Third World International Studies Conference, Porto, Portugal from 17-20 August 2011

The World in Crisis:

Revolution or Evolution in the International Community?

Panel: Responding to Climate Change in the Anthropocene: Security Impacts and a Needed Fourth Sustainable Revolution

Implementing Climate Change Commitments:

Sustainability Revolution, Changes in Worldviews and Mindsets

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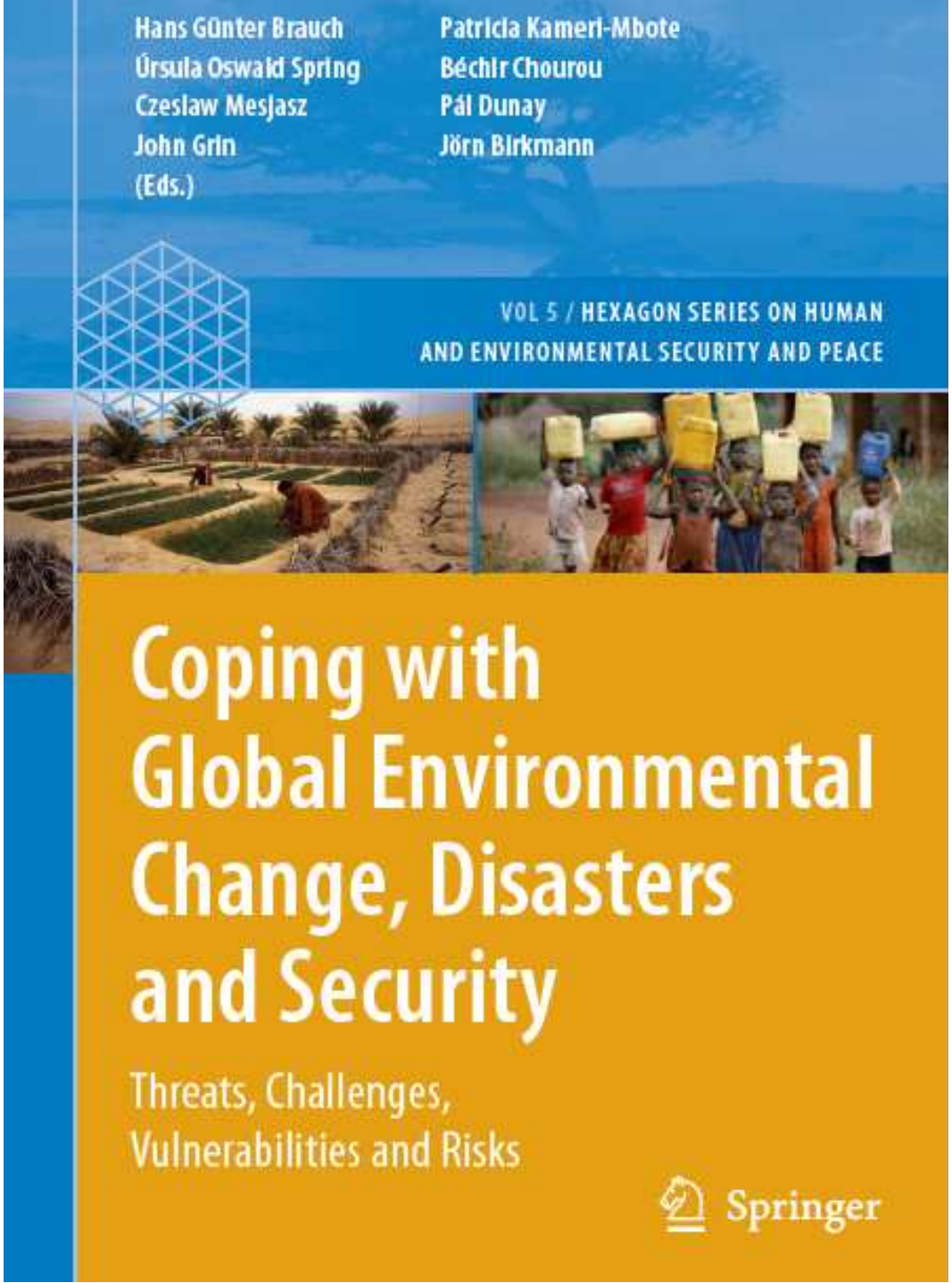

Acknowledgement

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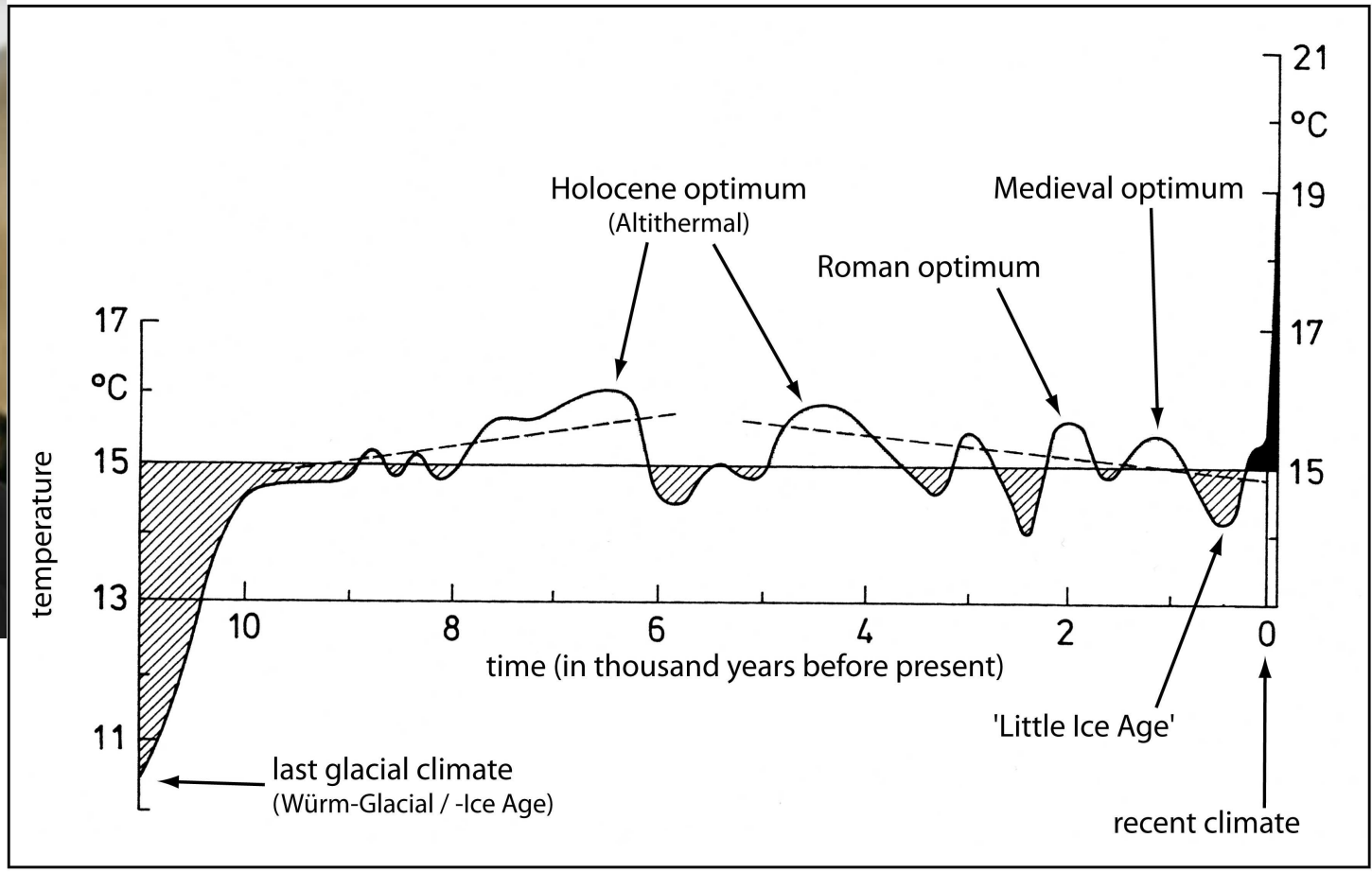
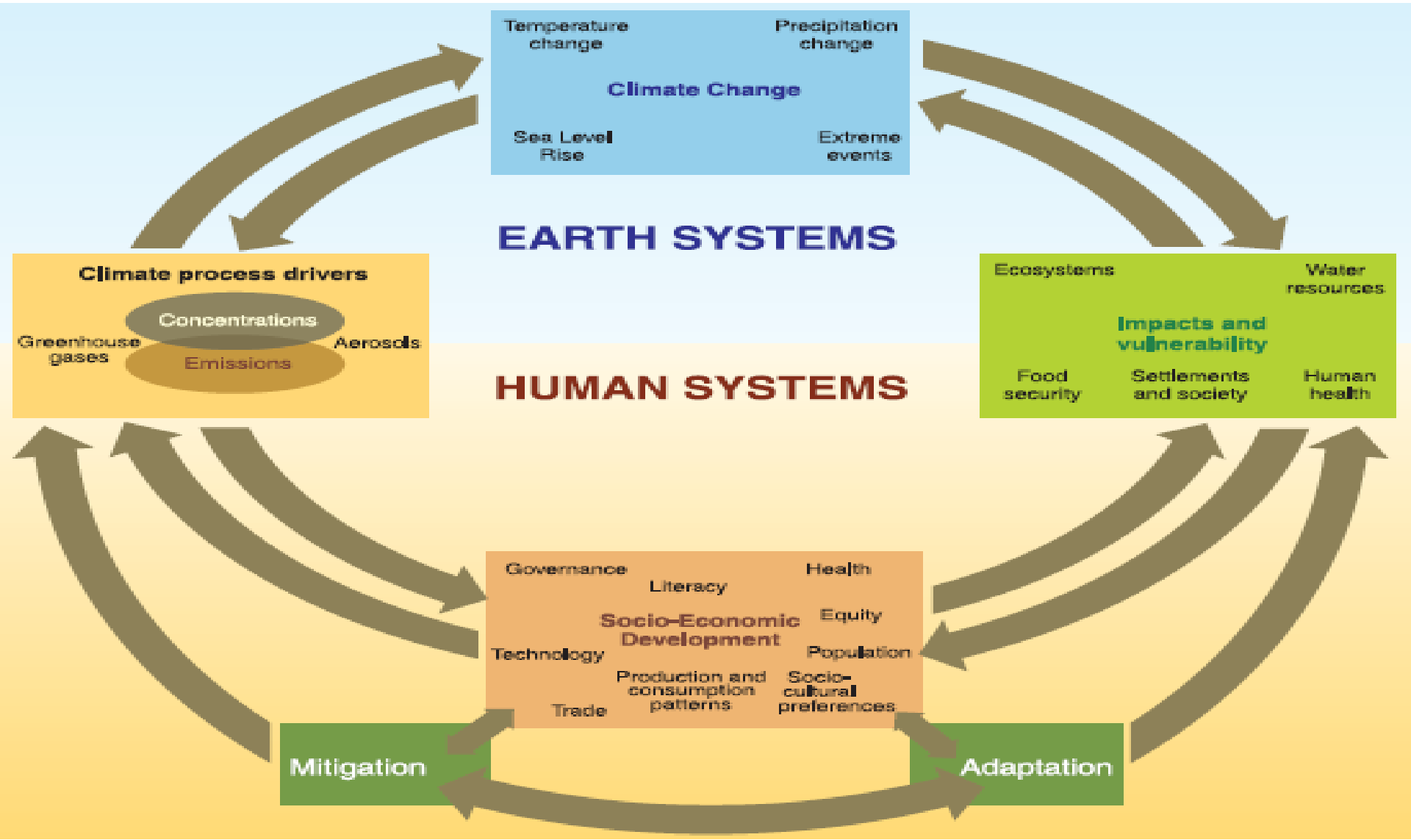
1. From the Holocene (12.000 years b.p.) to the Anthropocene (1784 AD)

