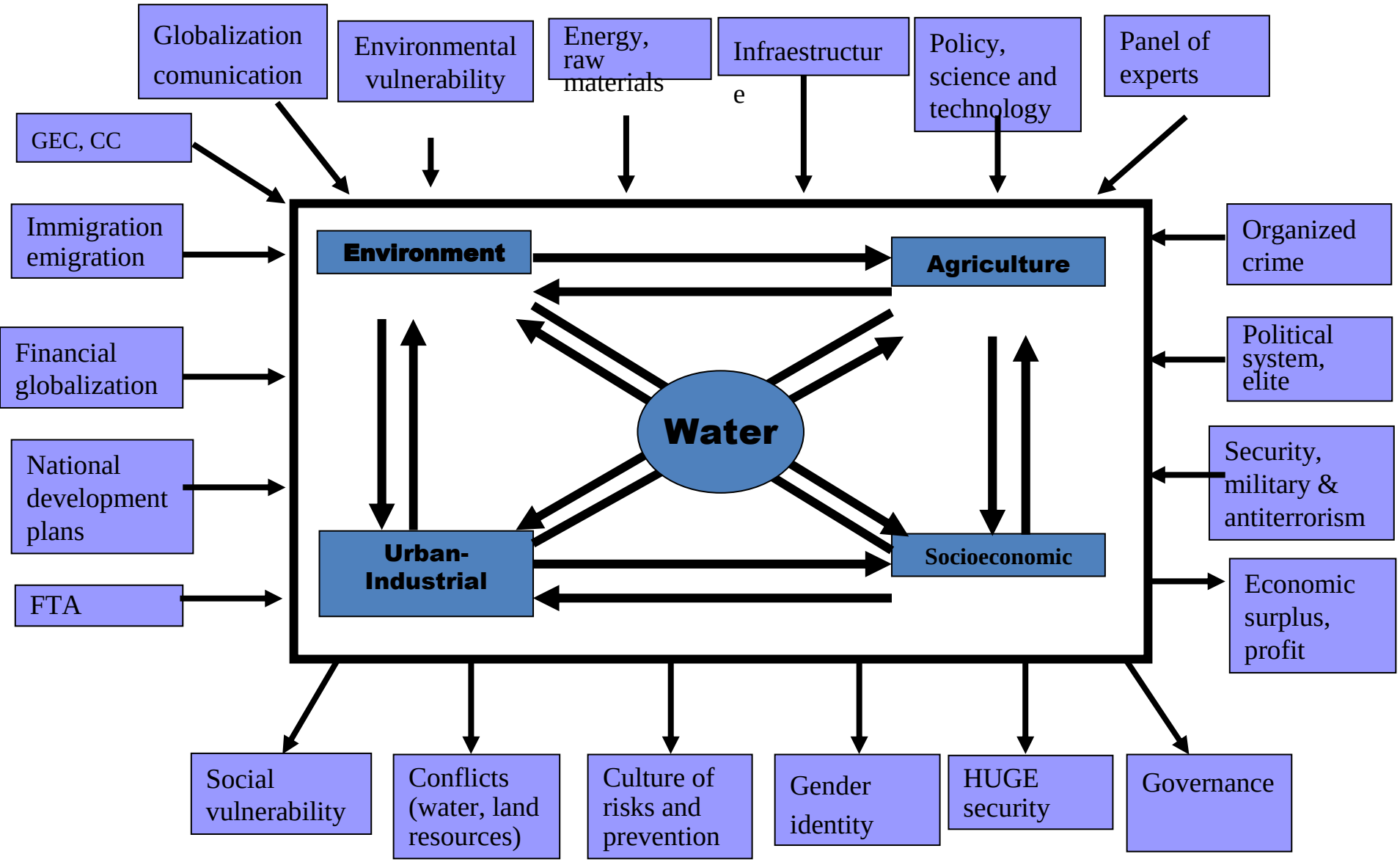
Complexity in transdisciplinary anthropology

	Questions Concerning Proximate Causes		Questions Concerning Ultimate Causes		
	(1) Causation	(2) Ontogeny	(3) Adaptation *(a: ecological, b: intraspecific)*		(4) Phylogeny
A) Examples of ethological inquiry and associated disciplines	• How do behavior and psyche "function" on the molecular, physiological, neuroethological, cognitive and social level - and • what do the relations between the levels look like? • How are biologically preprogrammed (hereditary) behavior patterns (e.g. 'instinctive' drives and inhibitions), learning, intellect and culture, as well as ability, volition and conscience entwined with one another and • are there differences dependent on the species, age, gender and behavioral realm? • How do perception, subjective internal mentation and behavior correspond with the environment?	• Which developmental steps and which environmental factors play when / which role? I.e.: • What are the ontogenetic bases of behavior and learning? E.g.: Which effect have • hormones and • reafferences for • maturing processes and • imprinting-like steps? • How are instincts and learning intertwined with one another? • What is learned?	• How do specific faculties of perception, subjective internal mentation, learning and behavior benefit the performer? E.g.: • Which evolutionary alterations occurred in persistent phylogenetically earlier traits, caused by the selective pressure of more recent behavior patterns? What are the costs, what the benefit of a behavior pattern - for example *(a) ecological* • concerning caloric intake and energy expended?	*(b) within the species* • in relation to familial proximity and • social attractiveness?	• Why did structural associations evolve in this manner and not otherwise? Specifically: • Which behavior was a prerequisite of which new form? • What consequences do older traits have for further developments - e.g. for • synergy and antagonism in hormones and transmitters, • neuro-anatomical structures and • behavioral traits? (space-time-struct.) • Which traits are homologous, which analogous?
B) Examples of behavior	• Endorphine levels rise during grooming in enactor and recipient. • Expression: emotion - enactor - recipient relations. • Friendly behavior patterns are adversaries of aggression, they can be furthered culturally. Unattractive behavior patterns such as wanton aggression can be culturally inhibited.	• Children recognize themselves in a mirror at 20 months of age. This is one of the foundations of social cognition, for example being able to put oneself in another's perspective as a prerequisite for cognitive altruism and cooperation.	Social bonding is advantageous for • protection against predators, • collective hunting, • building larger structures.	• Friendly behavior helps to develop and maintain bonds as a basis for reciprocal support, e.g. during brood provisioning and aggressive interactions.	• Brood provisioning and mother-child bond were phylogenetic preconditions for social bonds. Within this development in addition to their original function, elements of brood behavior became elements of social behavior, e.g. kissing & billing and grooming & preening.
C) Level of inquiry (e.g.: atom, molecule, cell, tissue, organ, individual, group, society) with examples of scientific disciplines	**atom, molecule:** Biochemistry, **cell, tissue, organ:** Neurophysiology, Neurobiology, **organ, individual:** Neuroethology, Neuropsychology, Neurology, Behavioral Physiology, B. Endocrinology, B. Genetics, B. Immunology, Chronobiology, Psychiatry, Psychosomatology, **individual, group:** Ethology, Sociobiology, Behavioral Ecology, Psychology, Psychotherapeutic Theories, Pedagogy, Earliest History, **society:** Sociology, Law, Political Science, Economics, History, Cultural Sciences, Arts.	**organ, individual:** Developmental Neurology, Neurobiology, **individual, group:** Ethology, Developmental Psychology, Psychotherapeutic Theories..	**individual, group:** Ethology, Behavioral Ecology, Socio-Ecology.	**individual, group:** Ethology, Sociobiology.	**cell, tissue, organ:** Neurobiology **individual, group:** Ethology.

