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Our New, Hotter World

Climate Change, Security & Conflict:

Searching for Sustainable Alternatives

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Our New, Hotter World(SF session)

- The stage is set for intensified food, water, and energy insecurity along with floods, desertification, and disease that will drive instability and mass migration. Climate change is here and it has the propensity to wreak havoc globally, but especially in regions already prone to conflict. The burdens will not be bared by a select group of states alone. What are the risks as societies try to adapt to new climates? What are the links between non-traditional security threats and climate change? What's being done?

My key questions and thesis:

- **How has this linkage: climate change, security & conflict evolved?**
- **We are the threat and the victims! Why democracies fail to act?**
- **There are Alternatives: Business-as-Usual & Sustainability Transition**

Abstract

- Global environmental change and climate change became scientific problems since the 1970s; they were put on the political agenda in 1988. They became security issues since 2004 in the UK and USA but the political takeoff occurred in 2007 when several policy studies were released in Washington, when the fourth assessment report of the Inter-governmental Panel on Climate Change was released and the IPCC was awarded the Nobel Peace Prize. A German study (WBGU) on "Security Risk Climate Change" helped putting this new security challenge on the EU's agenda. UK and Germany put climate change and security on the UNSC's agenda in April 2007 and July 2010. A UNSG's report (2009) pointed to the two faces of climate change as a threat maximizer (securitization, militarization) and sustainable development as a threat minimizer (politicization, economization).
- In the Anthropocene era of earth history we are the threat with our burning of hydrocarbons, and we are the victims (of hurricanes, cyclones, typhoons, floods, drought, heat waves, forest fires) but those who pose the least threat carry the greatest burden. Major democracies (USA, Canada, Australia, and Japan) face a climate dilemma by acknowledging the challenge but failing to act (missed Kyoto Protocol target). Hydrocarbons observe a revival (tar sands, fracking, coal), emissions continue to rise and policymakers are pursuing business-as-usual.
- Instead the causes of anthropogenic climate change must be addressed by strategies aiming at a decarbonization of their economies by 80-90% by 2050 what the G-8 announced in 2007 and repeated until 2010. We need in science, production and consumption strategies and policies aiming at a long-term transformative change of economies and societies. Given the obstacles in major democracies (US, Canada, Japan, Australia) but also autocracies (China) humankind must develop and implement political strategies that lead to a sustainability transition during this century.

Contents

1. Global Environmental Change: A New Global Security Challenge

- **Scientization:** GEC: Climate change, water, soil,biodiversity
  - **Svante Arhennius (1896):** CO2: hydrocarbons & GHG in Atmosphere
  - **75 years later**: in 1971 scientific debate started on linkage
  - **Since 198Os**: 4 science programmes: IGBP, WCCP, Diversitas, IHDP
  - **IPCC** (1988), Earth Systems Science Partnership– Future Earth (2012)

- **Politicization**: since 1980s: Reagan Administration (1988)
  - G-7 meeting in Toronto (September 1988)
  - Dec. 1998: UNGA set up IPCC – negotiation mandate: UNFCC
  - 1992 (Rio summit; UNFCC, CBD), 1997: Kyoto Protocol, 2009: Cop.

- **Securitization:** since 1980s (Gro Harlan Brundtland, 1988)
  - GHB Speech in Washington, IISS 1989 (Peter Gleick, Neville Brown)
  - Project: UK, Germany, Finland, Mexico. BMU Report (2002)
  - 2004: Pentagon Leak – UK: MoD, King: Science Adviser of Blair
  - 2007: Takeoff of the debate: Washington DC, IPCC (AR4, Nobel PP)

2. Phases of the Political & Scientific Securitization Debate

- **Political Debates: 2 phases**
- **First debate: Environm. Security**
  - **USSR: M. Gorbachev (1988:** UNGA: ecological Security
  - USA: Clinton Administration
  - NATO: US-DoD, German BMU
- **Second debate: Climate Change, Security & Conflict: declaratory p.**
  - **UK: 2004 -> UNSC (April 2007)**
  - **Germany: 2002, WBGU (2007), UNSC (July 2010>**
  - **EU: 2008 (report) ESSS (Dec. 2008)**
  - **UN (UNGA, UNSG (11-9-2009, 2014)**
  - **Obama Administration: DoD, NIC**

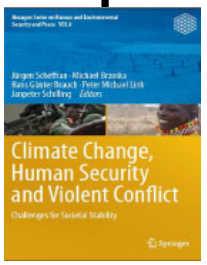
- **Scientific Discourses**
- **First discourse: ES->EC**
  - **1989: Agenda Setting**
    - Matthews, Myers
  - **1990s: Empirical research**
    - Canada: Thad Homer-Dixon
    - Switzerland: Günther Bächler
- **Second discourse: CC-S->C**
  - **2007: Washington**
  - **2009: Hamburg workshop**
  - **2010: Trondheim workshop**
  - **2012:** Two peer-reviewed Pub.
    - Scheffran, et al. (Springer)
    - Gleditsch (Ed.) JPR (Sage)

3. Climate Change, International, National & Human Security and Conflict

State-centred: (Inter)national Security

- **US policy debate: nat.security**
  - **National Intelligence Counc. (2008,9)**
  - **Clinton Administration**
    - **QDR (2010, 2014)**
    - **National Security Strategy (2010, 2014)**
- **EU & UN debates: internat. Sec.**
  - **EU (since March 2008)**
  - **UN (since 2009)**
- **Strategic studies (US): both**
  - **IISS: Mazo**
  - **Georgetown Univ. Press**