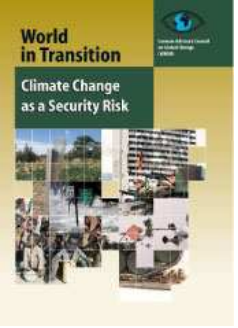
Paul Crutzen, Nobel Laureate for Chemistry (1995)



In Geology/geography: **Holocene era** of earth history since end of glacial period (10-12.000 years ago, Anthropocene, since industrial revolution (1784, J. Watt's invention of steam engine: anthropogenic climate change: burning of coal. oil, gas ➔ GHG increase

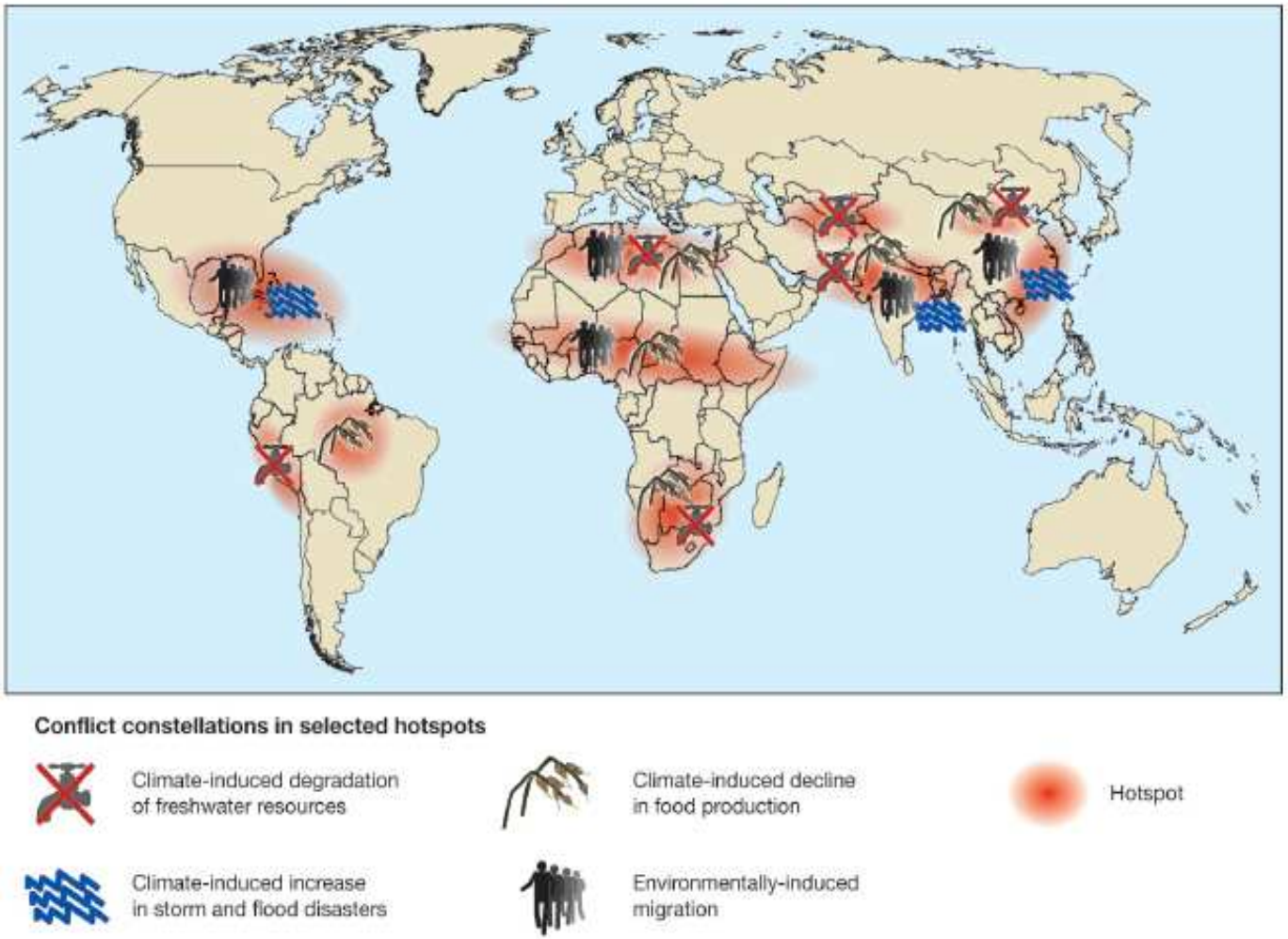
1.1. IPCC: AR4, 2007 (Synthesis Report)





1.2. WBGU-Study: Climate ‚Hotspots': 4 Conflict Constellations

Figure 4.7: Regional hotspots and security risks associated with climate change. **Source**: WBGU (2008: 4). Reprinted with permission.