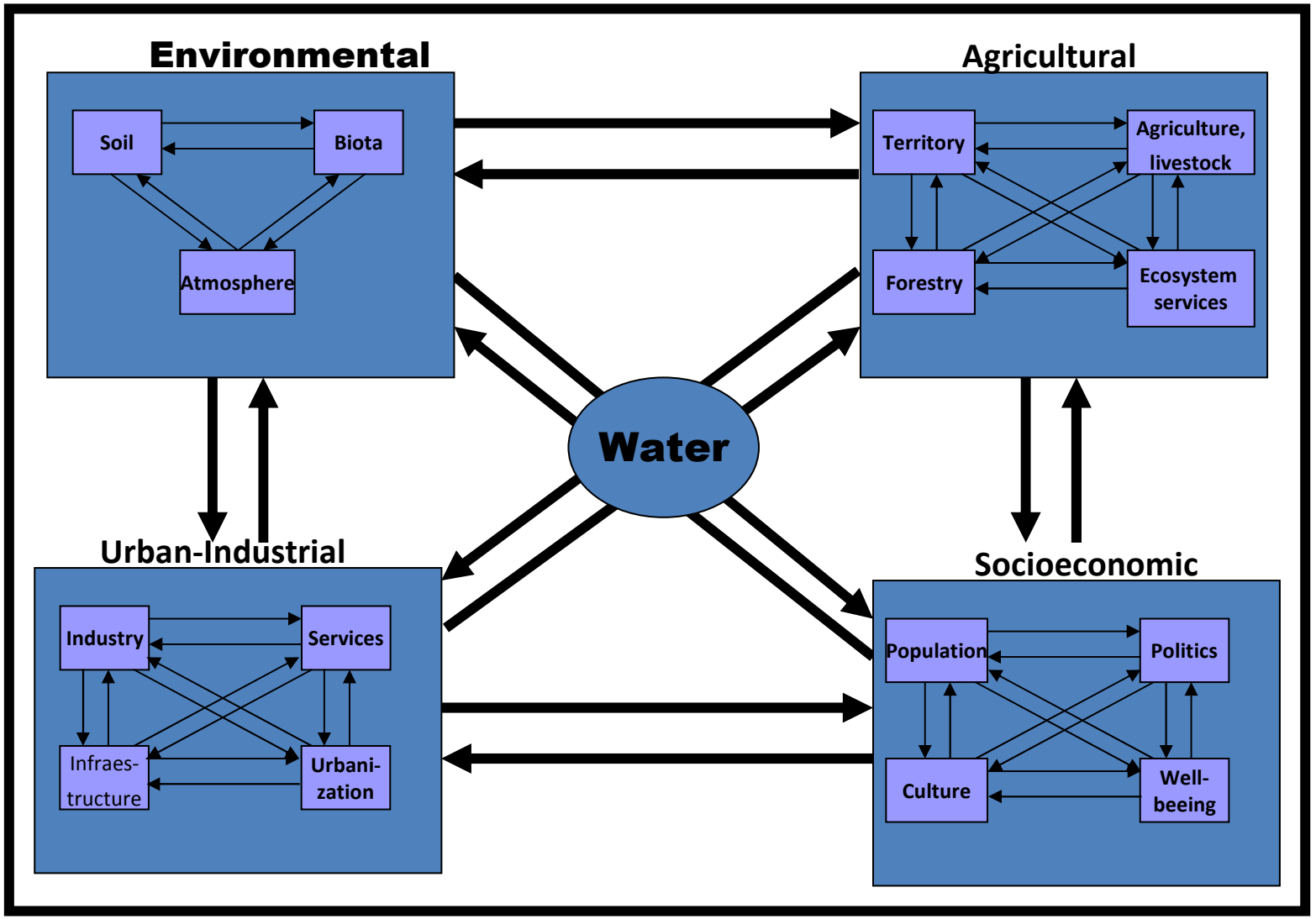
Source: Rupert Riedl 1984

3. Dissipative, open and self-regulating system analysis

System structure with subsystems and surrounding conditions



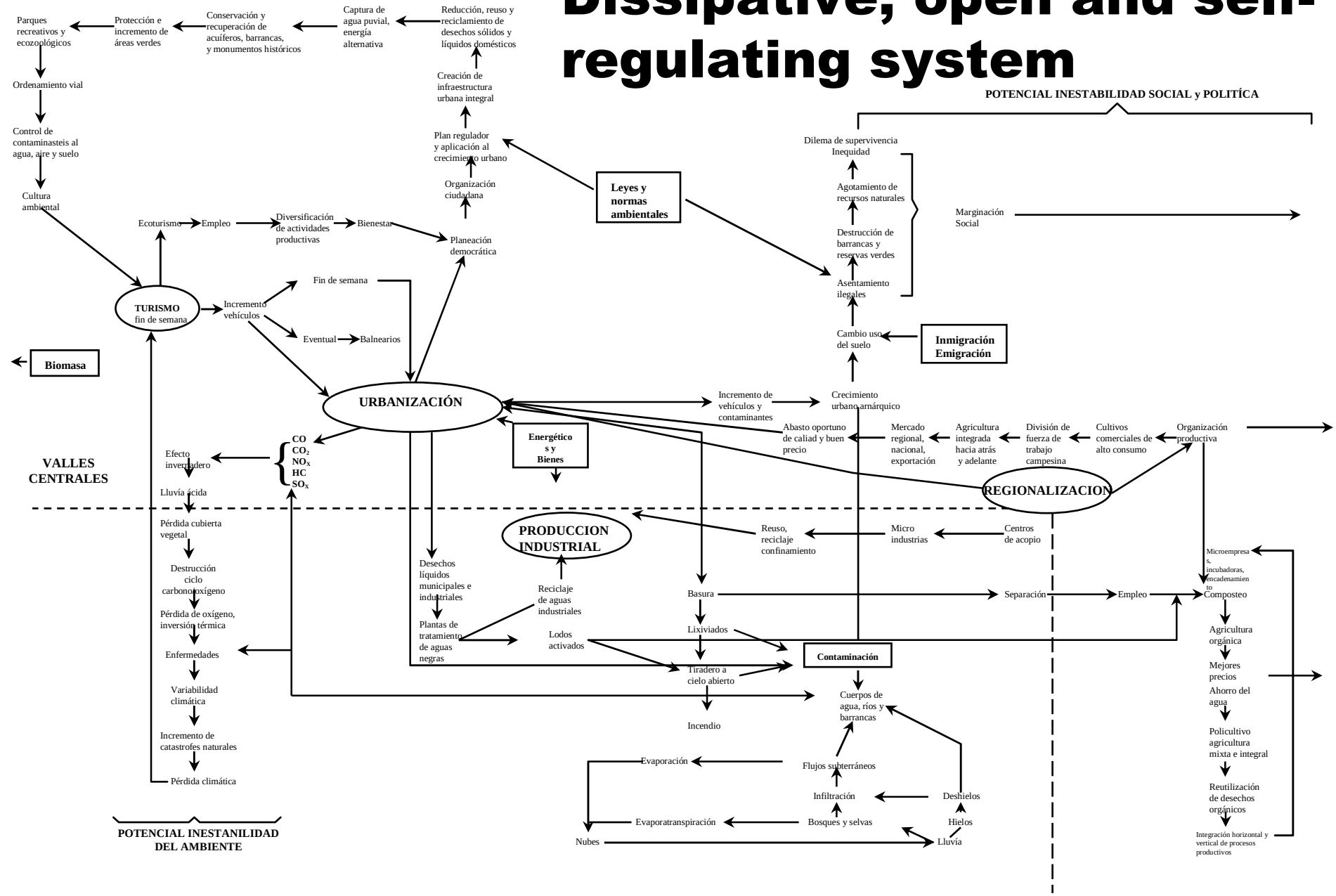
Four Subsystems and subsystems with its interrelations and feed-backs