People-centred: Human Security

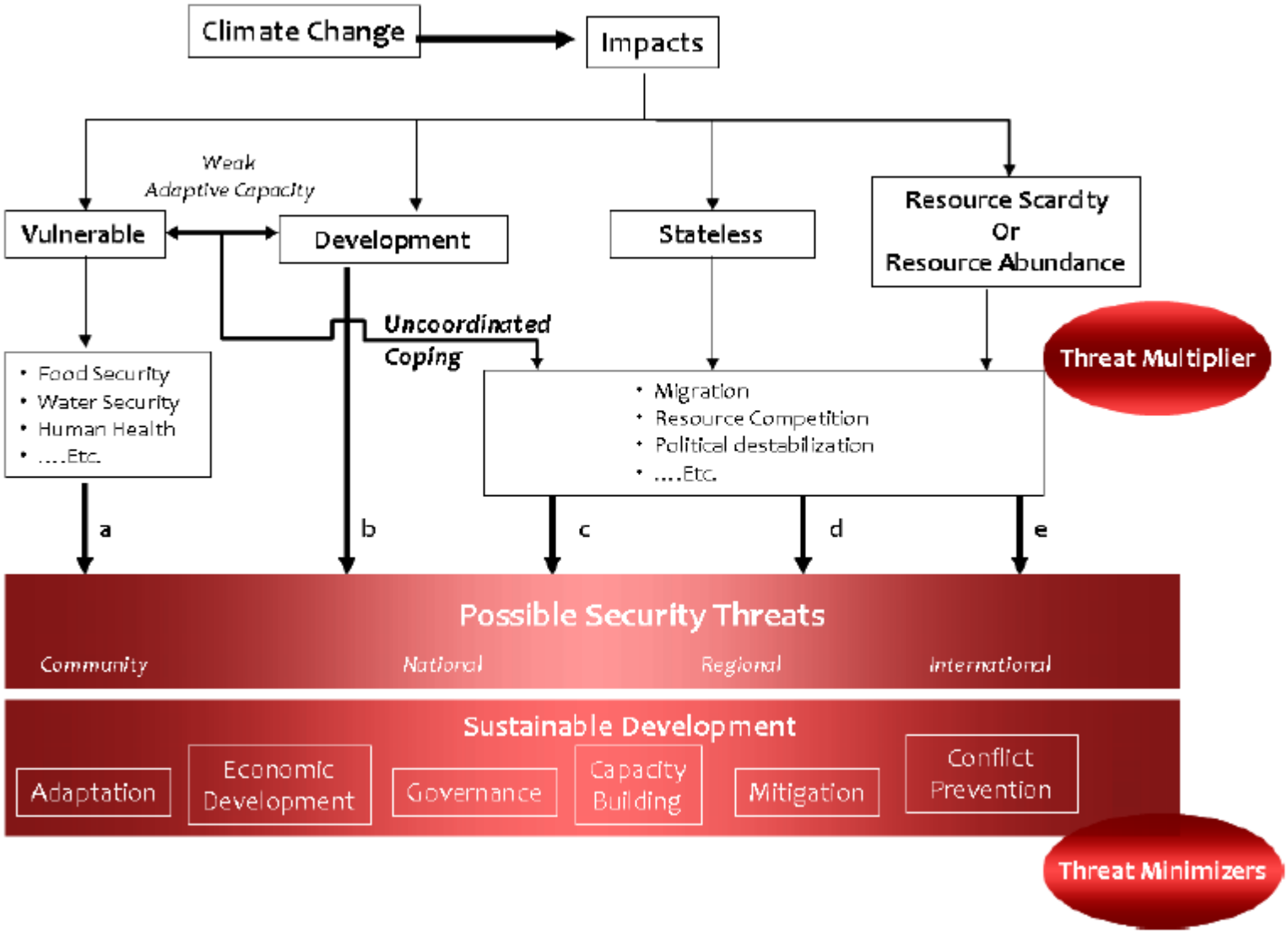


Referent object: human being(s), Vulnerable communities, humankind

Impacts on human beings: their livelihood, well-being

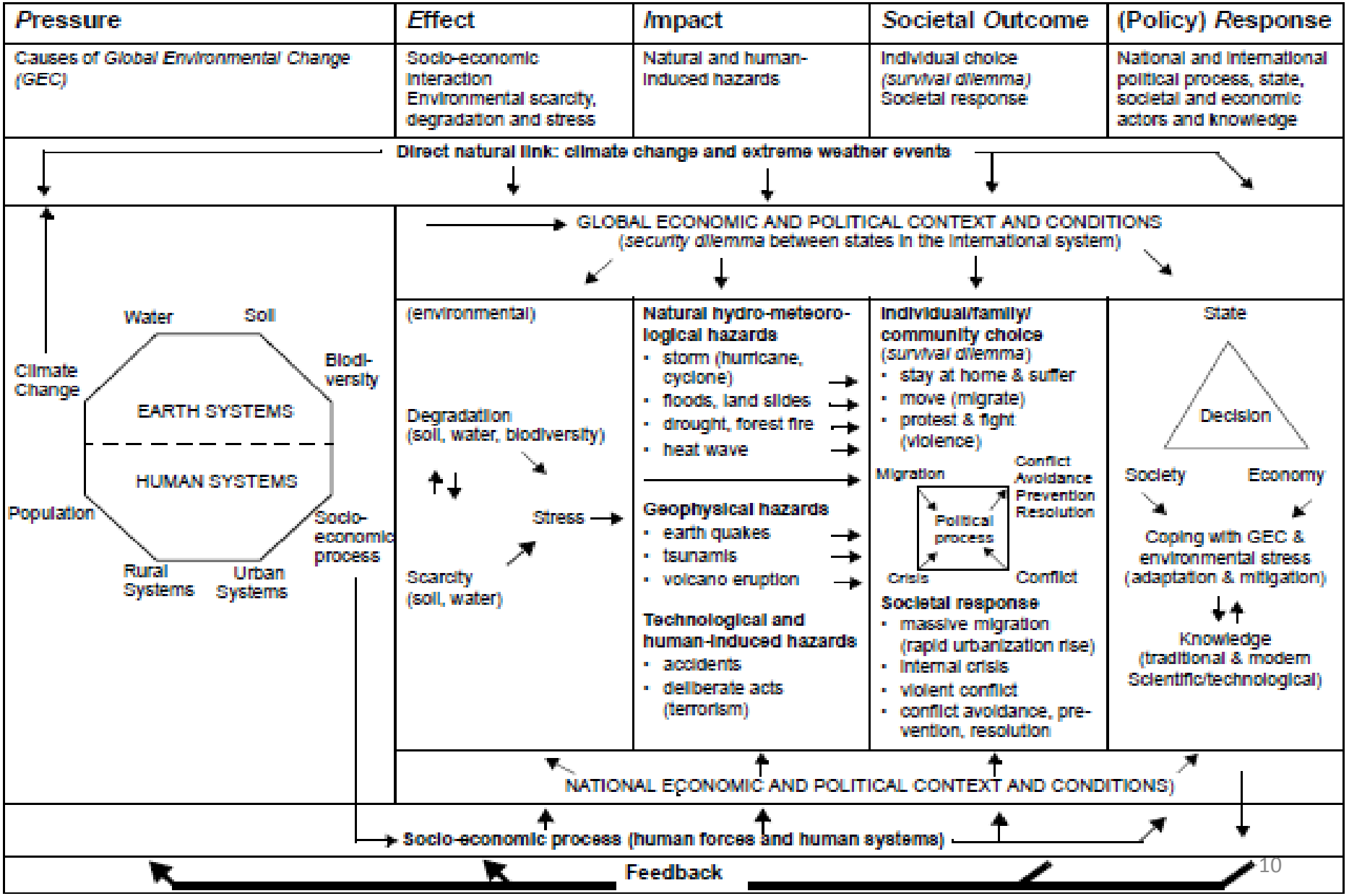
- **UNSG: Human security reports**
  - **2009:Climate change and its possible security implications**
  - **2010 and 2012**
- **IPCC: AR5, WG II, chap. 12**
- Scheffran, Jürgen; Brzoska, Michael; Brauch, Hans Günter; Link, Peter Michael; Schilling, Janpeter (Eds.): **Climate Change, Human Security and Violent Conflict: Challenges for Societal Stability (2012)**