- **Mediterranean**
  - Water
  - Food product.
  - **Migration**
- **South, Central and East Asia**
  - Water
  - Food product.
  - **Migration**
  - cyclone
- **Latin America & Caribbean**
  - Water
  - Food product.
  - **Migration**
  - hurricanes

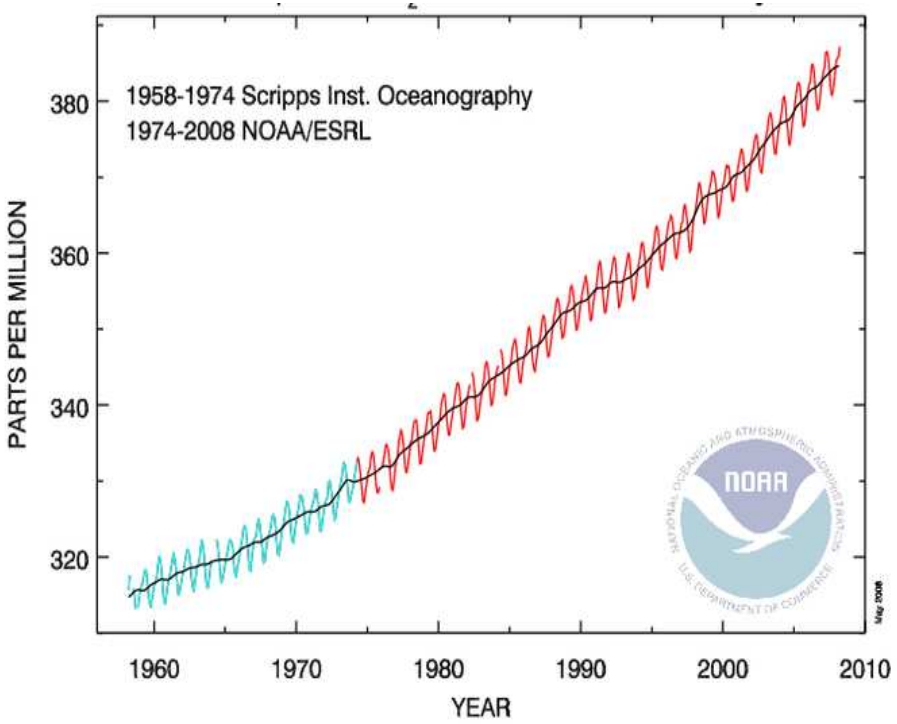
2. Climate Paradox and Policy Response

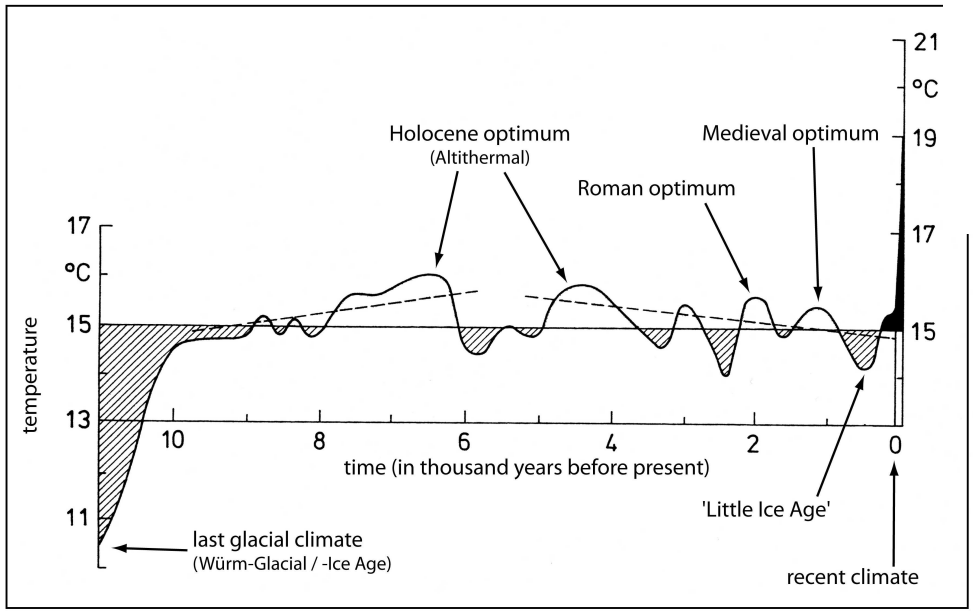
There is a scientific & political consensus

- **Global climate change is anthropogenic** (IPCC, 2007)
- **Global average temperature is projected to rise until 2100** AR4 (2007):+1.1-6.4 (1.8-4)°C
- **Sea-level will rise**: AR4 (2000-2100): 18-59 cm – Pachauri (2008): 0.6-2.4 metres
- **Major precipitation changes in climate hotspots**
- **Hazards will rise in number & intensity** (AR4)
- **Global population will rise** (med. project, UNPD, PR 2010): 9.3 bn by 2050 and above 10 bn by 2100

2.1. There is a consensus that climate change is largely anthropogenic

IPCC in Assessment Reports (1990, 1995, 2001, 2007): since industrial revolution climate change has been anthropogenic





