



The Fourth Green Revolution

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Facing Global Environmental Change

Environmental, Human, Energy, Food,
Health and Water Security Concepts



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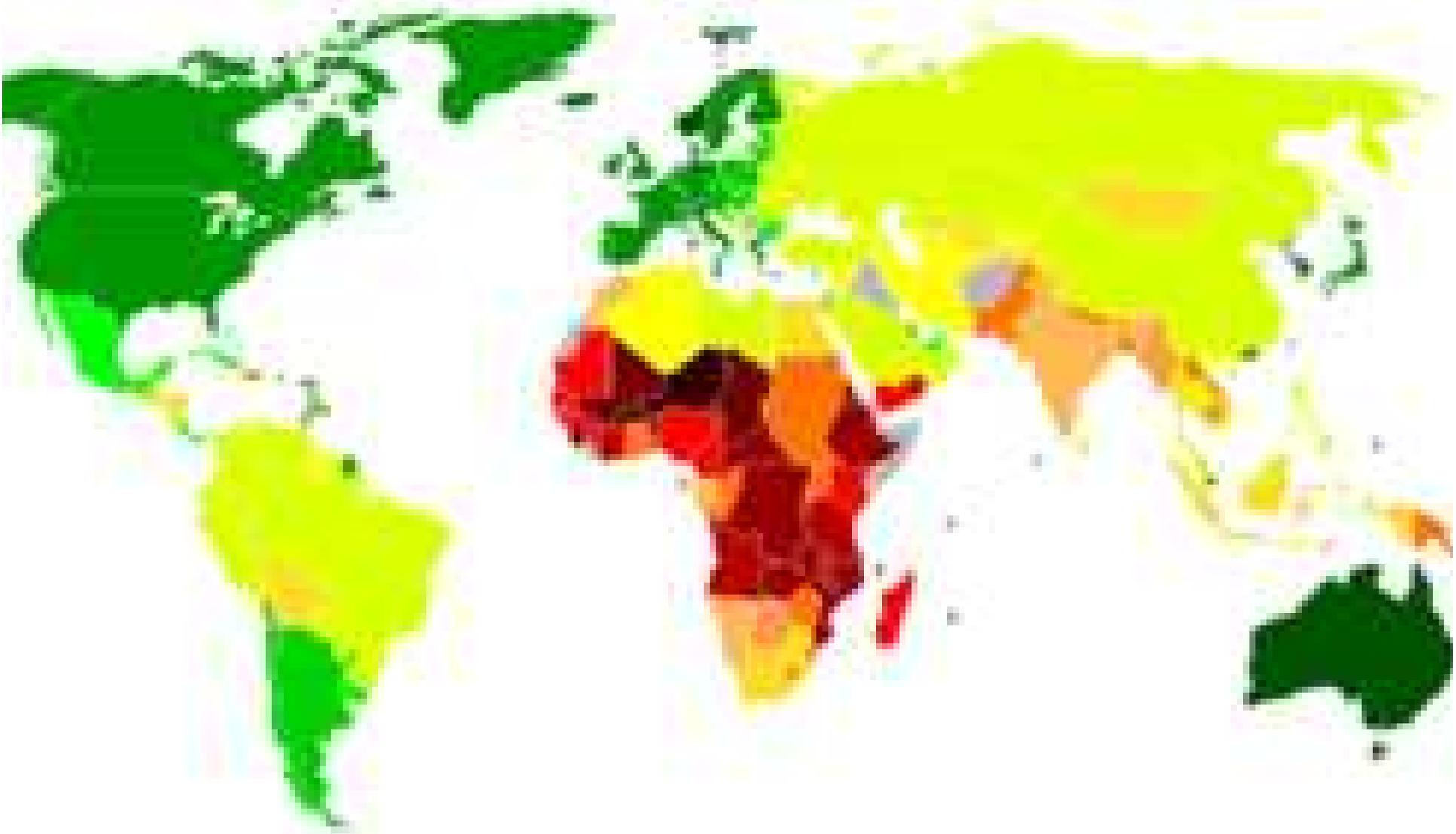
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1. Hobbes and the Business-as-usual Approach