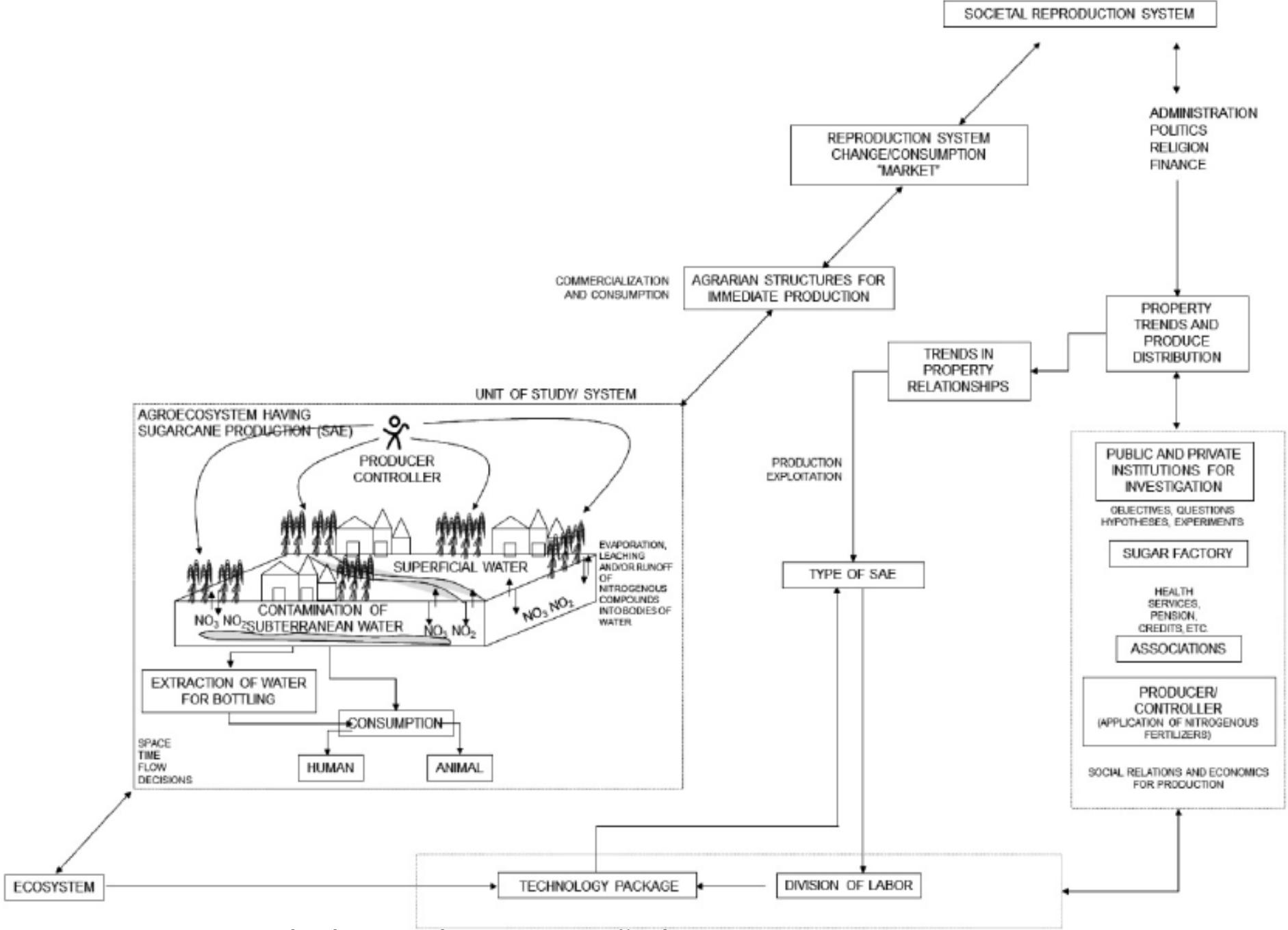


Subsystem and subsystems

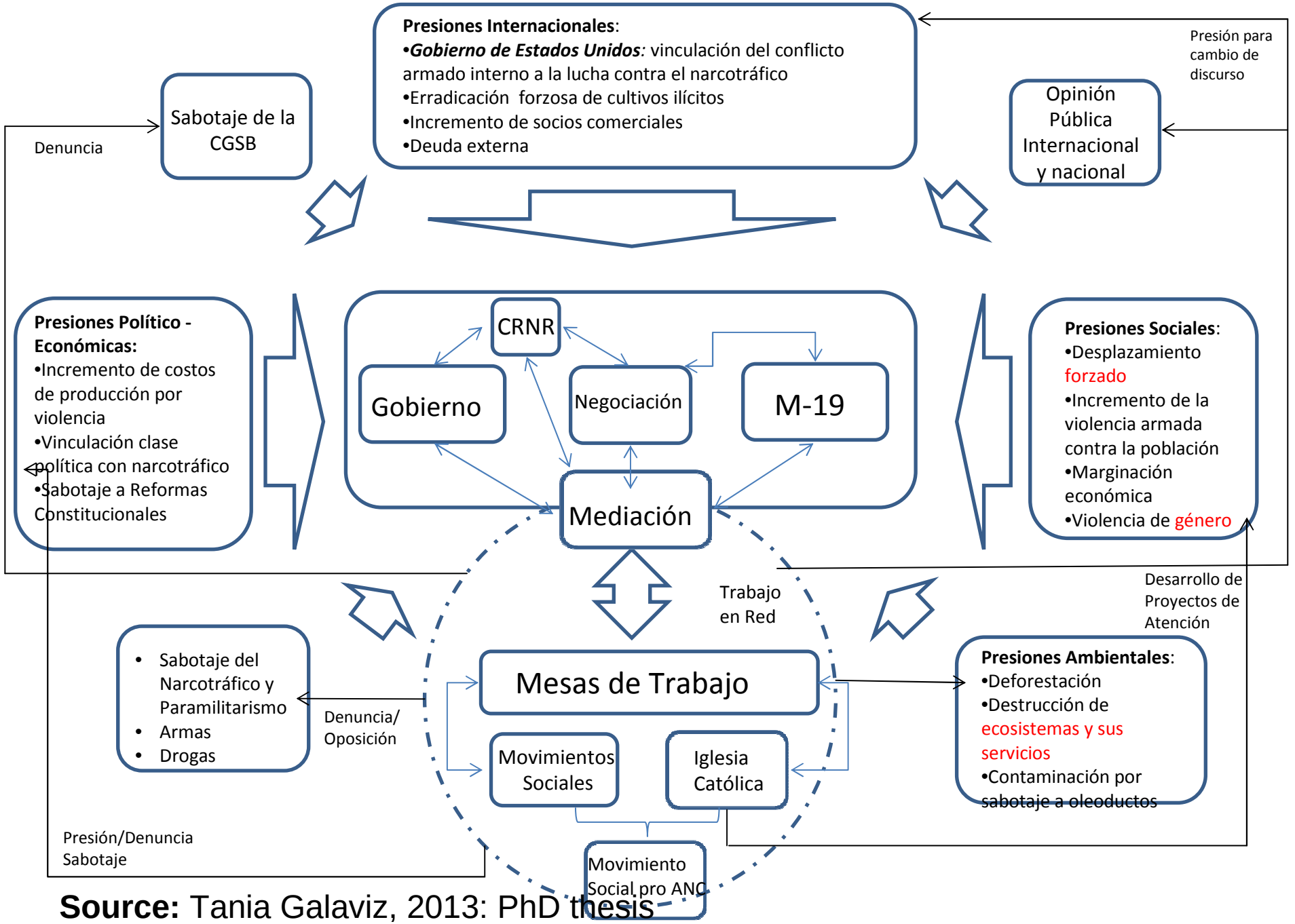
- **Environment**
  - Surface, groundwater, biological-soil water, atmosphere
  - Climate, weather and variation
  - Soils, type, uses, changes, erosion, desertification
  - Ecosystems, natural flora and fauna, introduced flora and fauna, deforestation, fire
- **Agriculture**
  - System of territorial organization
  - Use of soil, agricultural production and livestock
  - Forest management, ecosystem services, ecotourism
- **Urban-Industrial and sociocultural subsystem**
  - Urbanization, industrialization, pollution, sewage systems, waste management
  - Population, employment, well-being, poverty, health
  - Cosmovision, identity, social representations and environmental culture