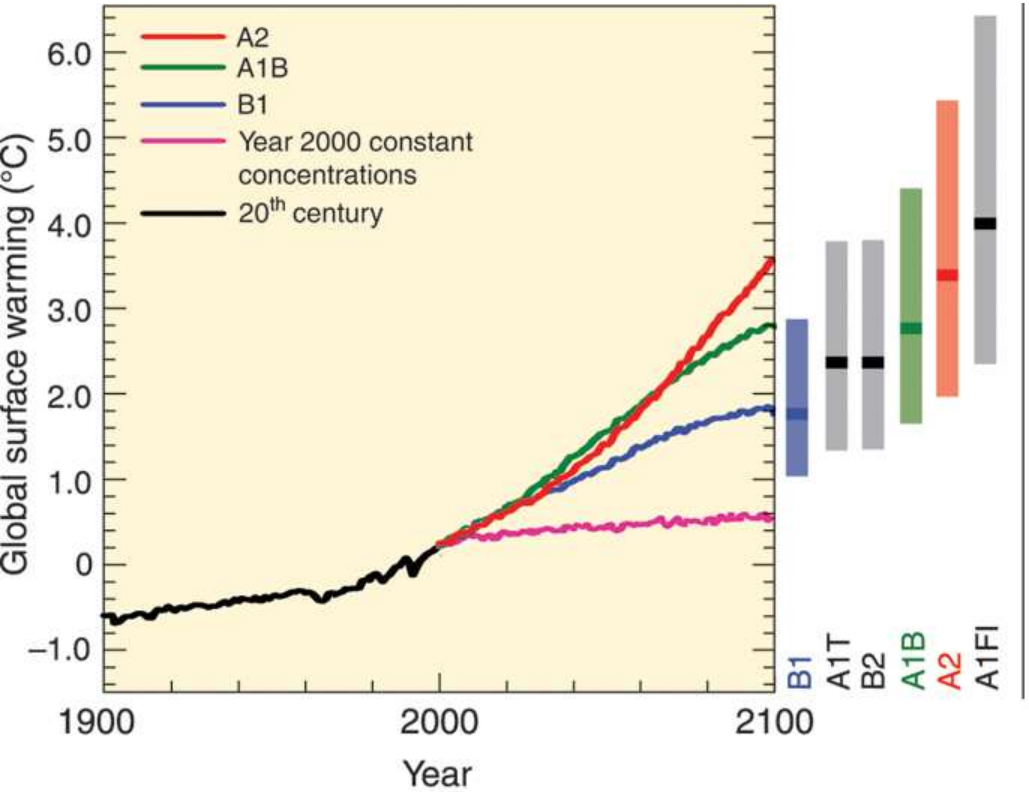
GHG in the atmosphere

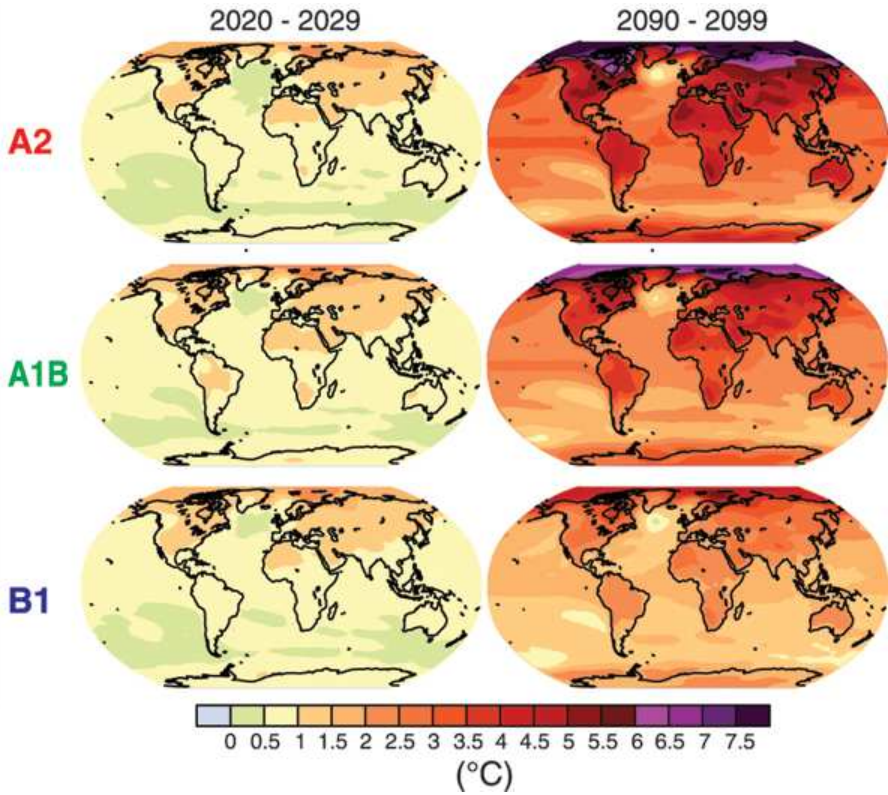
1750: 279 ppm, 6/2011: 393 ppm

1/3: 1750-1958: 279 to 315 ppm

2/3: 1958-2011: 315 to 393 ppm

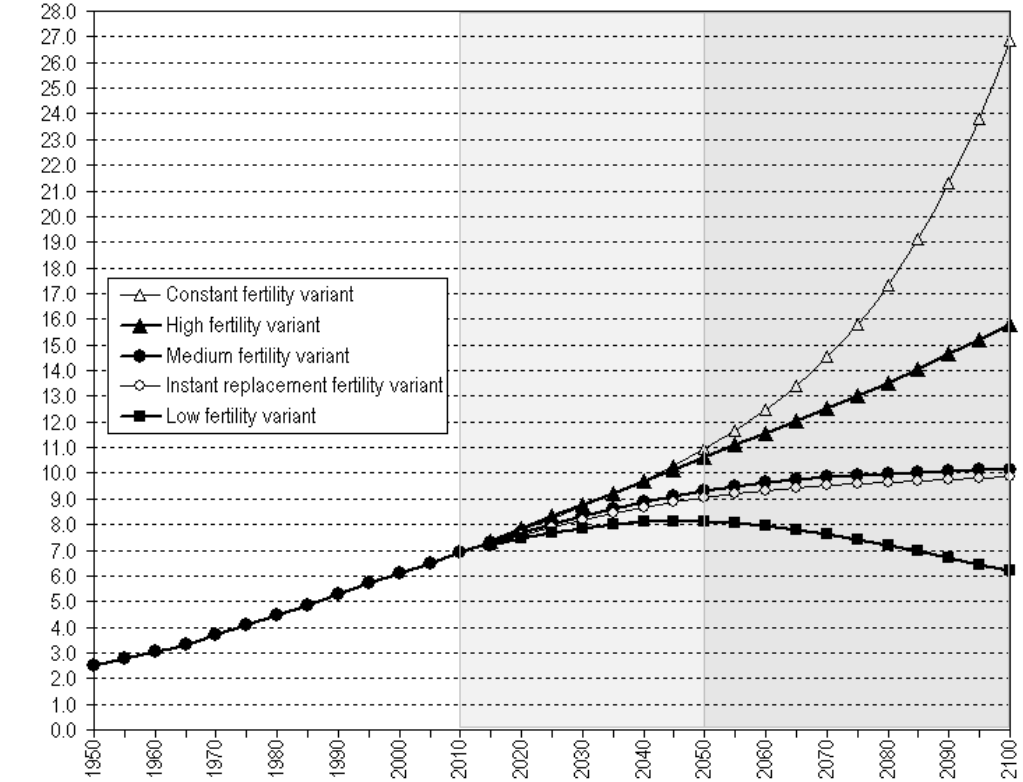
2.2. Anthropogenic Climate Change in the Anthropocene (1900-2100)