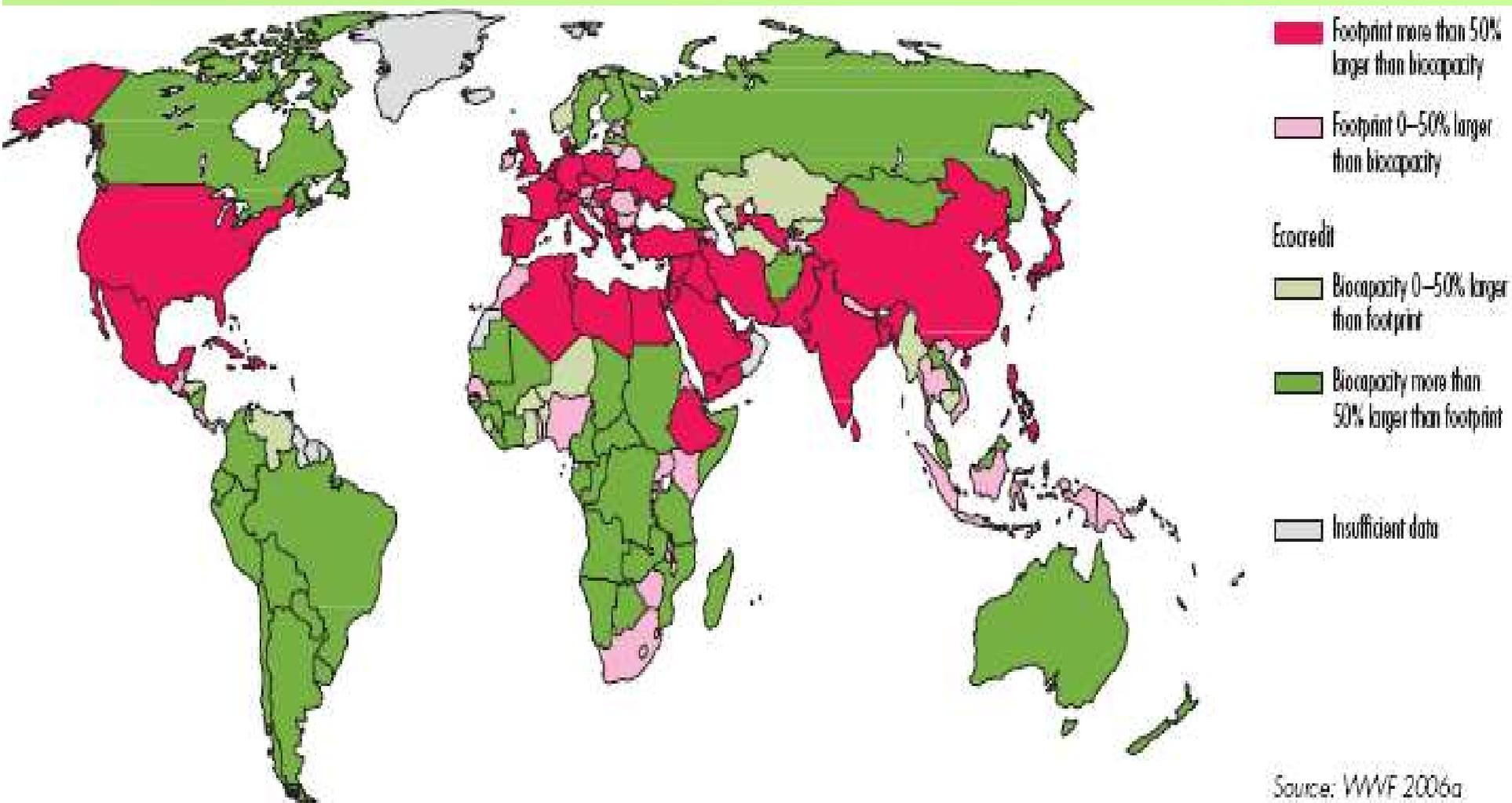
Global and Systemic Crisis:

- Financial-economic debacle: at least a rescue 27 trillions USD
- Population growth: 8.5 to 9 billion people
- Climate change: 2 to 6.5° C?
- Urbanization and slum development: over half of world population
- Employment and poverty: 4 to 5 billion poor people
- Environmental deterioration: bio-debt
- Water security: 1.1 billion without water; 2.4 billion without sanitation facilities
- Food, obesity and famine: 1 billion hungry, 4 billion are overweighted
- Health threats: each second person in the USA will get cancer; 90% of all illnesses are related to water
- Psychological disorders
- Gender violence: each 3rd women is beaten; each 5th is raped
- Conflicts, violence and social disorders: terrorisms, fundamentalism, resource-related wars, internal disputes about goods, international conflicts on crucial natural resources