4. UN (2009): Two Debates: Climate Change & Security vs. Sustainable Dev.: Threat Multiplier vs. Minimizer

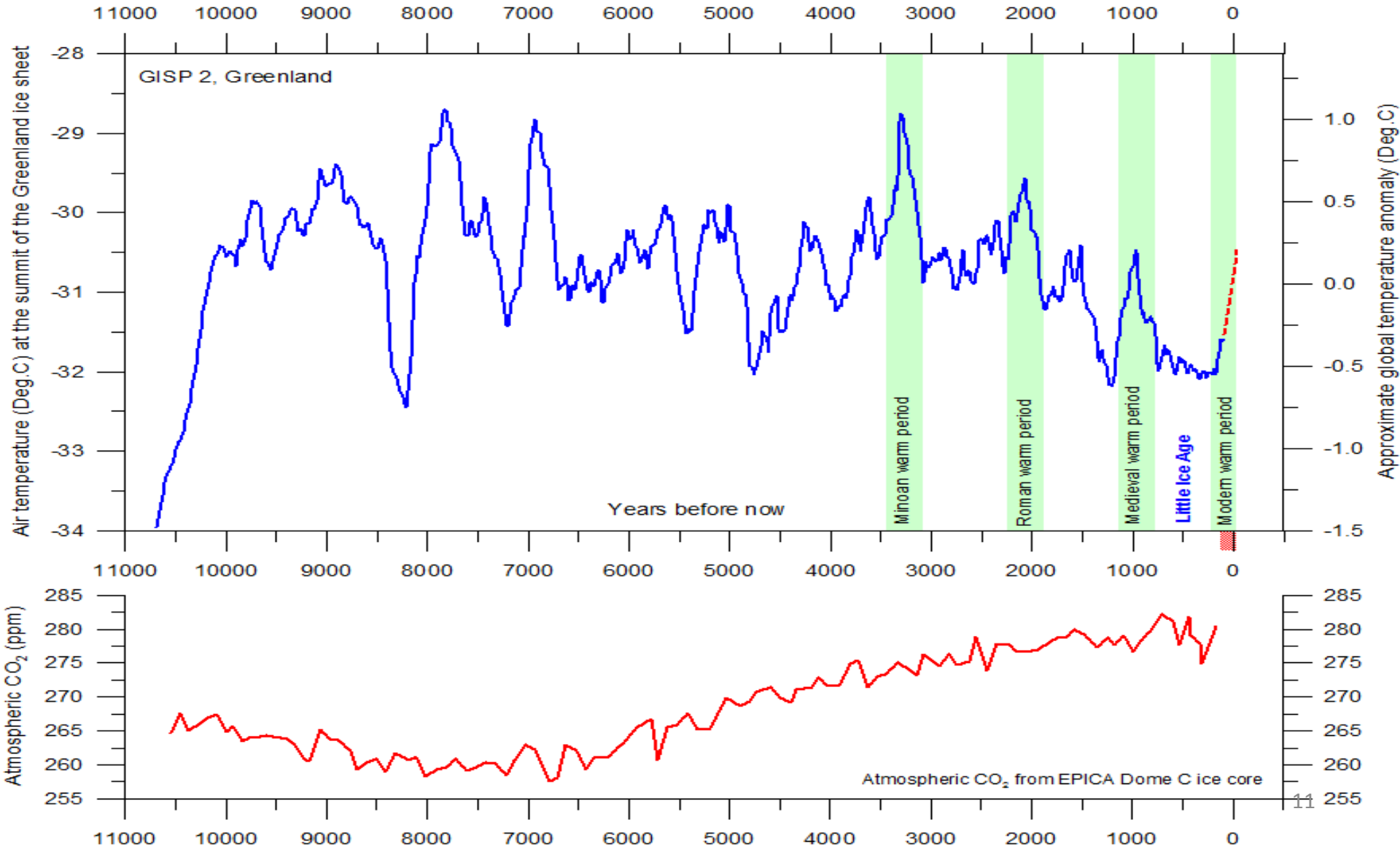


5. We are the Threat - We are the Victims But We & Our Governments do not Act

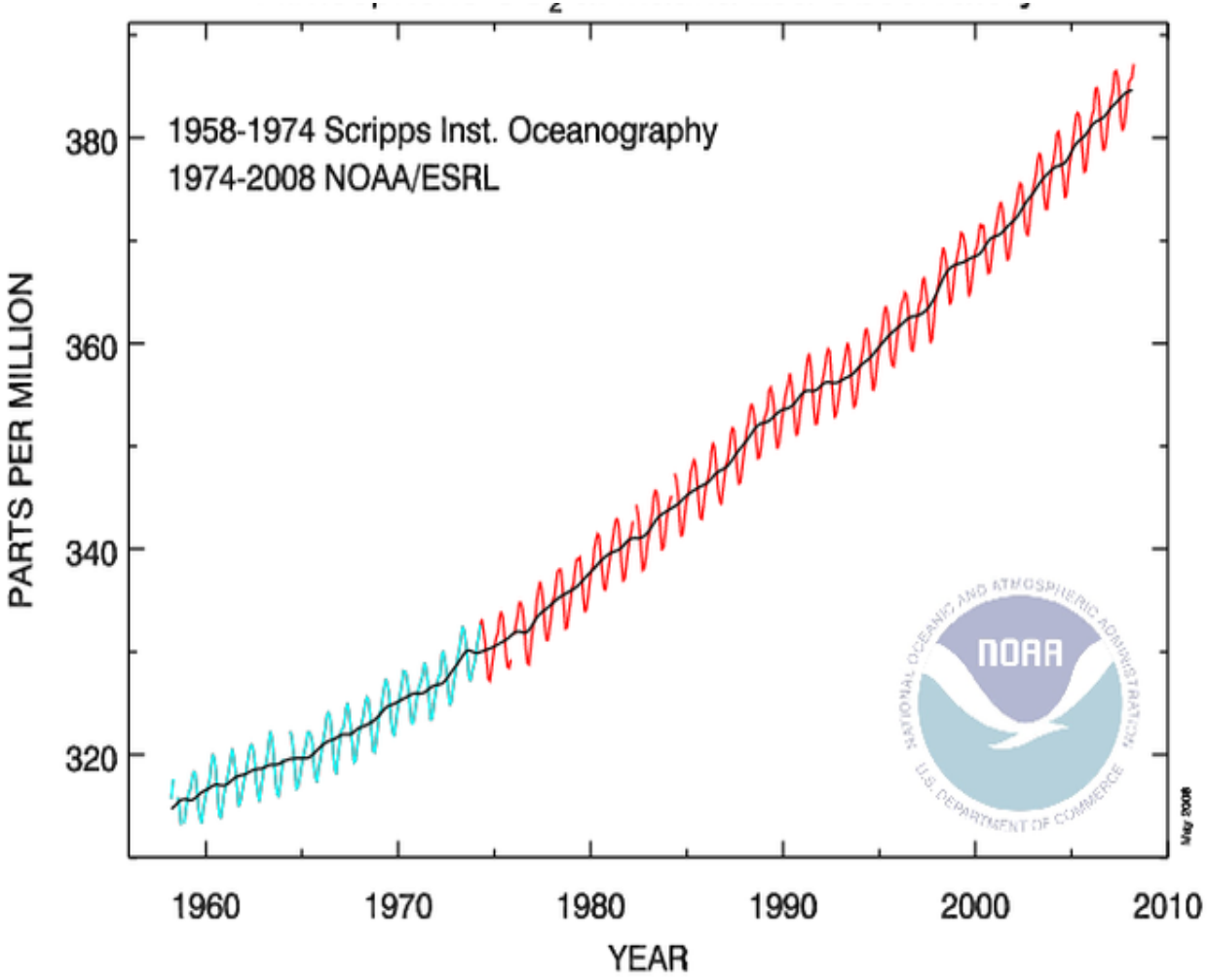
5.1 Analysing Linkages: PEISOR Model



5.2. The Holocene (11600 BP-now)



5.3. Anthropogenic Climate Change in the Anthropocene Era (1750 to 2012)



- GHG concen-tration in the atmosphere
- 1750: 279 ppm, 2013: 400 ppm
- 1/3: 1750-1958: 279 to 315 ppm