Dissipative, open and self-regulating system



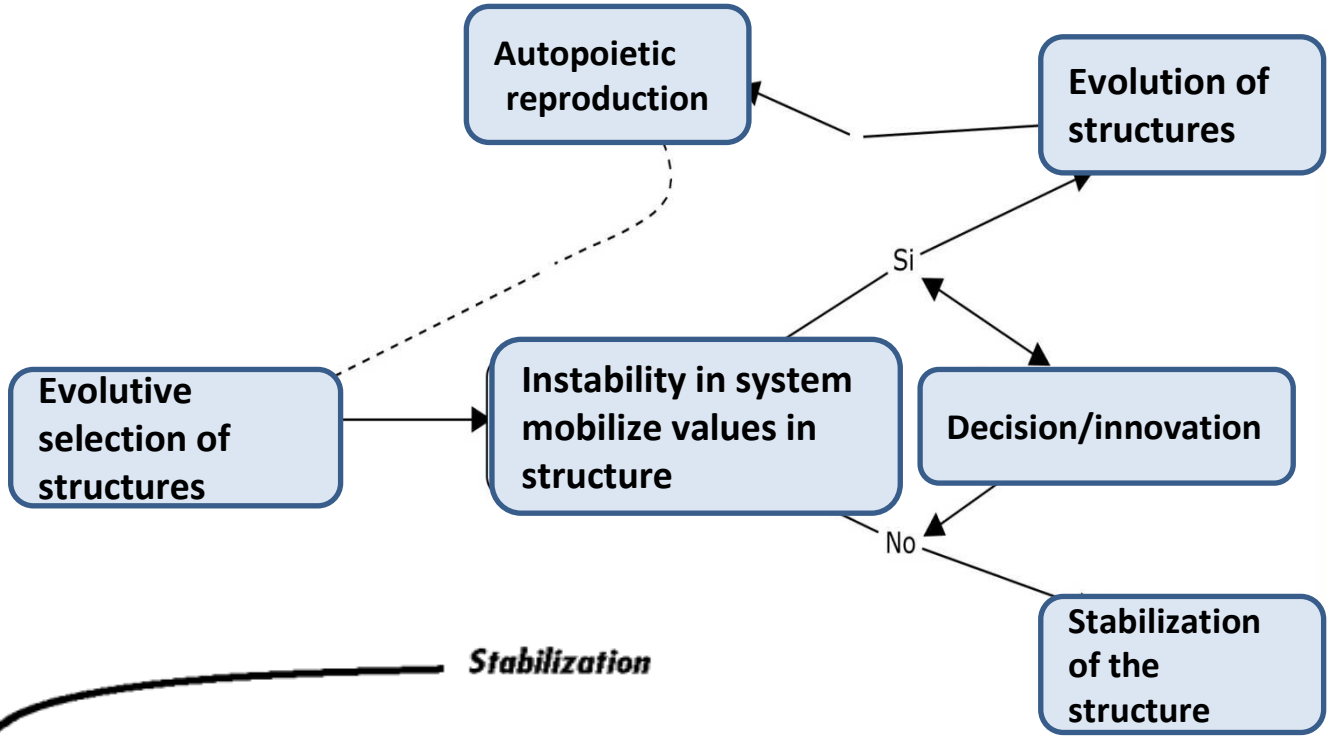


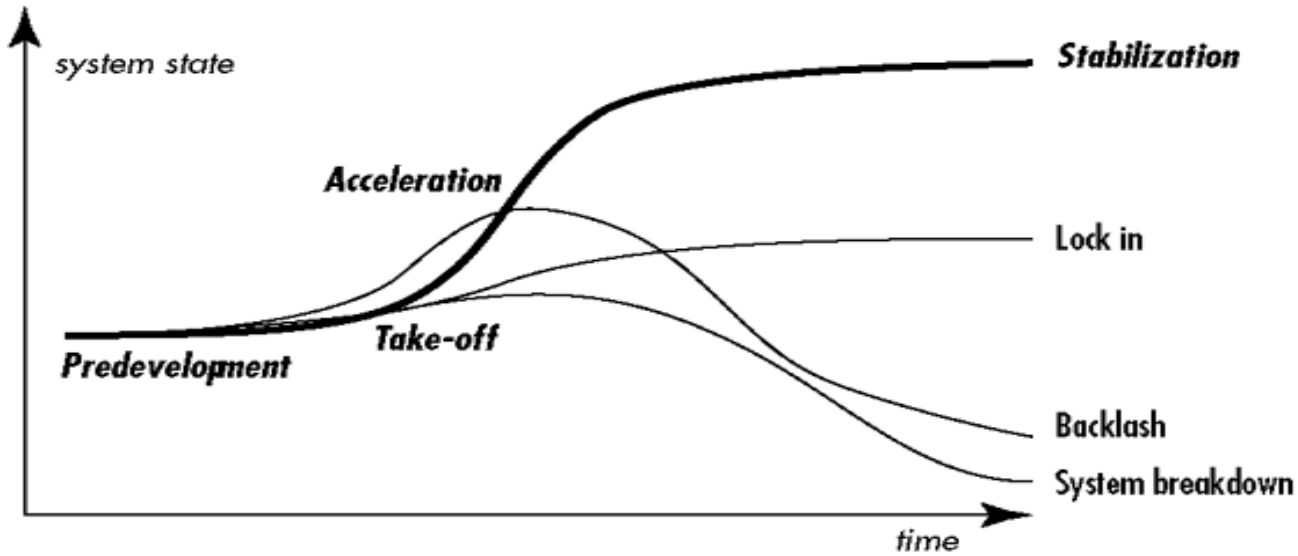
Source: Galaviz, Landeros, Castañeda, Lango, 2012: 216



Source: Tania Galaviz, 2013: PhD thesis

Autopoiesis: αὐτο- (auto: self) and ποίησις (poiesis: creation)