Human Development Index Inequity



Bio-capacity and bio-debt



Potential threats to GEC

- Linkages within the climate system has focused first on **linear interactions resulting in modelling and projections** of physical impacting on economic sectors (agriculture, industry, habitat, health, etc.), ecosystems or bioms (coastal, marine, forests, deserts, etc.) and geographic regions (Africa, Asia, Latin America, Arctic, etc.) that may trigger extreme societal outcomes.
- Now scientific attention has shifted to **chaotic processes such as a nonlinear and abrupt climate change**. Once linear processes cross certain thresholds they may result in fundamental contextual changes, as, for example, the shutoff of the Gulf Stream, the collapse of the Amazon rain forest, the ENSO cycle or the change of the Indian monsoon. These chaotic changes have recently been conceptualized as '**tipping points**' that may fundamentally change the linear projections.

Alternative Vision



The *Fourth Green Revolution* with Sustainable Development and Sustainable Peace

Revolutions

- ***Agricultural:*** 7,000-10,000 years ago: human settlements and Holocene
- ***Industrial:*** from 1750: urbanization with massive use of fossil energy
- ***Technological-Communicative:*** 1950: Globalization, GEC in the Anthropocene
- ***Green Revolution:*** 2020-2050: Tipping points or Sustainability

Elements of *Fourth Green Revolution*

1. Culture
2. Worldview
3. Mindset
4. Governance



Culture

- is a globally organized way of life based on values, norms, beliefs, institutions and productive processes including the development of science and technology
- is transmitted from generation to generation by formal and informal learning processes, which includes acculturation and enculturation
- not based on natural laws but socially constructed: interests maintain and reinforce structures of power and mechanisms of control
- deeply internalized that it is perceived by the people as natural
- cultural products are shared by members of a society; they link people together due to identity patterns and social representations
- cognition process legitimized deep structures of beliefs/ behavior of complex relationship and interdependence due to progressive destruction of natural - human systems
- individual/ social actors, institutions, regimes and worldviews require fundamental change from cornucopian view to complex sustainable biological-human system.

Worldview

- *Worldview* refers to a world perception, ideas and beliefs through which people interpret the world and interacts with it.
- Palmer (1996: 114) includes cognitive orientation of a society, its values, emotions, and ethics
- Aerts, Apostel, De Moor, Hellemans, Maex, Van Belle and Van der Veken (1994) comprise seven elements:
 1. an *ontology* (descriptive world model);
 2. an *explanation*;
 3. a *futurology*;
 4. *values*;
 5. a *praxeology* or a theory of action on how we should attain our goals;
 6. an *epistemology*, or a theory of knowledge on what is true and false; and
 7. an *etiology* or a constructed worldview with an account of its own building blocks, origins and construction.

Mindset

- **Includes a fixed mental attitude or disposition that predetermines a person's responses to and interpretations of situations by referring to different patterns of perceiving and reasoning.**
- **Fisher (1997) used it as 'cultural lenses' that filter our view of and reaction to the world.**
- **Over-coming these deeply ingrained constraints cannot be solved by convenient technical fixes but requires much deeper and radical changes in our own aspirations and consumption patterns and those of civil society, the business community, and finally also those of our governments and international organizations**

Governance

- Weiss and Thakur (forthcoming) defined governance as “the complex of formal and informal institutions, mechanisms, relationships, and processes between and among states, markets, citizens and organizations, both inter- and non-governmental, through which collective interests on the global plane are articulated, rights and obligations are established, and differences are mediated”.

Obstacles Impeding the Change

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- A photograph showing a large, sprawling pile of garbage, likely in an informal waste dump. Three people are visible, using long wooden sticks to sift through the trash. One person on the left wears a white hat and a dark shirt. Another person in the center wears a red and white patterned shirt. A third person on the right wears a blue long-sleeved shirt and a blue cap. The ground is covered in a dense layer of plastic, paper, and other debris.
- 1. Patriarchal Culture**
 - 2. Mental Obstacles due to Old Worldviews and Mindsets**
 - 3. Short-term Interest-driven Opposition**
 - 4. Deficient Governance Processes**