208 years:36ppm

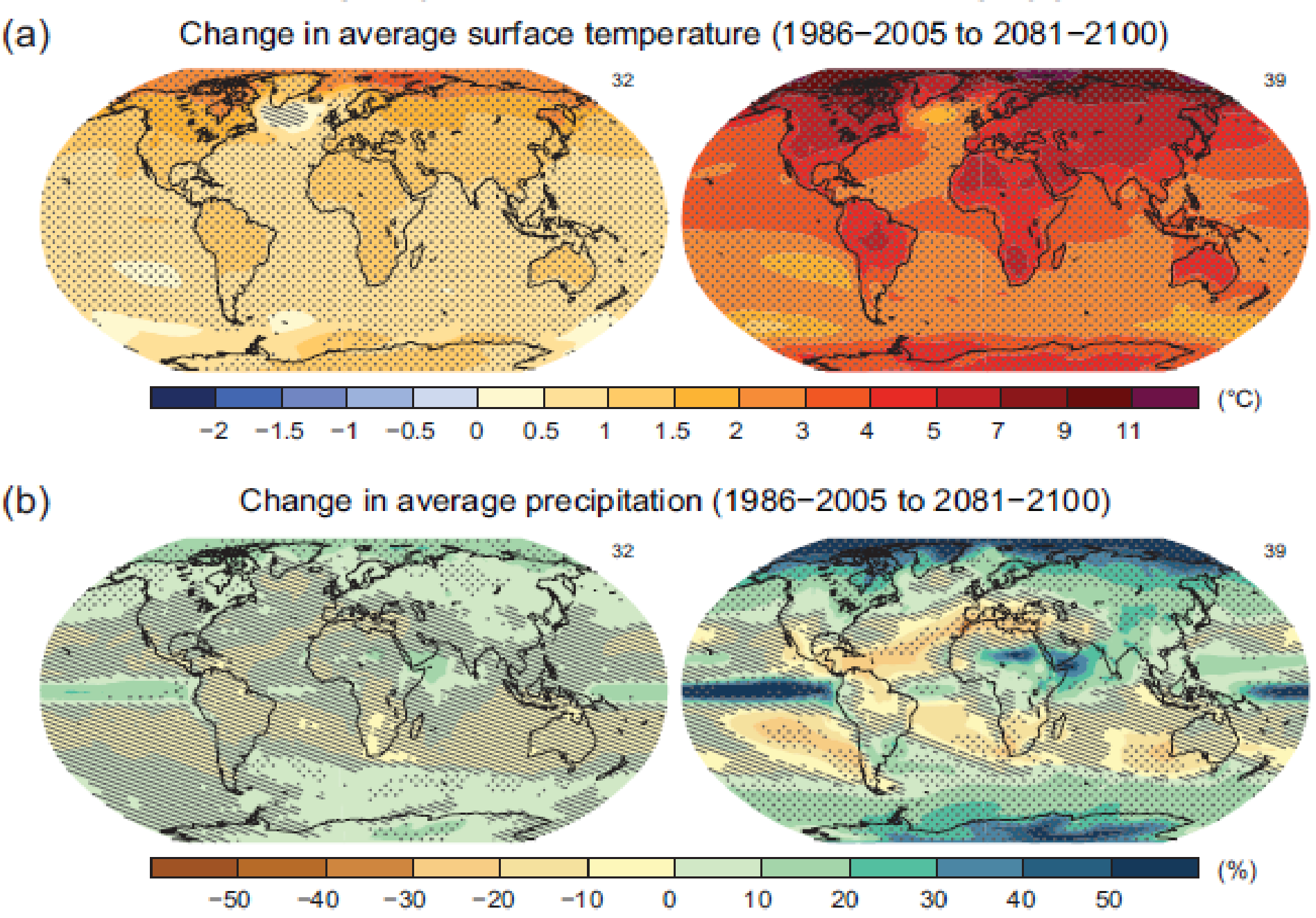
- 2/3: 1958-2012: 315 to 395 ppm

56 years:+85 ppm

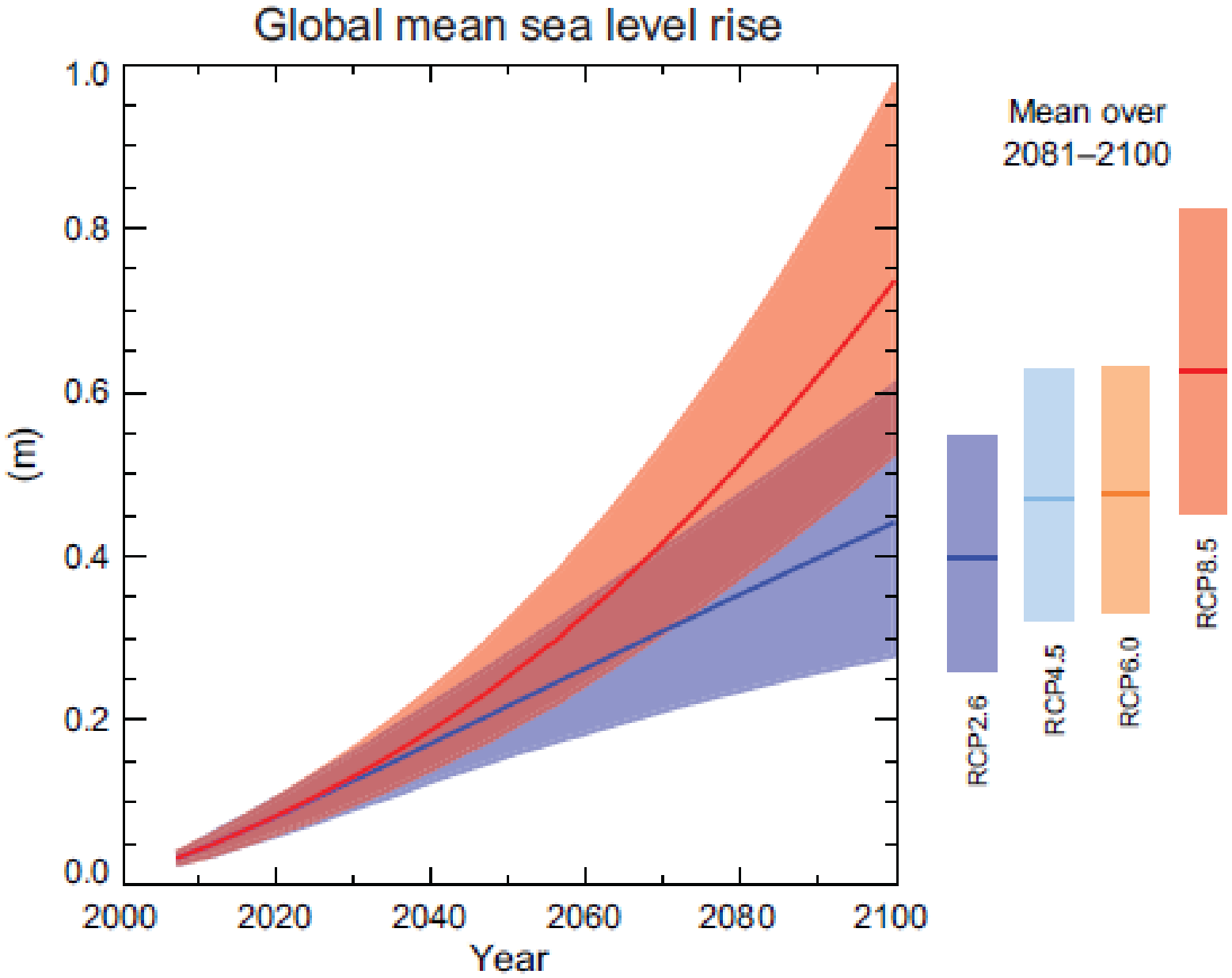
10 years:+20.8ppm

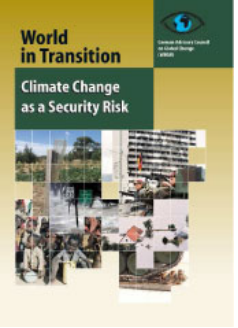
1 year: ca. 4ppm

5.4 IPCC, AR5, WG 1 (2013)



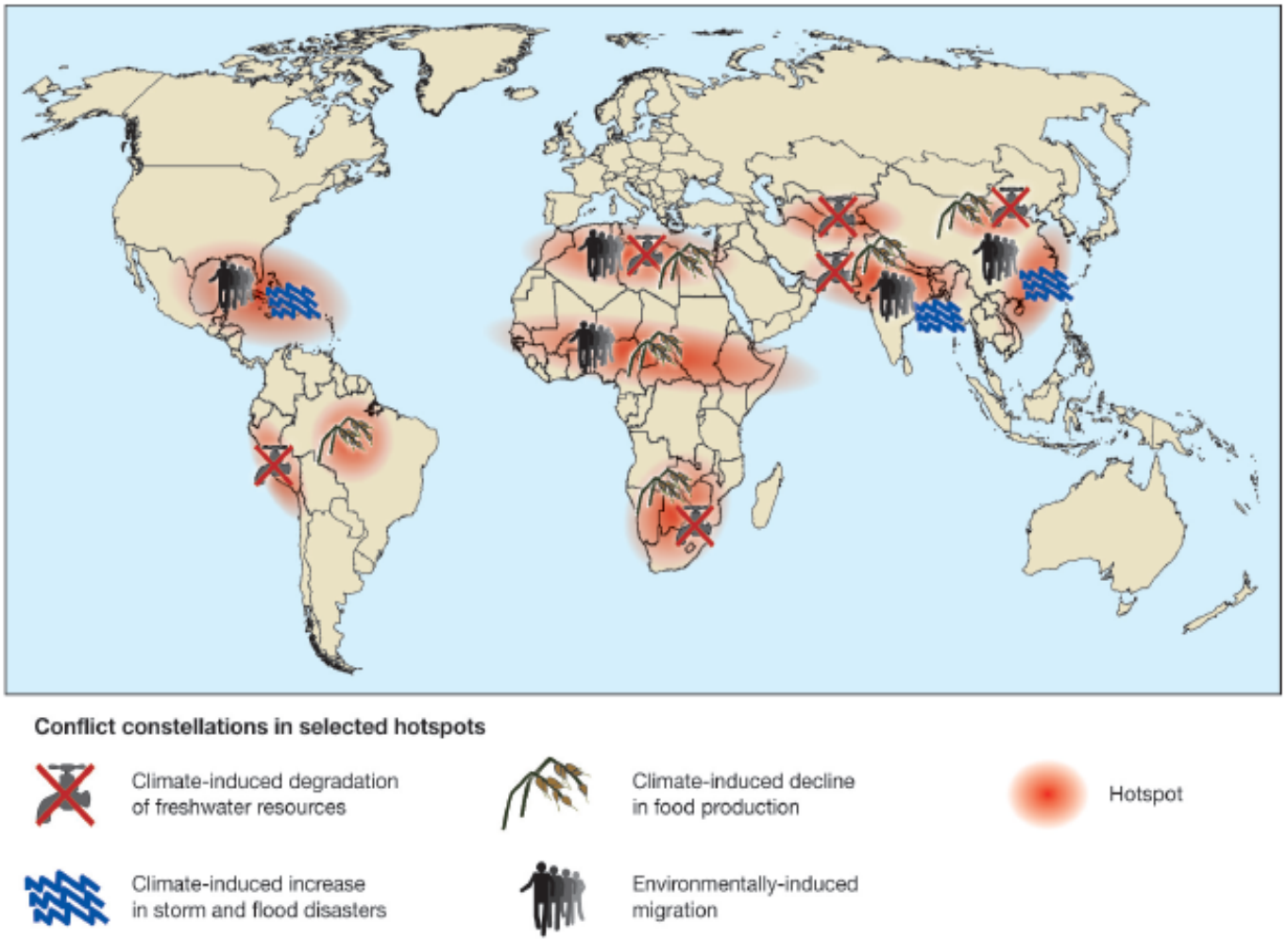
5.5 IPCC, AR5, WG 1 (2013)





6. Climate Change Hotspots: Four Conflict Constellations (WBGU Study)

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



- **Cause: GHG conc. In atmosphere**
- **Physical Effects:**
  - **Temperature inc.**
  - **Precipitation ch.**
  - **Sea-level rise**
  - **Extreme events**
- **Mediterranean**
  - Water
  - Food product.
  - **Migration**
- **South, Central and East Asia**
  - Water
  - Food product.
  - **Migration**
  - cyclone
- **Latin America & Caribbean** Wasser
  - Water
  - Food product.
  - **Migration**
  - hurricanes