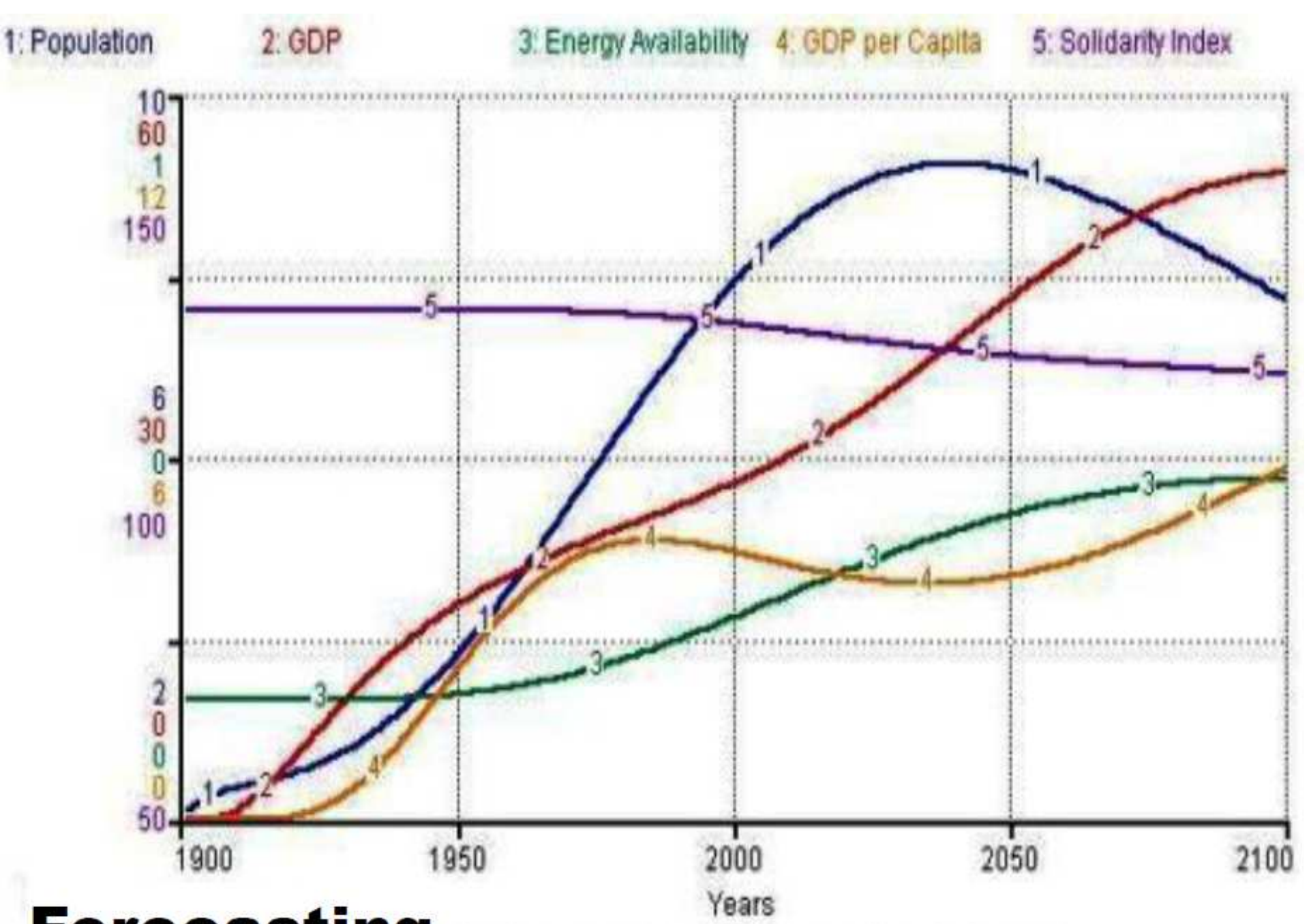



4. What are the limits & potentials of sustainable social sciences in Thailand?

Transdisciplinary links: sustainability, development, peace & security

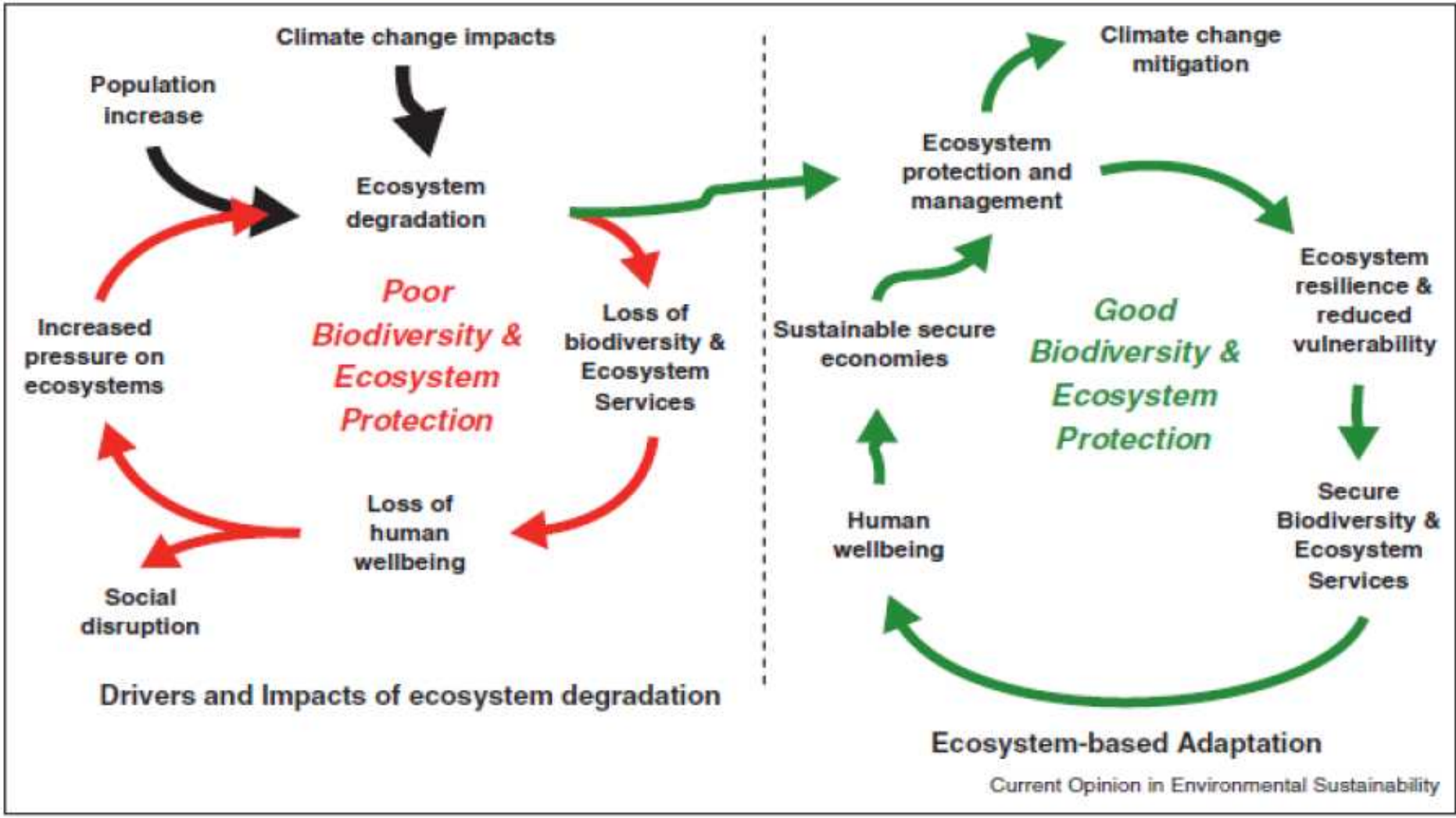
Dangers for a long-term transition for sustainability are related to:

- linear, **non-linear, chaotic or cascading** systems' changes in the natural and human systems during the Anthropocene;
- From **elite-interest** driven short term destruction of Earth and human beings (profit at any cost)
- From a multidisciplinary approach of **systems theory** and **complexity research** possible linkages
  - between a fourth sustainability revolution and
  - a sustainable peace must be analysed.



Forecasting

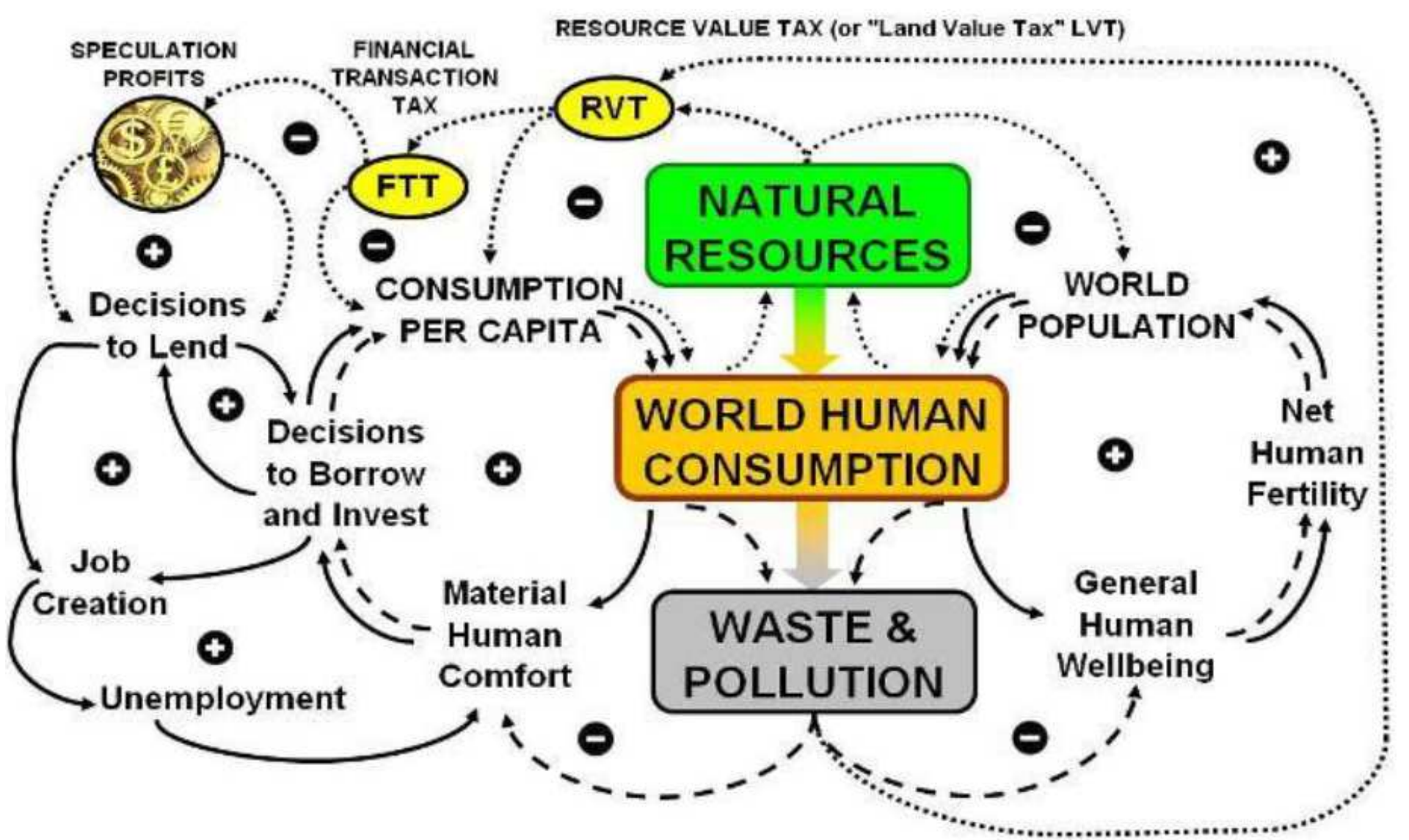
Ecosystem-based adaptation



Climate change and Ecosystem-based Adaptation: a new pragmatic approach to buffering climate change impacts