Patriarchal Culture

- Patriarchy refers to a **social organization** that is a hierarchical, violent and exclusive, creating the systematic domination of women, children, poor and other men by male leaders.
- Patriarchy created that the other five billion – the excluded – do not have access to basic needs or the life-style of the top billion.
- Patriarchal mindset is shared by most religious traditions (Judaism, Hinduism, Christianity, Buddhism, Islam). Religious patriarchy is obstacle to cross-gender solidarity. However, religious structures are not an expression of divine law; rather, they are the result of historical events driven by human decisions.
- In gender studies *patriarchy* is marked by the **supremacy of a male** figure, group of male figures, or men in general.
- It is depicted as **subordinating women**, children, and those whose genders and bodies defy traditional man/woman categorization.
- Some of these **deeply rooted determining factors** may have been influenced by religious beliefs, patriarchal patterns, and the market-based capitalist system that is primarily driven by a profit motive and less by a sense of societal and global obligations to the Earth System or – in belief terms to ‘creation’.



Mental Obstacles due to Old Worldviews and Mindsets

- With regard to the 'Fourth Green Revolution' culture, worldview and mindset refer to a discussion of a **post-carbon society**, where **solidarity, equity, and social justice** are key drivers instead of the maximization of profits and the destruction of the Earth without thinking of the **next generations** or of the collapse of **ecosystems**.

- **Includes a fixed mental attitude or disposition that predetermines a person's responses to and interpretations of situations by referring to different patterns of perceiving and reasoning.**
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Mindset and FGR

Mindset of key decision-makers that were expressed by:

- a) the ***lack of will*** to take the challenges posed by climate change seriously;
- b) the prevailing *thinking in terms of **short-term**, often **selfish**, national, state, local community and individual interests* that have put the climate change challenge down on the individual national and global priority list;
- c) the ***lack of readiness for a global climate deal*** based on the “common but differentiated responsibilities” under Art. 4,1 of the UNFCCC and the lack of thinking in terms of common obligations based on solidarity and aiming at equitable sharing of the global resources.

Short-term Interest-driven Opposition

- For major industrialized countries **no price was too high** to bailout the consequences of the **global financial crises** since 2008. At COP 15 in Copenhagen, they were not willing to treat climate change as an issue of 'utmost importance' nor to commit even **less than one per cent of their bailout costs** of the global financial crisis for a global fund to assist developing countries in coping with the impacts of global climate change.
- Since 2007 industrialized countries were unwilling to commit significant **food-aid and financial resources** to counter the hunger of 1 billion people. Many of the same countries have used food crops for **biofuels**, creating an **artificial scarcity** of food commodities that resulted in major food price hikes (partly also due to **speculation**). They have also spent much more in **subsidizing ethanol** and biodiesel than would have been needed to launch a strategy for **combating hunger**.