6.1. Tropical Cyclones: Threat to Megacities

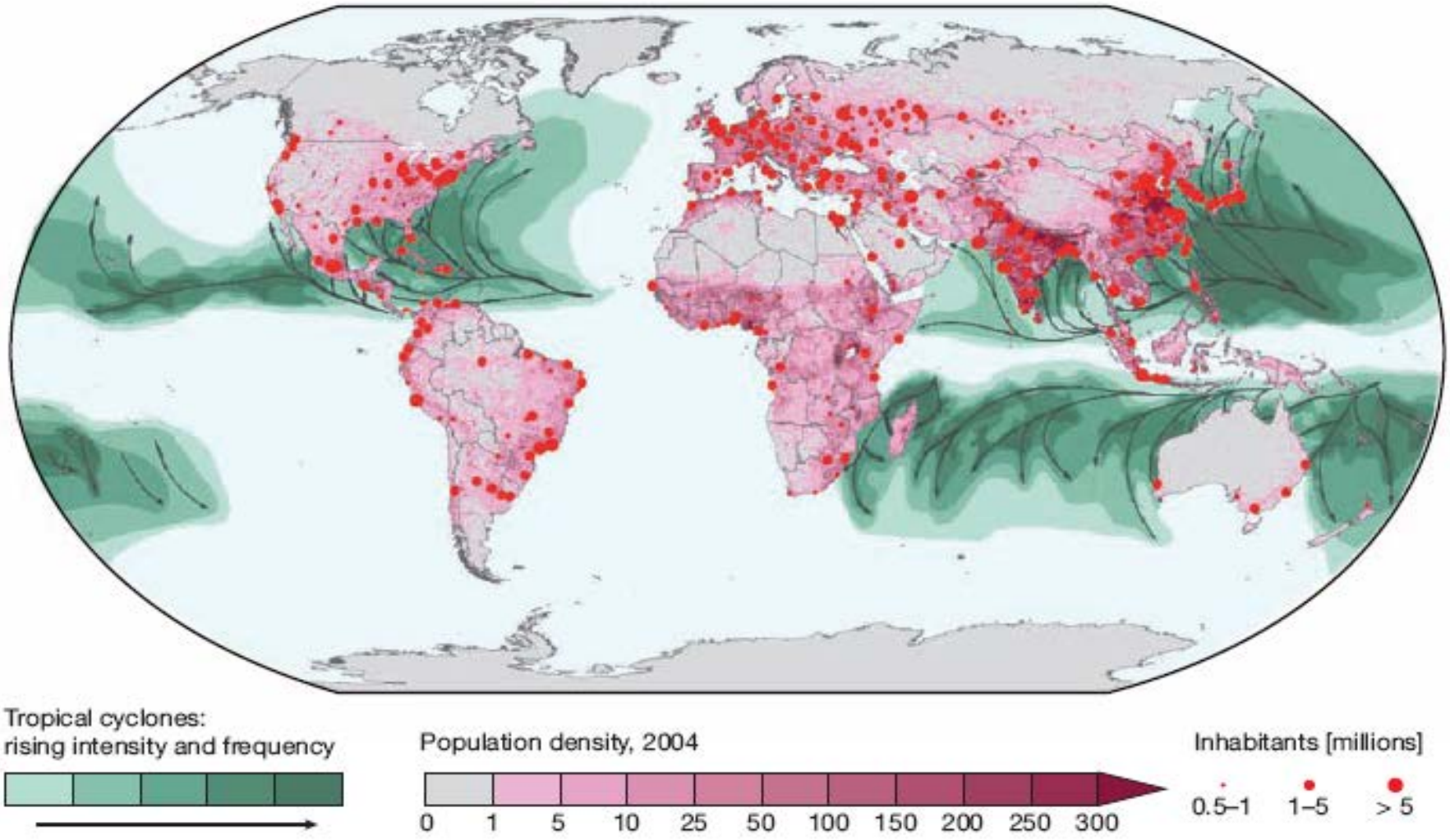


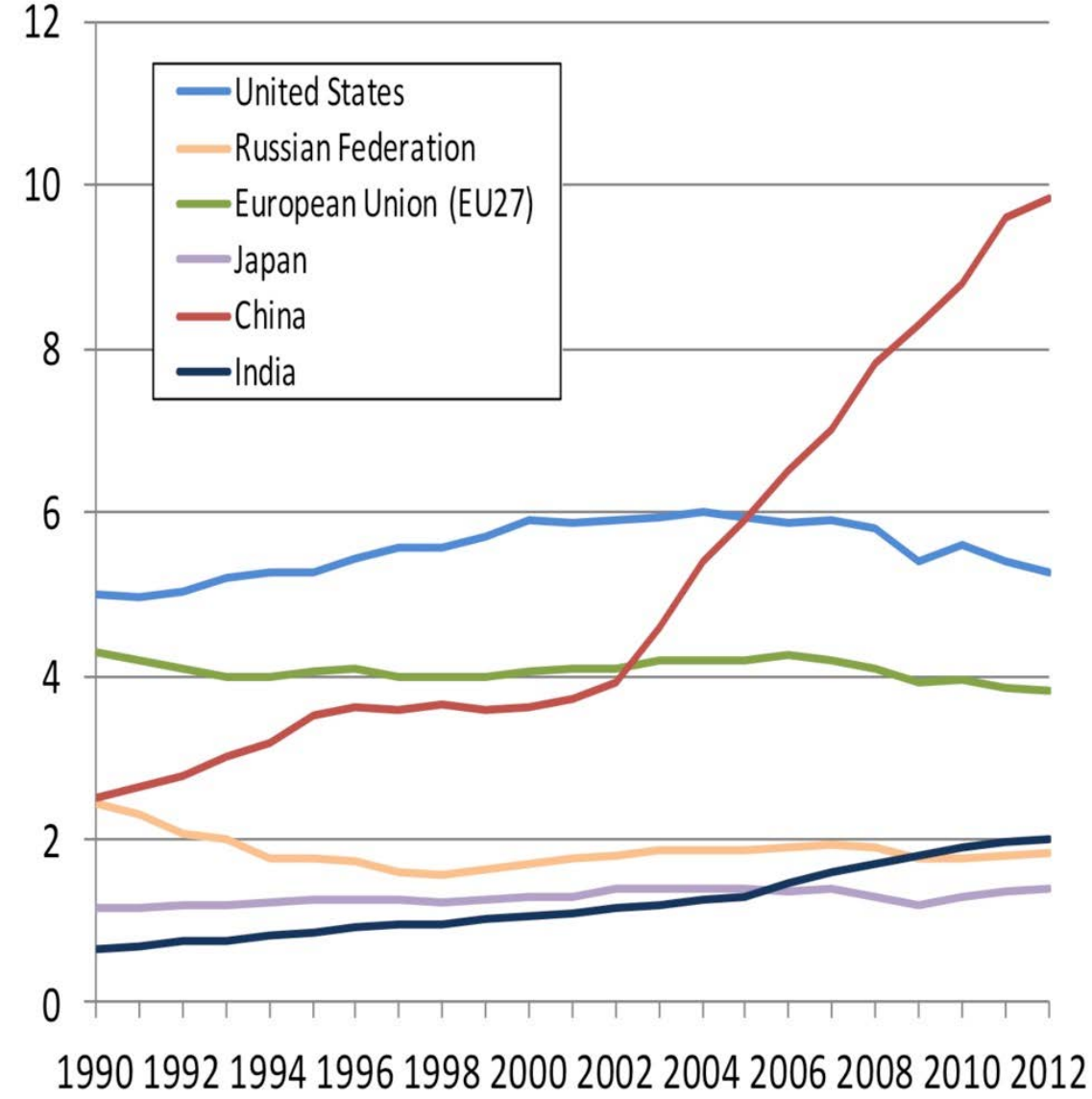
Figure 6.4-1
Tropical cyclone threat to urban agglomerations.
Cartography: Cassel-Gintz, 2006.
Source: WBGU

7. Climate Change Impacts: Political Obstacles and Lack of Political Will

- Global goal of UNFCC (1992) & of Kyoto Procol (1997) to reduce emissions by 2012 failed. **Global GHG emissions increased by 40%.**
- **Major G-7 countries failed to reduce their GHG emissions** (US newer ratified KP, Canada withdrew in 2012, Japan no target: 2020)
- **In democracies electorate voted for opponents of climate change** initiatives [Canada (Harper), Australia (Abbor); Japan (Abe)] or **parliaments blocked them** (US Congress blocked Obama‘s energy bills).
- **Economic interests** (oil: tar sands, gas: fracking, coal) of carbon energy sector succeeded prevented GHG reduction obligations.
- **Threat of GHG emissions increase will remain**
- **Democracies face a „climate paradox“: Accept knowledge of anthropogenic climate change but fail to act. Rather emissions are projected to increase and thus also their physical effects**