Richard Munang[1], Ibrahim Thiaw[1], Keith Alverson[1], Musonda Mumba[1], Jian Liu[2] and Mike Rivington[3]

Current Opinion in Environmental 2013; 2



THE SUSTAINABILITY PARADIGM WITH ENVIRONMENTAL & FINANCIAL LOOPS

The positive signs indicate positive (self-reinforcing) feedback loops

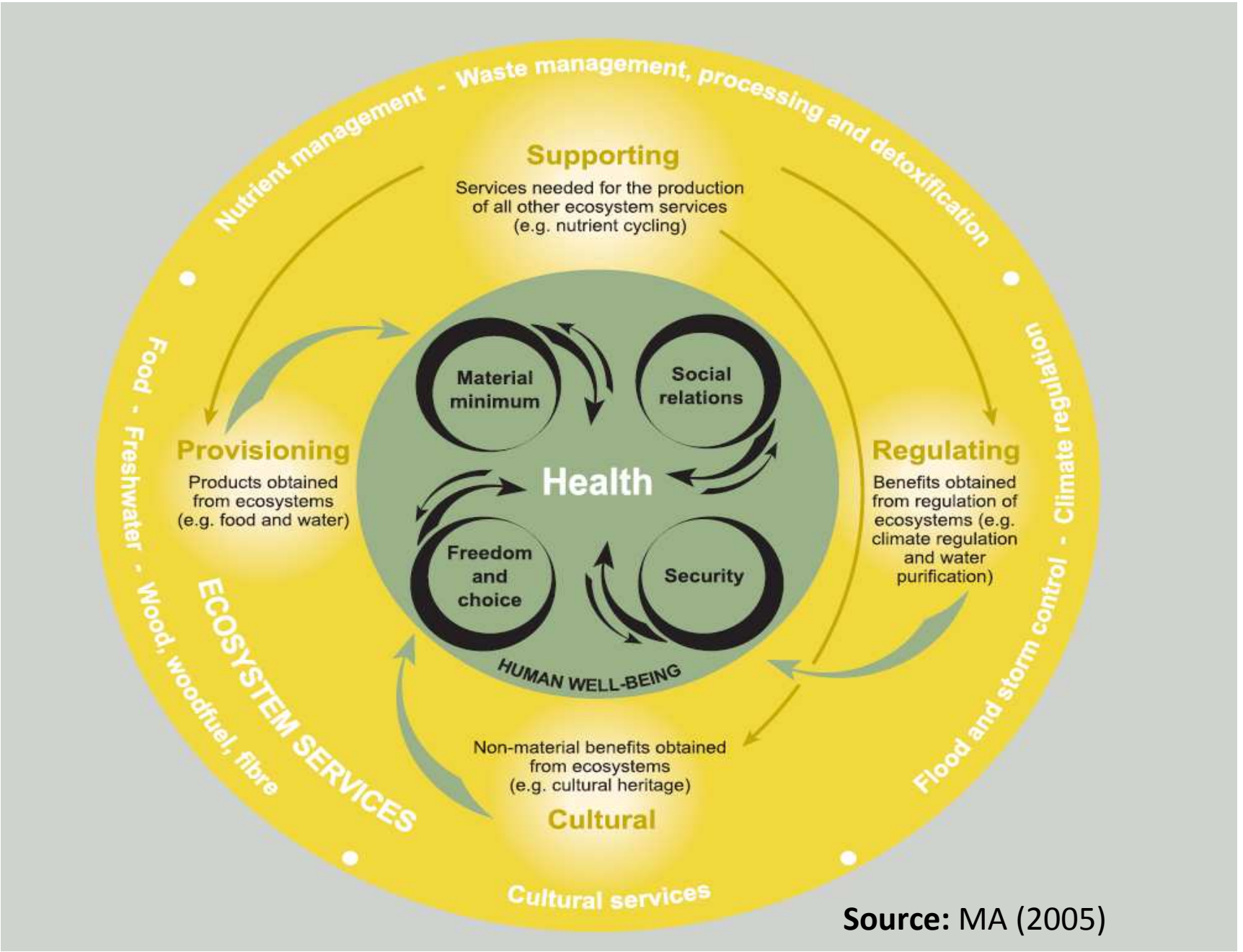
The negative signs indicate negative (self-correcting) feedback loops

Resource Value Taxes (RVT) are a function of natural resource depletion/deterioration

Financial Transaction Taxes are a function of RVT and the volume of non-real financial assets

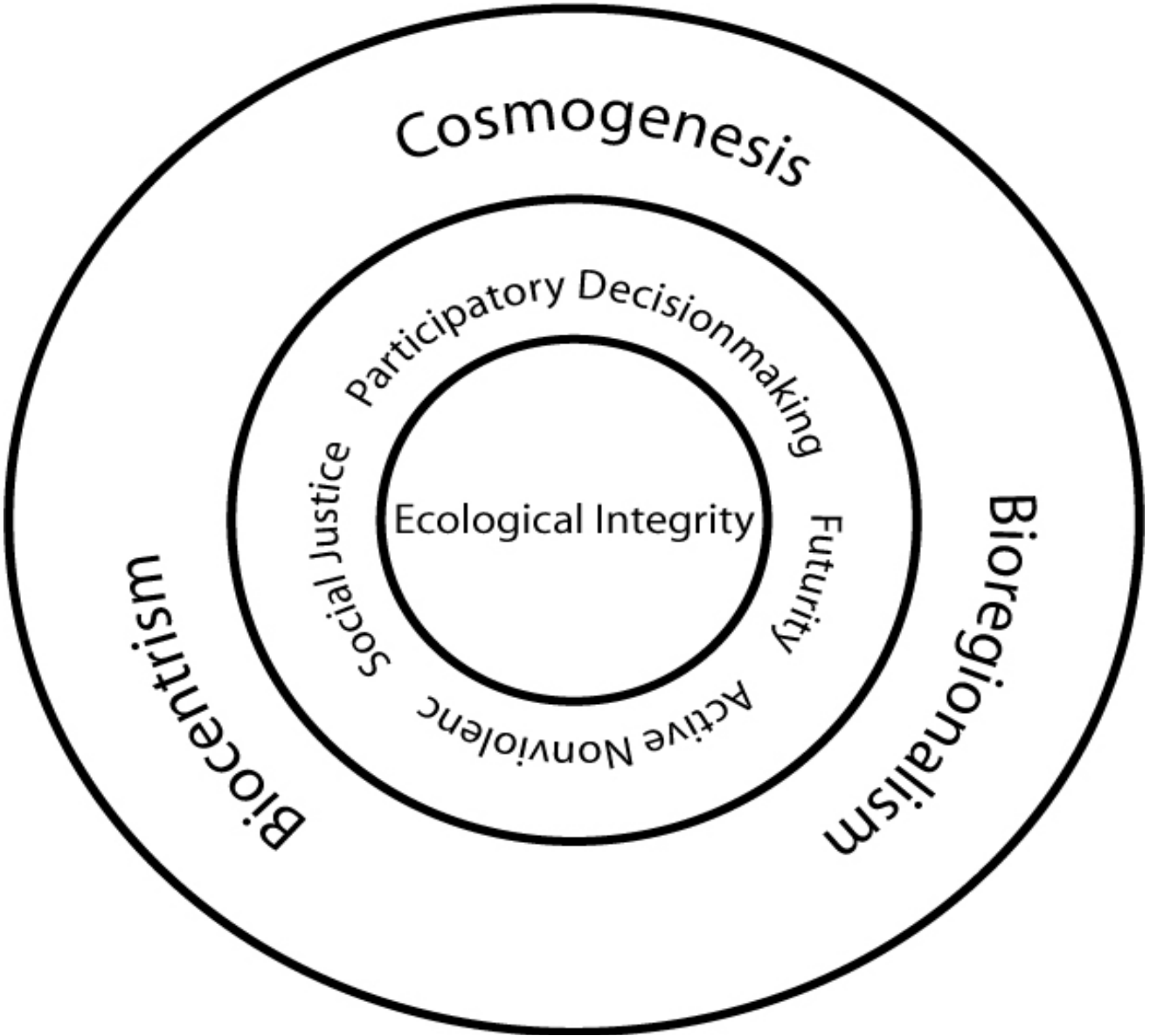
RVT and FTT serve to reinforce job creation and employment opportunities