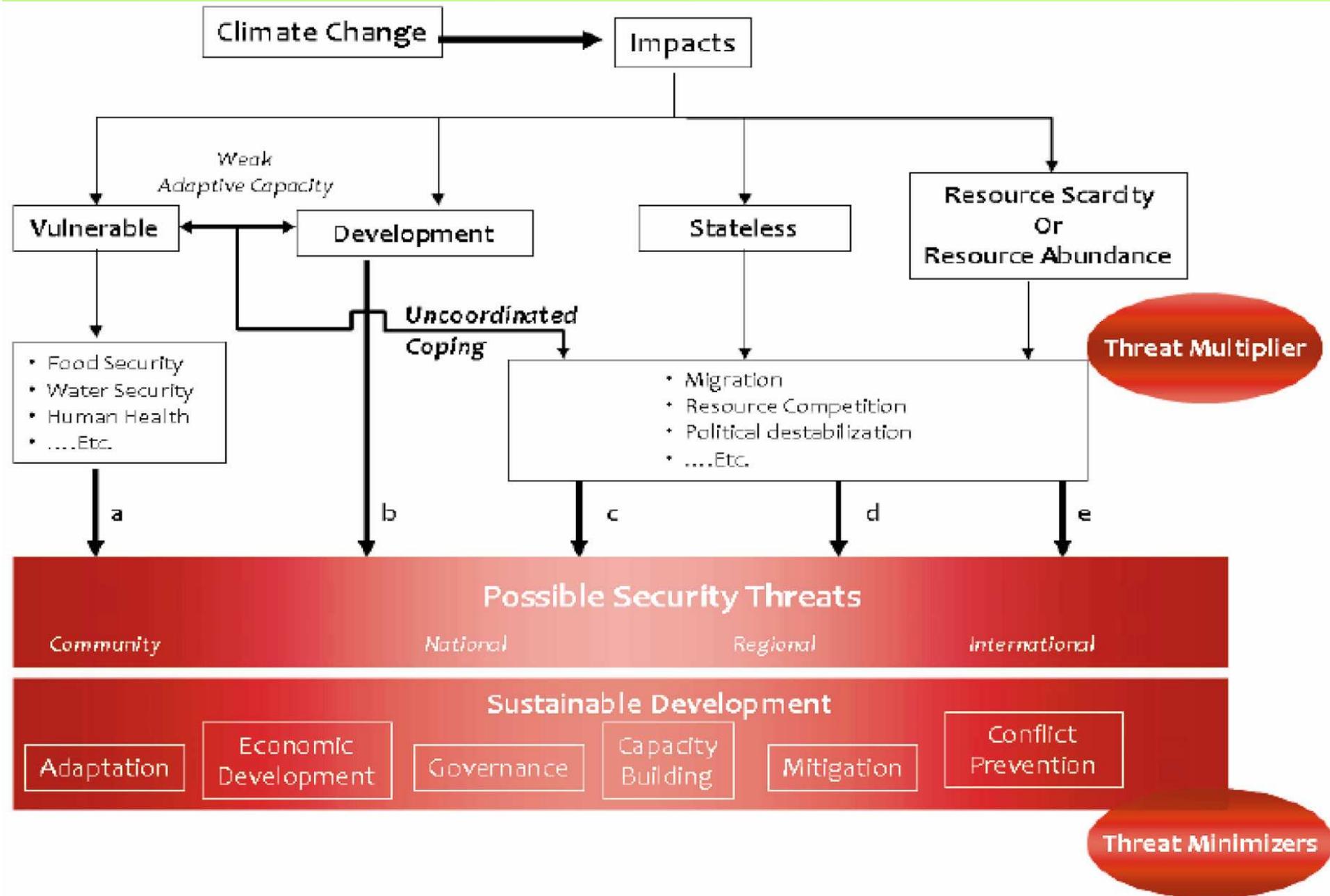


Copenhagen a Failure?

Three outcomes of COP 15 in December 2009 in Copenhagen:

1. It raised climate change to the **highest level** of government
 2. The Copenhagen Accord reflects a political consensus on the **long-term, global response** to climate change
 3. The negotiations brought an almost full set of **decisions** to implement rapid climate action near to completion.”
- **Nevertheless:** COP 15 noted the ‘Copenhagen Accord’ that was drafted and approved by a **few governments** (USA, China, India, Brazil and South Africa) **outside the negotiation** framework and **without any legal obligations**, where these governments agreed “to communicate their efforts to **limit greenhouse gas emissions every two years**, also listing their voluntary pledges before 31 January 2010”.
 - **Obstacles are deeply rooted** in our way of life, selfishness and **egotistic aspirations** for our own economic well-being

Dangers for Humankind: Climate Change



Deficient Governance Processes

- The **prevailing Hobbesian mindset** of the political and military elites applies **power concepts, strategic rationales, and military instruments** (armed forces, weapons, intelligence) for dealing with fundamentally different security dangers that it is **not any longer 'them'** that poses the threat **but 'us'** due to our **fuel-intensive mode of production and consumption patterns** where the externality of the costs have been ignored far too long.

Governance and FGR

- Authoritarian governments may be **less accountable** to their public opinion and lobby groups and more inclined to control and to distribute a large portion of the national wealth among a small elite; but once convinced of the urgency they may **more easily disregard opposition** and integrate significant GHG emission reductions into their longer-term national development planning.
- Major **shortcomings of national systems**, structures, and processes of governance pertaining to climate change & GEC:
 1. **competition** and a **lack of horizontal coordination** among ministries in this policy field;
 2. **lack of information, training and competence**;
 3. short-term, narrow and **selfish economic, political, military and social** interests and desires where the environmental consequences and costs have been ignored for far too long;
 4. **lack of longer-term visions**, commitments and **planning**;
 5. **dominance of short-term reactive over long-term proactive strategies** and policies;
 6. **mismanagement and corruption**;