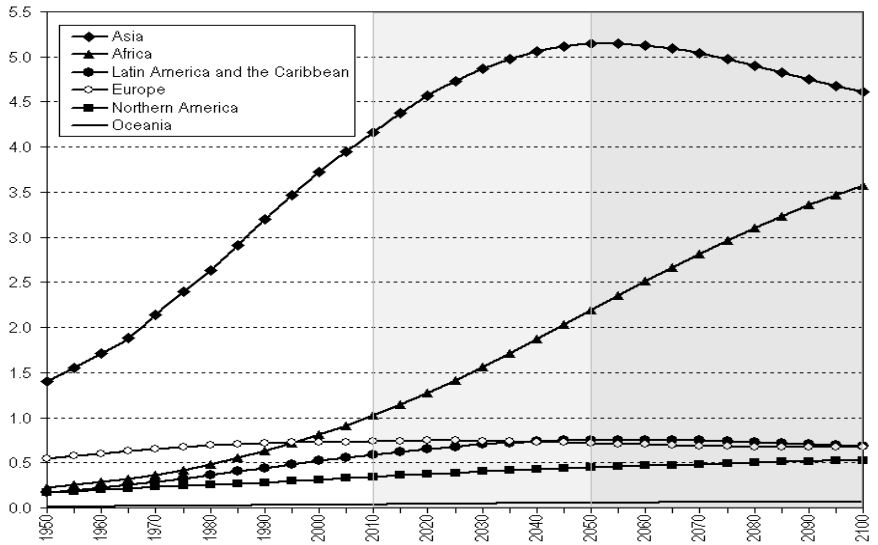


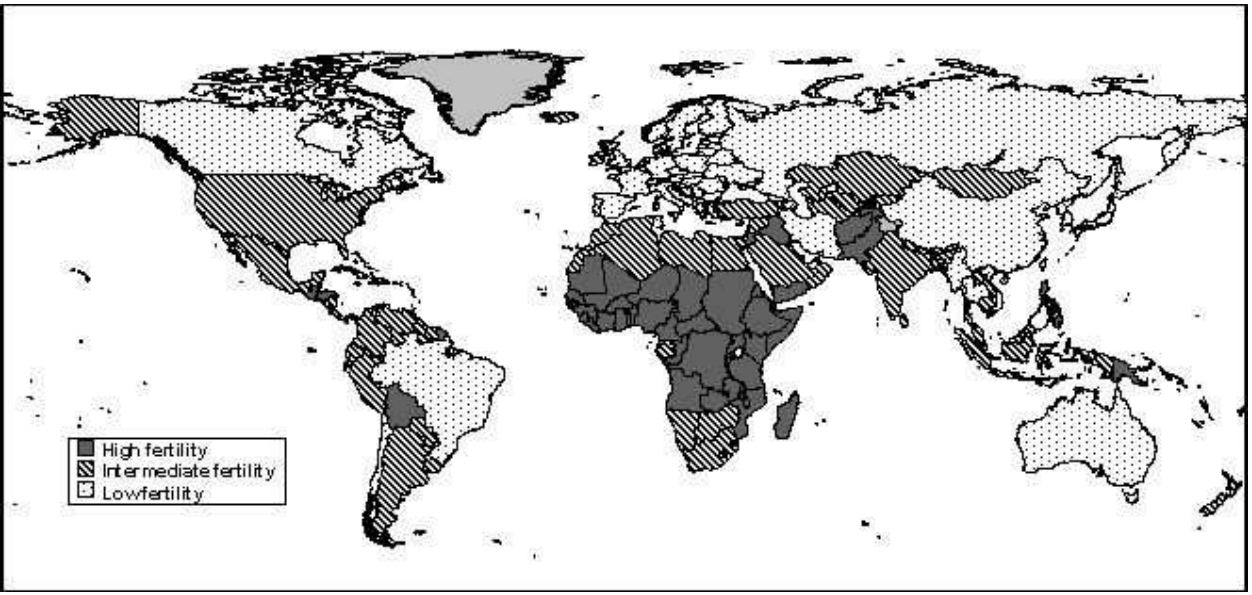


- **Three Regimes for Temperature Increase**
  - +2°C: **certain**: EU Stablization goal (**decision in Copenhagen COP 15)**
  - +4°C: **probable, without immediate Stabilizartion Measures**
  - +6°C: **possible** (business as usual) **(catastrophe scenario)**

2.3. Population Projection (2010)







- Med. projection: 2050: 9 b, 2100: 10 b
- Asia & Africa highest increase
- Highest fertility rate in environ-mental hotspots

2.4. Legal Obligations: UNFCCC & KP

There is a weak not very specific legal commitment

- **UNFCCC (1992): Art. 2, Objective:**

  The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, **stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system**. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

- **Kyoto Protocol (1997): Art. 3,1:**

1. The Parties included in Annex I shall, individually or jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts, calculated pursuant to their quantified emission limitation and reduction commitments inscribed in Annex B and in accordance with the provisions of this Article, with a view to reducing their overall emissions of such gases by **at least 5 % below 1990 levels in the commitment period 2008 to 2012.**

2.5. Policy Declaration: G-8 Countries
G-8 agreed to reduce GHG emissions by 2050 for industrial countries by 80 %

- G8 (Britain, Canada, France, Germany, Italy, Japan, Russia, US) agreed in 2007 (Germany):
  - **50% reduction of GHG emissions by 2050**
- in 2008 (Italy), 2009 (Japan), 2010 (Canada)
  - **80% reduction of GHG by 2050 for ind. countries**
  - US$ 10 billion/year climate technology & research.
- They differed on year of reference 1990 or later
- But no agreement on legally binding targets

2.6. Policy consensus to stabilize temperature rise 2°C above preindustrial levels by 2100

Copenhagen Accord agreed (COP 15, 2009)

„…we shall, recognizing the scientific view that the **increase in global temperature should be below 2 degrees Celsius**, on the basis of equity and in the context of sustainable development, enhance our long-term cooperative action to combat climate change.“

But legally nonbinding reduction obligations

Cancun Agreements (COP 16, 12.12.2010):

- 10. *Realizes* that addressing climate change requires a **paradigm shift towards building a low-carbon society** that offers substantial opportunities and ensures continued high growth and sustainable development, based on innovative technologies and more sustainable production and consumption and lifestyles, while ensuring a just transition of the workforce that creates decent work and quality jobs;

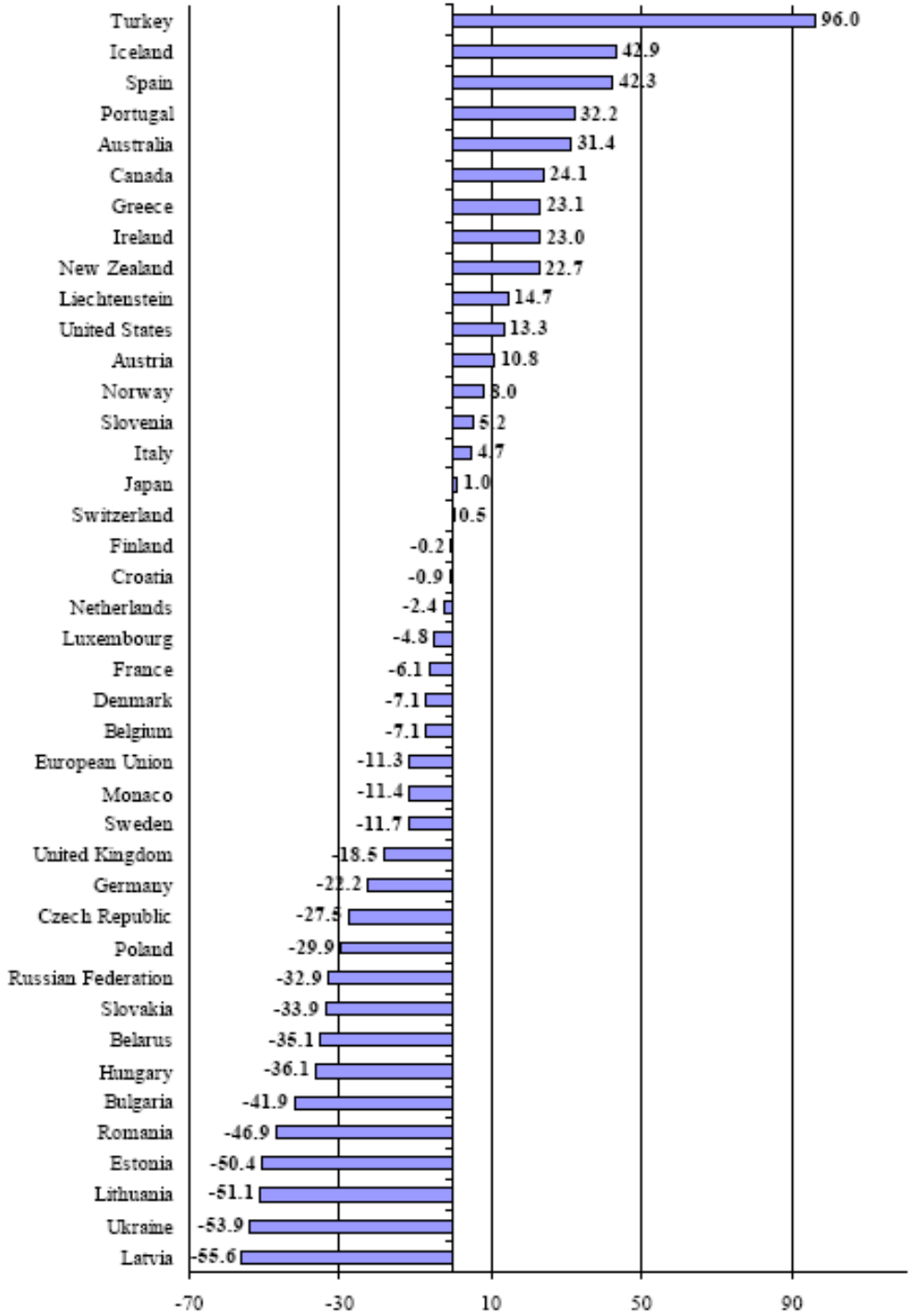
2.7. GHG Reduction Implementation Gap

QELRO, Kyoto Prot.

- EU countries: -8%
- Canada: -6%
- USA: - 7% (no party KP)
- Japan: -6%
- Australia: +8%

Changes in GHG Emissions: Annex I Part., 1990–2008 (exc. [incl.] LULUCF (%).

- EU countries:-11.3 [-13.3]
- Canada: + 24.1 [+33.6]
- USA: +13.3 [+15.3]
- Japan: +1% [-0.2]
- Australia: +31.4 [+33.1]
- Turkey: +96.0 [101.1]



2.8. Failure of Climate Negotiations to Adopt Post Kyoto Regime

- **Obstacles in major industrialized countries due**
  - Economic opposition of interest groups (lobbies)
  - Short-term interest of policy makers (re-election)
  - Lack of public awareness partly due to manipulation of media
- **Lack of political will of parliaments and governments to implement policies (in USA)**
  - Bush Administration adopted 50-80 reduction goals
  - But no legally binding reduction targets for US
  - Obama: proposal -17% (now), -5% (1990) until 2020

3. Two Opposite Visions

Anthropocene Two Ideal Type Future Visions:

- ***Business-as-usual*** where economic and strategic interests and behaviour prevail leading to a major crisis of humankind, in inter-state relations and destroying the Earth ('security' and 'market first' scenarios, UNEP 2007)
- The need for a ***transformation*** of global cultural, environmental, economic (productive and consumptive patterns) and political (with regard to human and interstate) relations ('sustainability first' scenario, UNEP 2007).