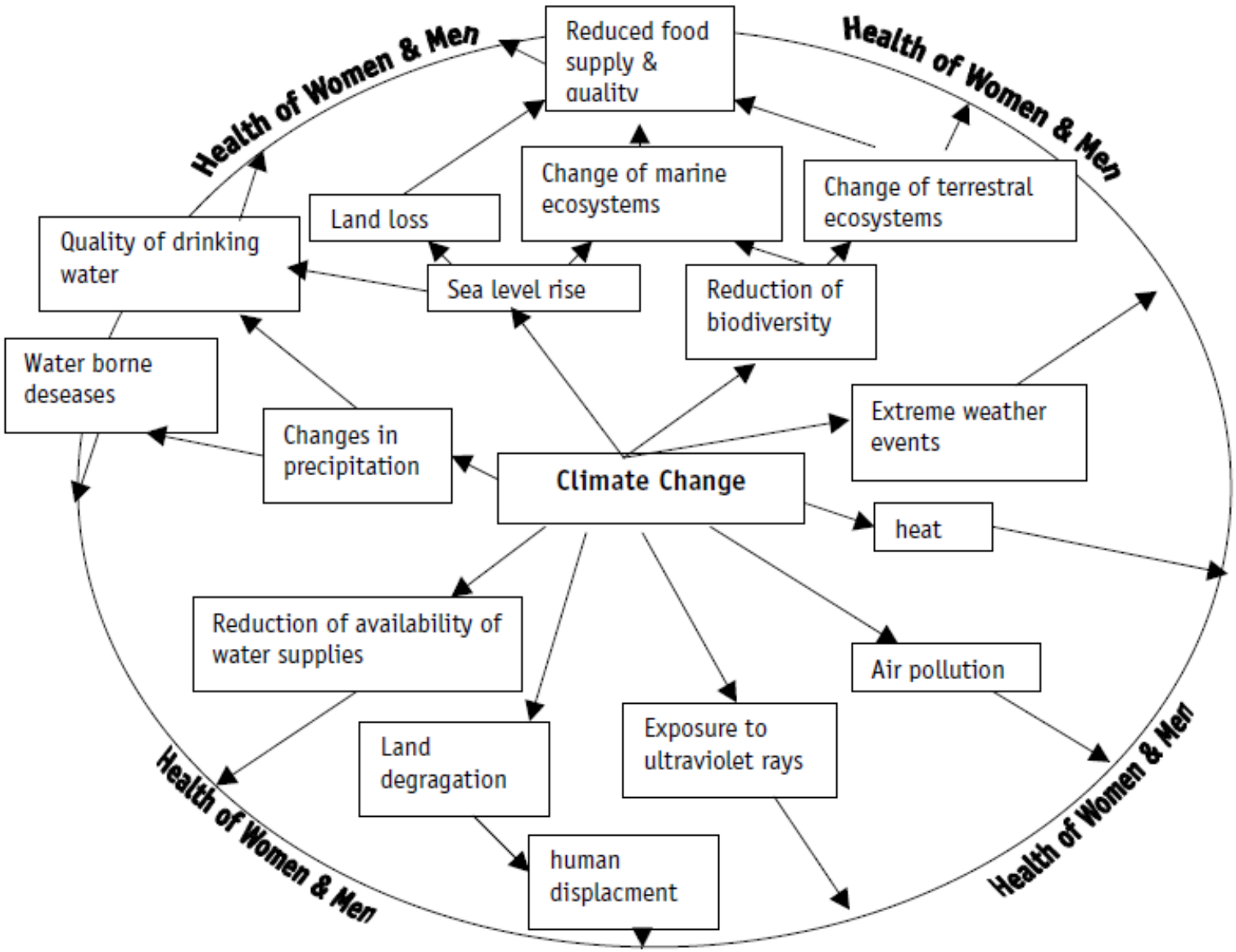
Ecosystem services in danger



Source: MA (2005)

The Contextual Sustainability Frame

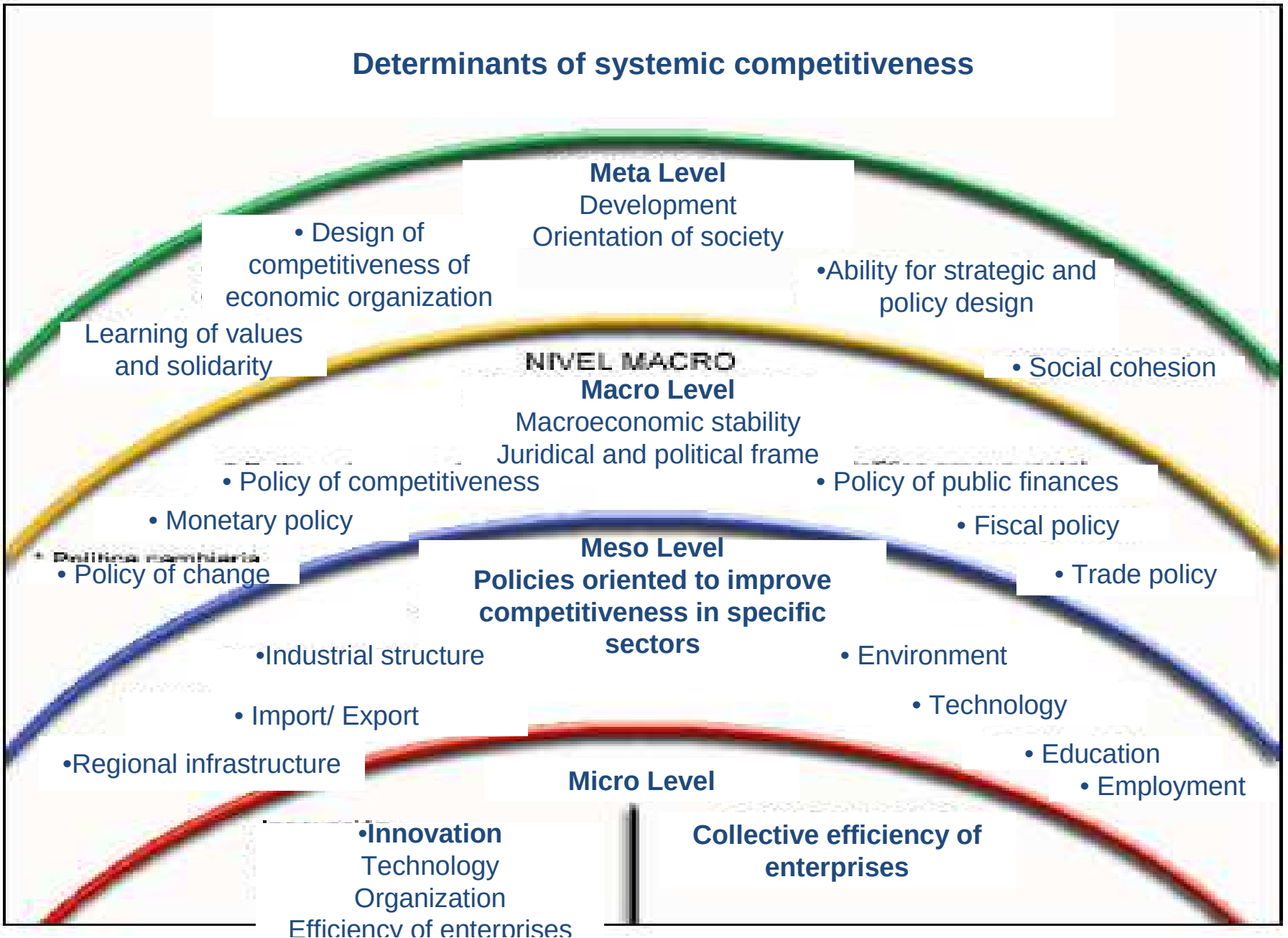



Health of Women & Men
Reduced food supply & quality
Health of Women & Men
Change of marine ecosystems
Change of terrestral ecosystems
Land loss
Quality of drinking water
Sea level rise
Reduction of biodiversity
Water borne deseases
Changes in precipitation
Extreme weather events
Climate Change
heat
Reduction of availability of water supplies
Air pollution
Land degragation
Exposure to ultraviolet rays
human displacment
Health of Women & Men
Health of Women & Men