7.1 Trends in Global CO2 Emissions (1990-2012):

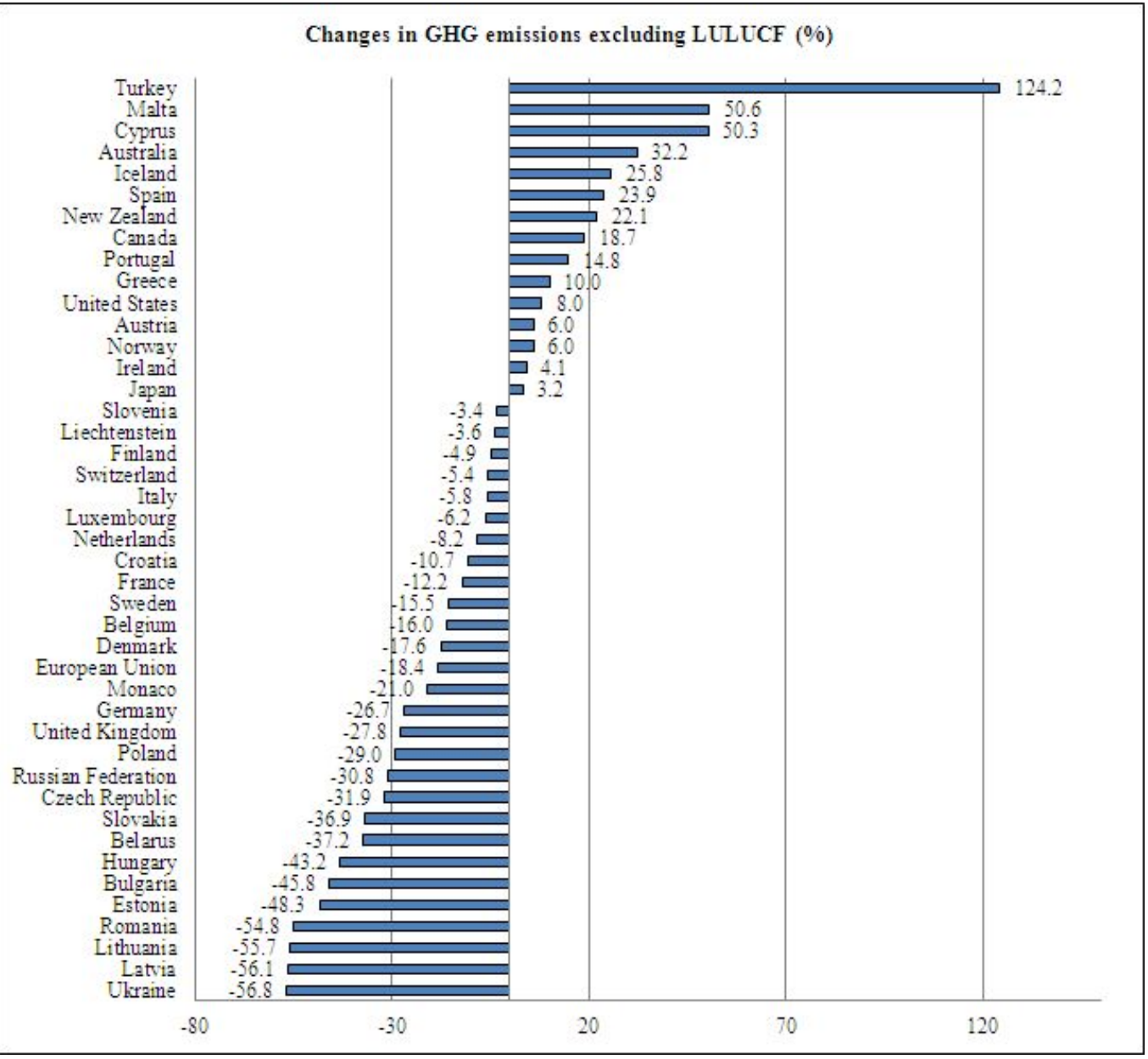
(Source: 2013 Report (PBL Netherlands Environmental Assessment Agency and European Commission Joint Research Centre, 2013).



Major changes (1990-2012):

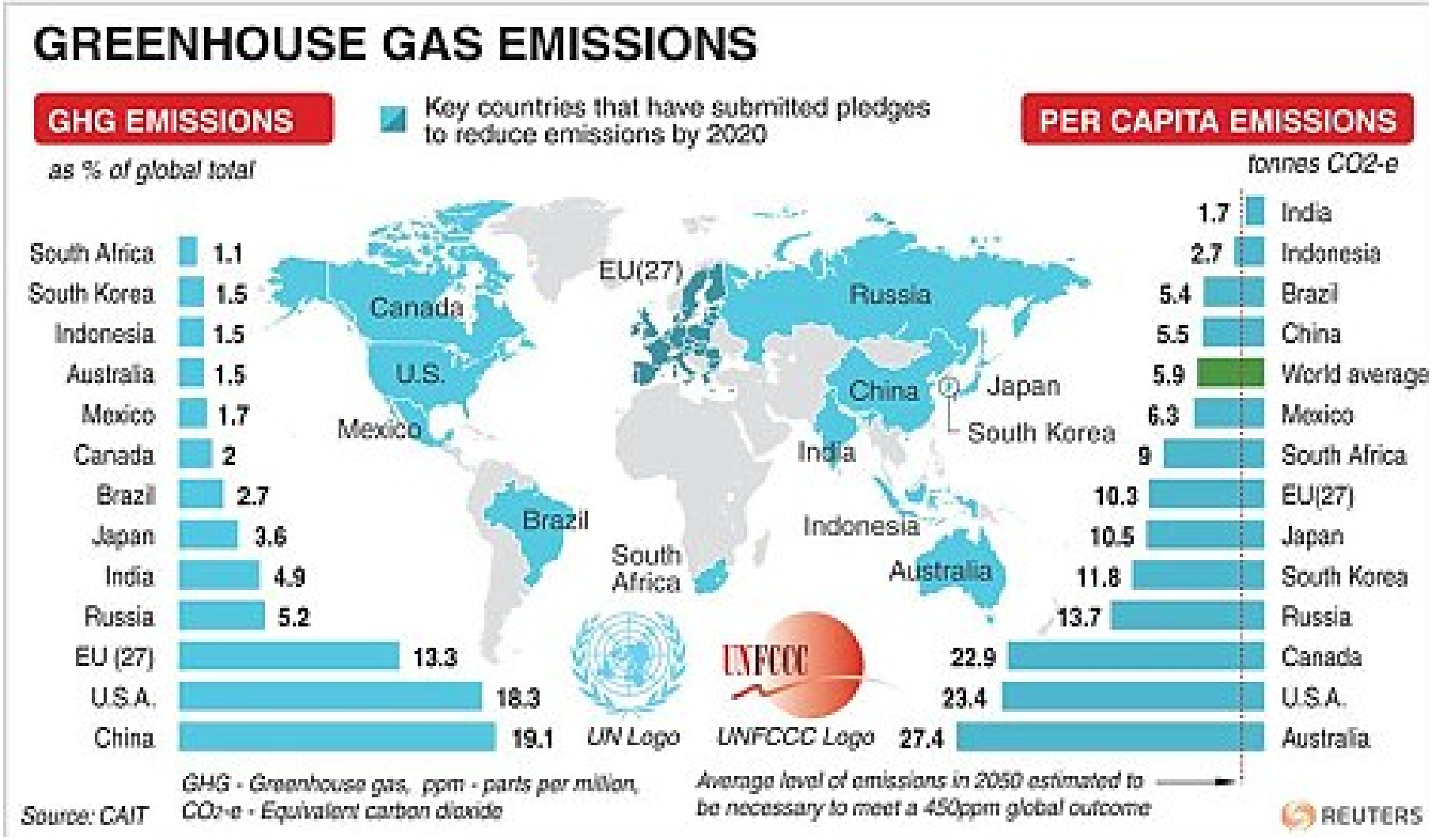
- **China** surpassed USA/EU
- **India** surp. Japan/ Russia
- EU & USA decrease of their global share but
- US continued to increase
- EU countries reduced GHG emissions (average)