- ‘Fourth Green Revolution’ after the agricultural, industrial, and communication revolutions is a **huge undertaking**
- is **necessary** due to human interventions and changes in the Earth System
- **deep changes** in the Earth System with inescapable consequences
- **future is unpredictable** with complex reactions humankind may face and will have to cope with during the Anthropocene
- our actions put **our survival at risk**, but due to short-term profit thinking we do not seem to have to change our behaviour and to **avert the destruction of our planet.**

Towards the Vision of a Global Sustainable Transformation

- **Natural sciences** have not taken into account the political dimension and the emerging thinking in the social sciences (postmodern approaches, risks thinking)
- **Social science** forgot GEC, natural hazards and security
- An isolated approach from the natural or social science alone will **not be able to develop the required revolutionary changes** in thinking & policy
- Therefore, 'Fourth Green Revolution' includes **changes in material and immaterial processes, beliefs and behaviours**, including power relations and control mechanisms. Humans are part of the Earth System and not their owners.

‘Fourth Green Revolution’

- launch the transformation from the dominant vision of business-as-usual towards a **sustainable vision in a multilateral cooperative** world.
- Climate change poses primarily challenges for **human and international security** that can only be overcome by human ingenuity. However, COP 15 in Copenhagen has shown that **key mental, economic and political obstacles** must still be overcome to prevent the security dangers referred to above from triggering violent conflicts during this century.



Participative governance

- In the context of the 'Fourth Green Revolution' participative governance is needed combining processes of policy initiation and adoption (**bottom-up**) and the implementation of the required fundamental transformations (**top down**). This requires peaceful negotiation processes based on diversity and tolerance.
- Moving towards the vision of a sustainable peace with human security requires **overcoming the Hobbesian obsession of a militarization** of the climate change impacts for national security.

Sustainable Development & Peace



Sustainable Development, Security, and Peace in the Anthropocene

- *Earth Systems Science* requires human-induced changes oriented at **global sustainability, sectoral wisdom** and a total **transformation of the energy system**, gradual dematerialization and **decarbonization** of the production, transportation, and consumption processes, changes in terms of **trade**, a different **debt** policy and fundamental reforms of the **global financial system** to achieve the **MDGs**.
- New global governance systems with **sharing of knowledge and technology**, additional **employment opportunities, local capabilities, self-reliance, empowerment, solidarity**, and more equitable social relations with **bottom-up initiatives** and an **ethics** of responsibility for nature with long-term **land planning** and **sustainable resource management**.

Goals of FGR

Goal of a global average increase of temperature of **2 °C by 2099** , through:

- a) **enhanced energy efficiency**, a shift towards renewables and a gradual dematerialization and decarbonization of the economy
- b) **ecosystem recovery** and restoration to maintain environmental services
- c) integrated **water** basin management, rain harvesting, providing safe water, sewage facilities (including recycling and reuse), enhancing irrigation efficiency and substitution with less water demanding plants
- d) combating **soil** erosion, degradation and desertification by integrated waste management, composting of organic **waste**; terracing, restoration of salinized and degraded soils, recovery of soil fertility by crop rotation
- e) changes in our 'ways of life' and '**lifestyles**' by changing meat-intensive diets to vegetarian **food** (food culture)
- f) reduction of advertisements for a **consumerist waste economy** and of individual demand for non-essential goods and enhancement of intellectual and spiritual aspirations possibly leading to a new modesty
- g) **political reforms of democratic governance** to enhance longer-term orientations over short-termism, proactive over reactive policies.

International obligations for the FGR

International and peace community must take bold action :

1. on **climate change mitigation** to avoid an intensification of security threats to human well-being;
2. provide support to climate change **adaptation in developing countries** through investments in capacity building on water management, food security, agricultural resilience, and public health systems to deal with increased disease incidence and risk;
3. **disaster prevention**, preparedness and response, early warning systems for various climate change impacts
4. redouble its efforts for **sustainable and equitable development** through development assistance, sustainable economic growth, financial and technological support towards a low-carbon path
5. **anticipate and prepare for unprecedented challenges** beyond existing mechanisms
6. support **climate-induced displacement and migration** beyond existing legal protective regimes ('statelessness' of citizens of SIDS and impacts on sovereignty, claims over marine resources, and rights and relocation of their citizens);
7. **water scarcity and stress** for millions due to melting of glaciers and snow pack
8. competition over newly accessible **Arctic** natural resources and trade routes



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