Prevention

1. Reduction of 50% of green-house gases (GHG) by 2050: Post 2012
2. Resource conservation
3. Recycling and reuse
4. Restoration of deteriorated ecosystems (forests, corral reefs, mangroves)
5. River basin management
6. Actions against land erosion and desertification
7. Disaster risk reduction and risk management
8. Early warning systems
9. National preventive disaster systems
10. Gender-related disaster responses and training
11. Reduction of social vulnerability: 53% of disaster dead from countries with low human dev. index

Systemic Competitiveness




5. Some conclusions


CONSEQUENCES
INTERPRETATIONS
COMPLEXITY
CHANGE
RESPONSIBILITIES
DECISION MAKING
"GEC is not something external to the social sciences; on the contrary, it is a domain par excellence of our disciplines"
ISSC-CIPSH Nagoya Declaration, December 2010

Processes of awareness:

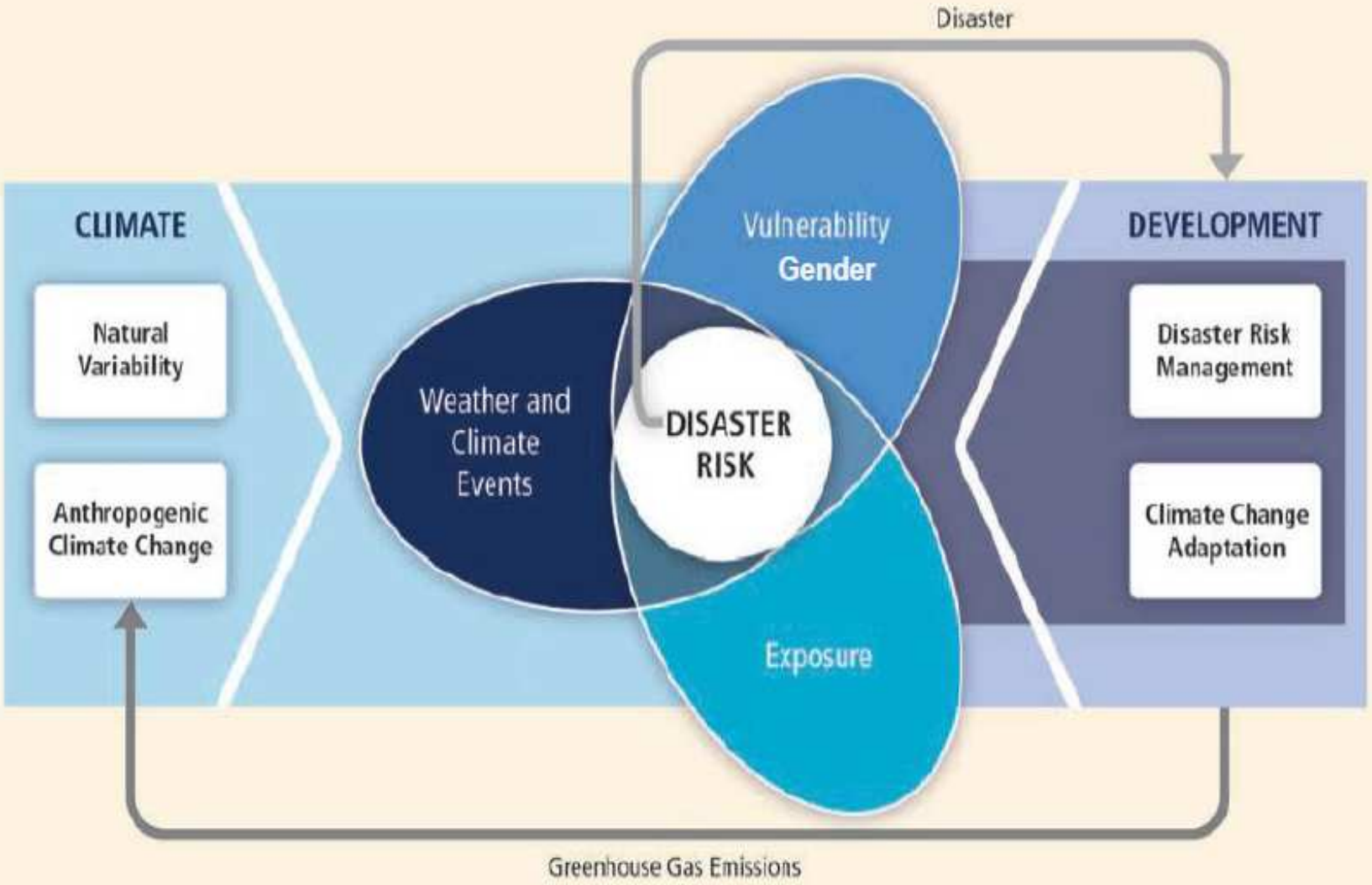
Awareness not of only one fundamental problem: GEC is complex: Climate Change, overpopulation, Peak Oil, chemical pollution, over-fishing, biodiversity loss, corporatism, economic instability, sociopolitical injustice. People become ardent activists for their chosen cause; very vocal; blind to any others.

Awareness of many problems: of complexity grows; committed to fighting for social justice; against climate change, resource depletion participative governance.

Awareness of the interconnections between the many problems: a solution in one domain may worsen a problems in another (fracking): requires large-scale system-level thinking with *sets of problems;* dialogue is essential & depth of exploration, because few people who have understood the interrelations.

Awareness that the predicament encompasses all aspects of life: our relationships with each other, with biosphere and the physical planet; no problem is exempt from consideration or acceptance.

- **The first phase is concientization to enable incentivation**. The objective is to create widespread popular support for the required revisions of tax codes and energy subsidies. In other words, the first phase is about creating a collective mindset of global citizenship and social responsibility, strong enough to translate into political will to face the inevitable transition and implement required reforms. Gender equity is key.
- **The second phase is incentivation to enable redistribution**. The objective is to reform tax codes and energy subsidies to expedite the transition from fossil fuels to clean energy. Applicable reforms include shifting taxes from earned income to the usage (extraction) of unearned resources and the release of pollution, as well as taxing financial transactions of dubious social value. Gender equality is key.
- **The third phase is redistribution to enable democratization**. The objective is to institutionalize democracy with gender balance and distributive justice. This may entail adopting a Universally Guaranteed Personal Income (i.e., a basic minimum income rather than a minimum wage) and a Maximum Allowable Personal Wealth (i.e., an upper limit on financial wealth accumulation) democratically adjusted periodically, Happiness Index
- **The fourth phase is worldwide democratization**. The objective is participative democratization of global, national and local governance with deeply ingrained gender balance and widely institutionalized implementation of the **solidarity, subsidiarity, and sustainability** principles. Decisions at the lowest level must increase governance capabilities and care about the common good of humanity with gift giving and gender equity.



Integration of three epistemic communities (IPCC-SREX, 2012)

1. Complex social networks sustain humans in normal times. Human vulnerabilities during transition, change, hazard, disaster or conflict are usually a matter of disruption or failure of these networks.
2. Gender and HUGE analysis in moments of transition will lend a more nuanced understanding of women and men as social beings aligning in networks of family and community.
3. More accurate understanding and training will facilitate to support networks that underlie a resilient society, where women and men educate, care and reproduce the historical memory and the cultural background, but increasingly generate also the material family sustain.
4. Active female participation and those of marginal opens the possibility to reduce gender related social vulnerability, improve security on human and environmental terms, and increase the survival of the whole communities frequently affected by physical, social and cultural violence and insecurity.
5. Traditional land tenure, collective work, communitarian solidarity reinforced these social networks, giving security to highly vulnerable, especially women and girls in urban and rural areas in Thailand.
6. Human Rights and its phases of development do not guarantee minimal life conditions, but reinforce the individualization process increasing social vulnerability. On the contrary, Social Rights reinforce networks and create within diverse cultural contexts and cosmovisions options for resilience-building, reduction of social vulnerability, self-reliance, peaceful conflict resolution; in synthesis a HUGE transition process.

Thank you very much for your attention

uoswald@gmail.com