3.1. Two Alternative Strategies

Both visions refer to different coping strategies :

- Vision of ***business-as-usual*** suggests primarily technical fixes (such as geo-engineering, increase in energy efficiency or renewables), defence of economic, strategic and national interests with adaptation strategies that are in the interest of and affordable for the ‘top billion’ of OECD countries.
- Alternative vision of **comprehensive transformation** a ***sustainable perspective*** has to be developed and implemented into effective new strategies and policies with different goals and means based on global equity and social justice.

3.2. Perspectives: Security & Environment

Worldviews/Traditions on security (→) / Standpoints on environmental issues (↓)	Hobbes, Morgenthau, Waltz (neo)realist (pessimist) *Power matters*	Grotius liberal pragmatist *Cooperation matters*	Kant Neo-liberal institutionalist (optimist) *International law matters and prevails*
Neomalthusian pessimist *Resource scarcity*	I	II	III
Equity-oriented pragmatist *Cooperation will solve problems*	IV	V International organisations and regimes	VI
Cornucopian neo-liberal optimist. *Technological ingenuity will solve problems*	VII	VIII	IX

Business as usual

- Hobbesian
- Neo-Malthusian
- Cornucopian
- Neoliberal

Alternative

- Kantian
- Grotian
- Equity-orien-ted pragmat.
- Sustainability transition

4. Coping Strategies: Business-as-Usual

- **Instant Response: Discredit the message & attack the messenger: 2009: Attack on IPCC**
- **Coping with Climate Change Impacts:**
  - **Market will provide means** for coping with physical climate change effects: **Washington neoliberal consens.**
  - **Military Protection:** Adjust military strategies, missions and tools to be able to operate under conditions of dangerous climate change („militarization“): **Hobbesian**
  - **Develop the technologies:** Geo-engineering schemes, strategy of energy independence: **Cornucopian**
- **No Need for a Sustainability Revolution**

4.1 Business-as-Usual: Hobbesian World

- *Business-as-usual* in a **Hobbesian world** where economic and strategic interests and behaviour prevail leading to a major crisis of humankind, in inter-state relations and destroying the Earth as the habitat for humans and ecosystems putting the survival of the vulnerable at risk.
- In this vision of ***cornucopian perspectives*** prevail that suggest primarily technical fixes (geo-engineering, increase in energy efficiency or renewables), defence of economic, strategic and national interests with adaptation strategies that are in the interest of and affordable for the 'top billion' of OECD countries in a new geopolitical framework, possibly based on a condominium of a few major countries.
- This vision with minimal reactive adaptation and mitigation strategies will increase the probability of a '**dangerous climate change' or catastrophic GEC** with both linear and chaotic changes in the climate system and their socio-political consequences that represent a high-risk approach.

5. Fourth Sustainability Revolution

- 2nd vision for a *transformation* of global cultural, environmental, economic (productive and consumptive patterns) and political (with regard to human & interstate) relations
- In the alternative vision of a comprehensive transformation a *sustainable perspective* has to be developed and implemented into effective new strategies and policies with different goals and means based on global equity and social justice.

5.1 Alternative Vision

- The alternative sustainability perspective requires a change in *culture* (thinking on the human-nature interface), ***worldviews*** (thinking on the systems of rule, e.g. democracy vs. autocracy and on domestic priorities and policies, interstate relations), ***mindsets*** (strategic perspectives of policy-makers) and new forms of national and global *governance*.
- This alternative vision refers to the need for a "**new paradigm for global sustainability**" (Clark/Crutzen/Schellnhuber 2004), for a "transition to [a] much more sustainable global society", aimed at peace, freedom, material well-being and environmental health. Changes in technology and management systems alone will not be sufficient, but "significant changes in governance, institutions and value systems" are needed, resulting in a fourth major transformation after "the stone age, early civilization and the modern era". These alternative strategies should be "more integrated, more long-term in outlook, more attuned to the natural dynamics of the Earth System and more visionary"

5.2. WBG (2011): New Social Contract for a „Global Transformation“

- **WBGU explains reasons for a ‚post fossil-nuclear metabolism‘ concluding that the transition to sustainability is achievable.**

A New Social Contract

- **Transformation into a sustainable society requires a modern framework for nine billion people for living with each other, and with nature: a new Contrat Social.**
- **This virtual social contract relies on each individual’s self-concept as a responsible global citizen. This contract is also a contract between generations.**
- **Science plays an essential role here, as for the first time in history, a profound transition is not caused by imminent necessity, but by precaution and well-founded insight. In this respect, the social contract also represents a special agreement between science and society.**
- **A new culture of democratic participation through the appointment of ombudsmen … to ensure the protection of future-oriented interests. Sustainability-oriented approach can be given a secure, firm footing through the inclusion of ‘climate protection’ in the constitution as a national objective, and through establishing a climate protection law.**
- **A low-carbon transformation can only be successful if it is a common goal, pursued simultaneously in many of the world’s regions.**
- **Therefore, the social contract also encompasses new ways of shaping global political decision-making and cooperation beyond the nation state.**

5.3 Ten Packages of Measures

GHG emissions are primarily caused by the energy industry & land-use, related to rapid global urbanisation. 3 key fields requiring transformation. 10 packages of measures that are particularly suitable for accelerating and extending the transition to sustainability.

- **The state should show conscious awareness of its enabling and proactive role to advance global decarbonisation. This must offer citizens extensive opportunities for participation.**
- **GHG CO2 should globally be given an 'commensurate' global price as soon as possible.**
- **A European energy policy aiming for a fully decarbonized energy system by 2050 at the latest should be developed and implemented at once. A direct objective should be the promotion of partnerships with North Africa.**
- **Feed-in tariffs for renewable energies should be introduced worldwide.**
- **A top priority for any development policy should be to provide access to sustainable energy to 2.5 to 3 billion people in developing countries currently living in energy poverty.**
- **A huge effort to steer the world's accelerating urbanisation towards sustainability.**
- **Land-use can and should become climate-friendly, in particular forestry and agriculture.**
- **Financing of the transformation and the massive investments required should increasingly rely on new business models that help to overcome current investment barriers.**
- **Within international climate policy, states should continue to work towards an ambitious global treaty. Multilateral energy policy promote global transfer of low-carbon technolog.**
- **The UN should be brought into a position where they can make effective contributions to the transformation. Development organisations should be reorganised into transformation agencies for sustainable development. The G20 should draft a road map for economic development that takes into account the planetary boundaries. The Rio+20 conference in 2012 is a unique chance to set the global course towards low-carbon development.**

6. Policy Response – Four Actors: State, Society, Economic Sector, Knowledge

- Key actors for development and implementation are:
  - **States:** initiate, fund and implement strategies, policies & measures for a fourth sustainability revolution
  - **Society** (parties, interest & pressure groups, NGOs, lobbyists): public awareness, discourse, social movements for sustainability transformation
  - **Economic sector & business community:** develops and offers technical and economic solutions
  - **Knowledge** (generation & education): source for innovation

7. Role of Knowledge

- The fourth sustainability revolution must be knowledge-based!
- The great transformation of the industrial revolution relied on new innovative scientific and technological knowledge that is either the result of inventions or resulted in new innovations.
- Despite its already widely accepted objectives and the many viable low-carbon technologies already available to us, the transformation is a joint quest.
- Research and education are tasked with developing sustainable visions, in co-operation with policy-makers and citizens; identifying suitable development pathways, and realising low-carbon and sustainable innovations.
- The WBGU recommends intensified refocusing of national and international research towards the Great Transformation, and the provision of the requisite funds. The relevant scientific findings must also be made accessible and understandable to allow people to accept the change and to participate democratically in the transformation.

7.1. Four Knowledge-based Concepts of for Alternative Vision

- Key concepts of the alternative vision of a new fourth 'sustainable revolution' are a radical change in *culture*, *worldview*, *mindset* and *participative governance* in the thinking and action on sustainability laying out an alternative development path with a total transformation of productive and consumptive processes aiming at equity, social justice, and solidarity with the most vulnerable and marginal people and the poorest countries.
- This lays out an alternative development path with a **total transformation of productive and consumptive processes** aiming at equity, social justice, and solidarity with the most vulnerable and marginal people and the poorest countries.

8. Worldview of Scientists

- *Worldview* concept evolved from 'Weltanschauung' that refers to a wide world perception and to a **framework of ideas and beliefs through which individuals interpret the world &** interact with it.
- A comprehensive worldview includes the **fundamental cognitive orientation of a society, its values, emotions, and ethics** through which a society or a group interprets the world in which it interacts.
- Worldview is the **fundamental cognitive, affective, & evaluative presupposition a group of people makes about the nature of things**, & which they use to order their lives.
- The **'construction of integrating worldviews'** begins from fragments of worldviews offered to us by different scientific disciplines and various systems of knowledge to which different perspectives contribute in the world's cultures.
- **Gert Krell** used this concept for distinguishing among several macro-theoretical approaches in international relations.

9. Mindset of Policymakers

- The concept of *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 used it as 'cultural lenses' that filter our view of and reaction to the world. With regard to the 'Fourth Sustainable Revolution' this concept refers to a discussion of a post-carbon society, where solidarity, equity, and social justice are the 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.
- **Ken Booth** mindsets "freeze international relations into crude images, portray its processes as mechanistic responses of power and characterize other nations as stereotypes". Many mindsets have survived the fundamental global contextual change of 1989/1990, as the Cold War "exists as our living past, and it exerts a powerful presence by being both remembered and forgotten in complex ways".

10. Political Urgency and Research Agenda: Towards a Fourth Sustainability Revolution

Glooming Prospects for Post-Kyoto Regime: Paralysis

- Prospects for Post-Kyoto climate regime at COP 17 in Durban are low
- At present it becomes increasingly unlikely to realize the 2°C world
- Probability of 'dangerous climate change' increases dramatically
- This increases the probability that thresholds in the climate system may be crossed, that tipping points may be unleashed, triggering cascading processes as: 'Arabellion' and 'Fukushima nuclear disaster'

Business-as-usual paradigm prevails in politics & media

- In light of global financial crisis, the sense of urgency for proactive climate action has declined since 2009 prior to Copenhagen (COP 15)
- The US government is paralyzed due to ideological confrontation within the US Congress and between the Senate & the House
- Lack of urgency among BASIC countries to accept commitments.

10.1 Emerging Research Agendas

Strategy for Sustainable Transition Requires Changes in the Scientific System of Knowledge Production

- **Edward O. Wilson (1998)** noted a growing *consilience* (interlocking of causal explanations across disciplines) in which the "interfaces between disciplines become as important as the disciplines themselves" that would "touch the borders of the social sciences and humanities."
- **Clark, Crutzen and Schellnhuber (2004)** called for a 'second Copernican Revolution in earth systems science' & a 'new paradigm of sustainability' and new 'Contract for a Planetary Stewardship'
- **Grin, Rotmans and Schot (2010)** reviewed "Transitions to Sustainable Development: New Directions in the Study of Long Term Transformative Change"
- **Huff (2011)** discussed past "Intellectual Curiosity and the Scientific Revolution" in Western and Non-western Cultures (Confucianism, Hinduism and Islam)
- **Brauch, Dalby and Oswald Spring (2011)** suggested a new 'Political Geo-ecology for the Anthropocene" by bringing politics and security into Earth Systems Science and its key results into the social sciences
- **WBGU (2011)** proposed a new "Social Contract for a Global Transformation"

10.2. Implications for the Social Sciences

- The challenge of research on the societal impacts of global environmental change in the Anthropocene requires an understanding of the **observed and projected changes** within the **earth system** and its **physical and societal impacts for the human systems, i.a. an analysis of earth systems sciences.**
- This requires increased funding for multi-, inter- and transdisciplinary research to address the '**consilience**' of the sustainability paradigm.
- Research on sustainability transition may not be limited to a research agenda of the priorities, pathways & strategies towards sustainability
- For **sociology and political science** it requires to address 'cascading processes' in the 'world risk society' stimulated by the ‚principle of *precaution through prevention*' (Ulrich Beck, 2011).
- For international relations, security and peace research this requires conceptual research on the conditions and possibilities of a sustainable peace as a global political framework for a sustainable transition.

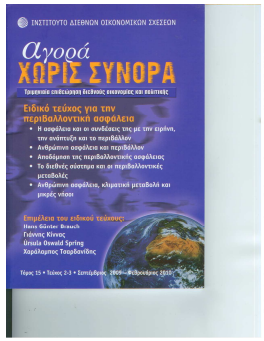
3. Global Environmental and Human Security Handbook for the Anthropocene

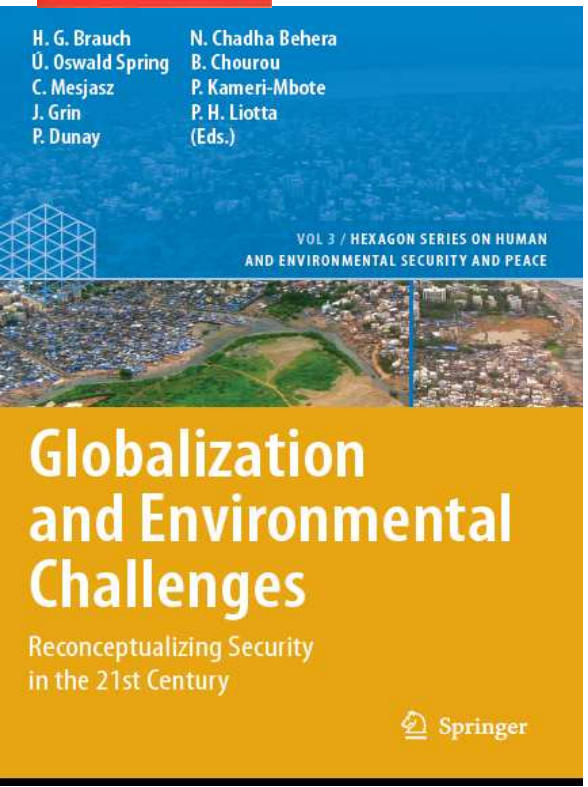
http://www.afes-press-books.de/html/hexagon.htm

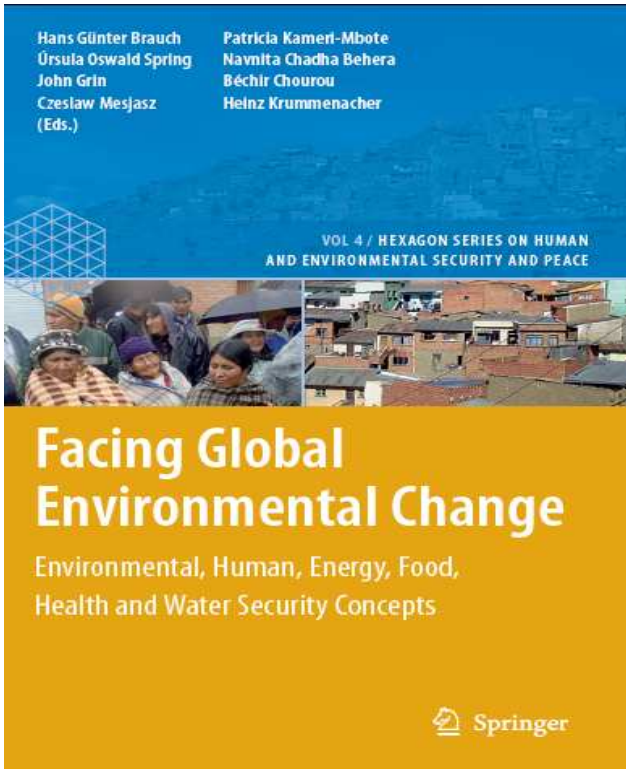
Vol. 3 (1): Globalization and Environmental Challenges: 92 authors, 36 countries, 16 disciplines, (2008)

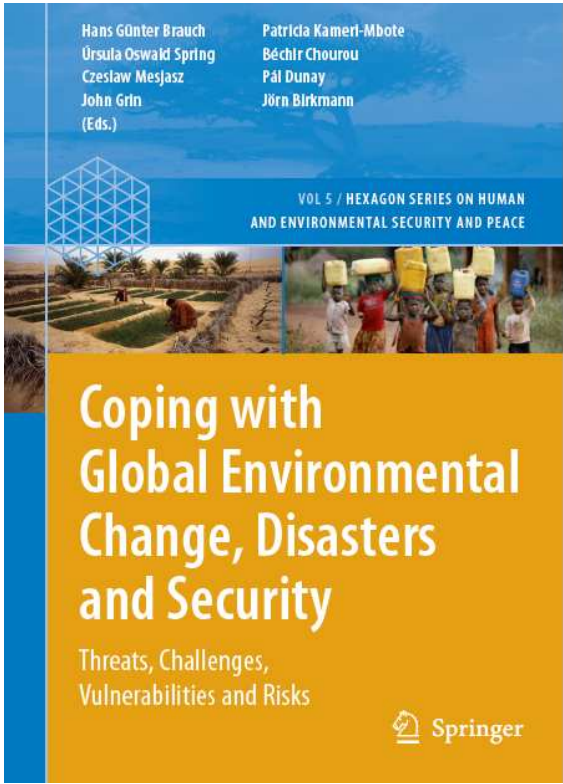
Vol. 4 (2): Facing Global Environmental Change: 132 authors, 49 countries on global debate and problems of environmental, human, energy, food, health, water security (2009)

➔**Vol. 5 (3): Coping with Global Environmental Change:** ***Disasters and Security – Threats, Challenges, Vulnerabilities and Risks*** **164 authors, 48 countries (2011).** ➘

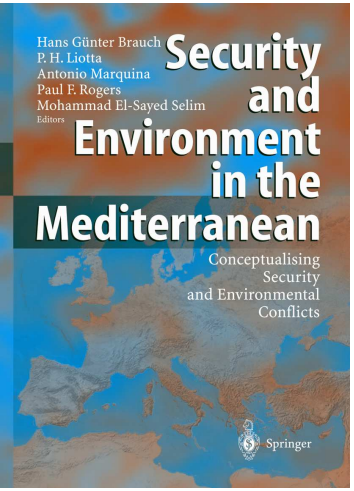


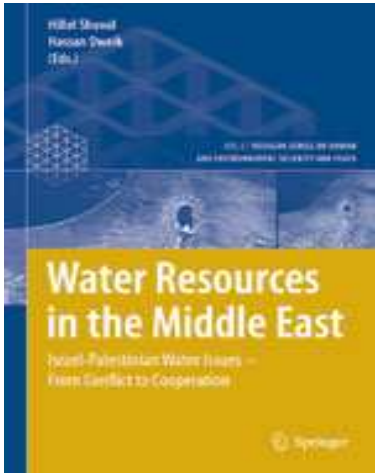


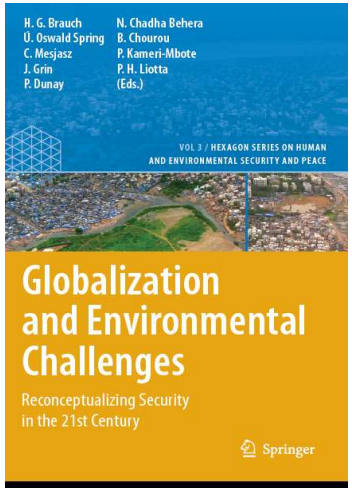


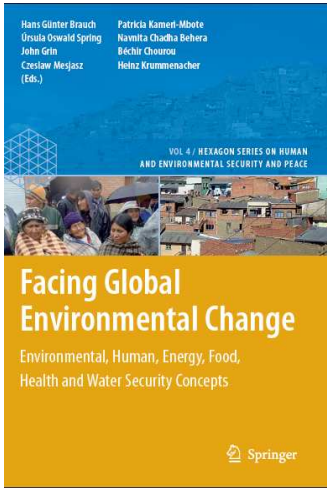


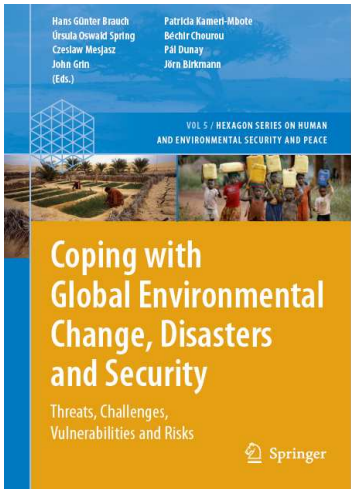
2.1. Hexagon Series: Volumes I-VII



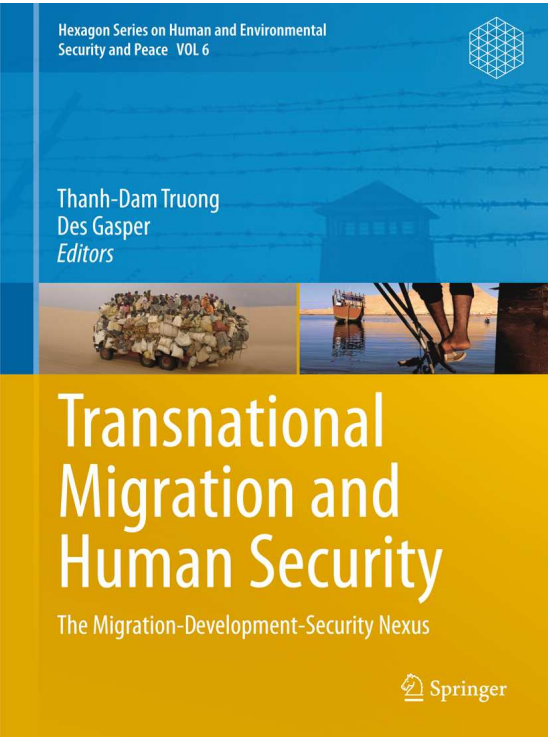


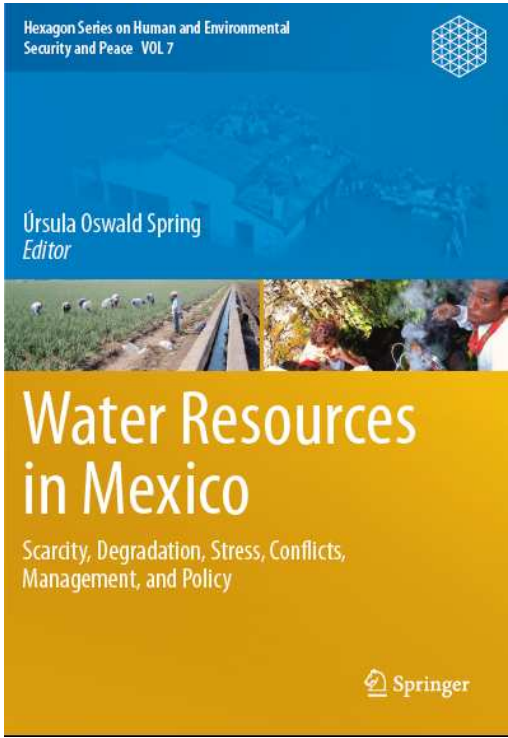






Forthcoming Volumes



Scheffran, Jürgen; Brzoska, Michael; Brauch, Hans Günter; Link, Peter Michael; Schilling, Janpeter (Eds.): ***Climate Change,Human Security and Violent Conflict: Challenges for Societal Stability*** . Hexagon Series on Human and Environmental Security and Peace, vol. 8 Berlin – Heidelberg – New York: Springer-Verlag, 2011).

Czeslaw Mesjasz: ***Stability, Turbulence or Chaos? Systems Thinking and Theory and Policy of Security***. Hexagon Series on Human and Environmental Security and Peace, vol. 9 (Berlin – Heidelberg – New York: Springer-Verlag, 2011), in planning.