7.2 Climate Change Performance (UNFCC)

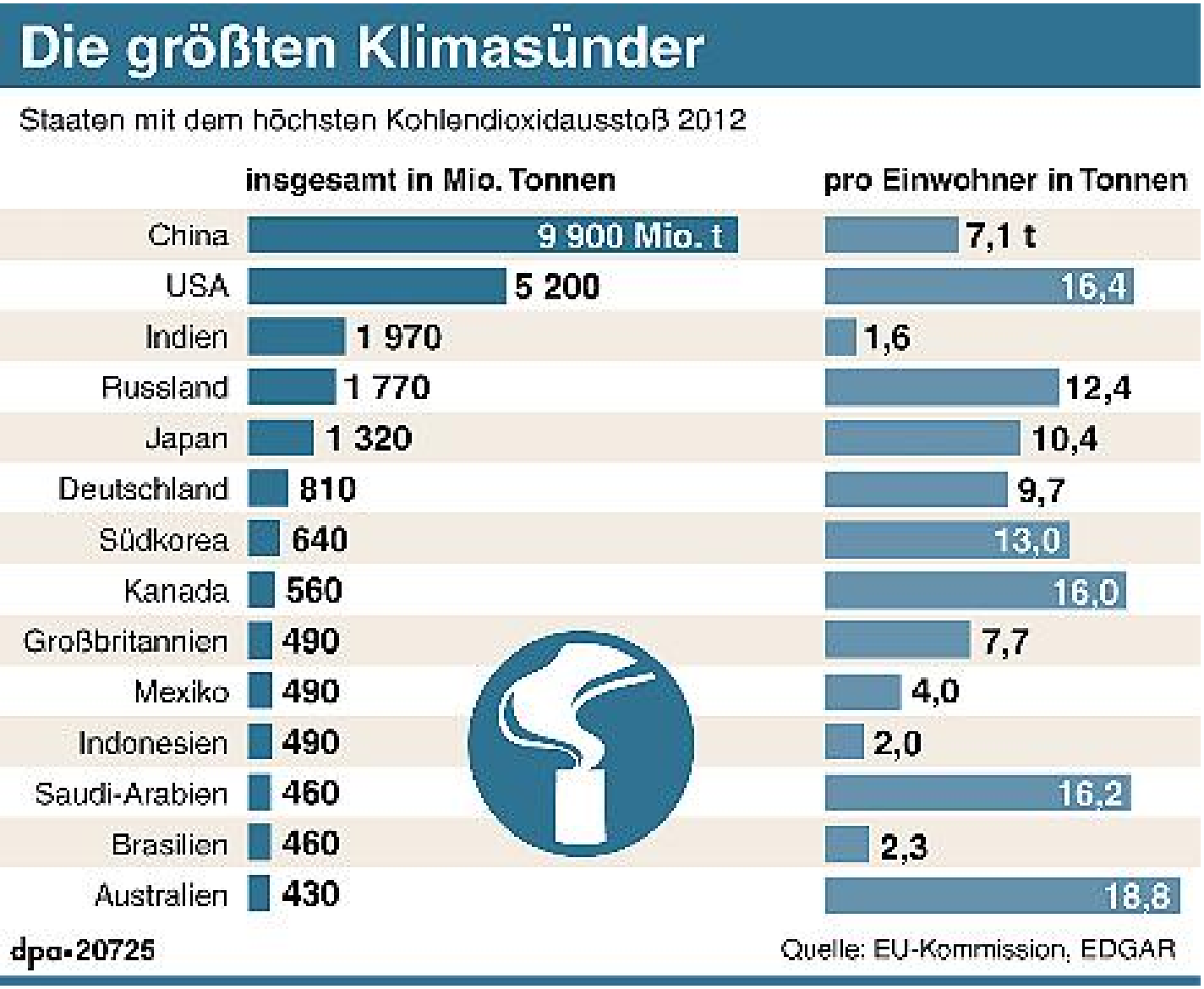


- **1990-2011 (Annex A/B countries with obligations)**
- **G-8 countries (Laggards)**
  - **Canada (18.7%)**
  - **USA (8.00%)**
  - **Japan (+3.2 %)**
- **Reductions:**
  - **Italy (-5.8%)**
  - **France (-12.2%)**
  - **Germany (-26.7%)**
  - **UK (-27.8%)**
  - **Russia (-30.8 %)**
- **Differences**
  - **Democratic Laggards:** Australia, USA, Cana-da, S. Korea, Japa

7.3. GHG emissions of global total & per cap.



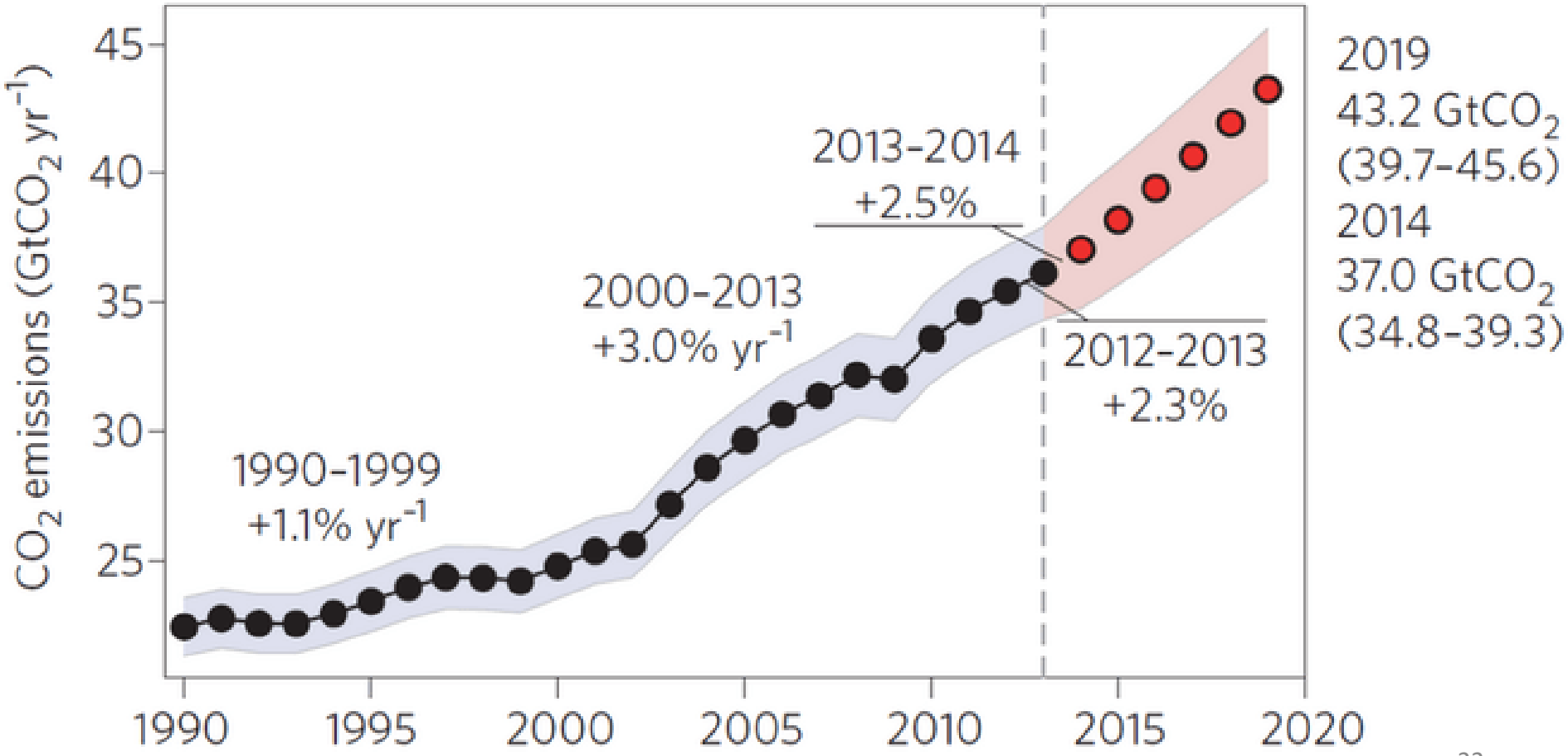
7.4. GHG emissions (county/capita) (EU, 2012)



- **Per tons (I)**
  China & USA largest emitters
- **Per capita(R)**
  - **Australia (18.8)**
  - **USA (16.4)**
  - Saudi Arabia (16.2)
  - **Canada (16.0)**
  - **S. Korea (13.0)**
  - Russia (12.4)
  - Japan (10.4)
  - Germany (9.4)
  - UK (7.7)
  - **China (7.1)**
  - **India (1.6)**

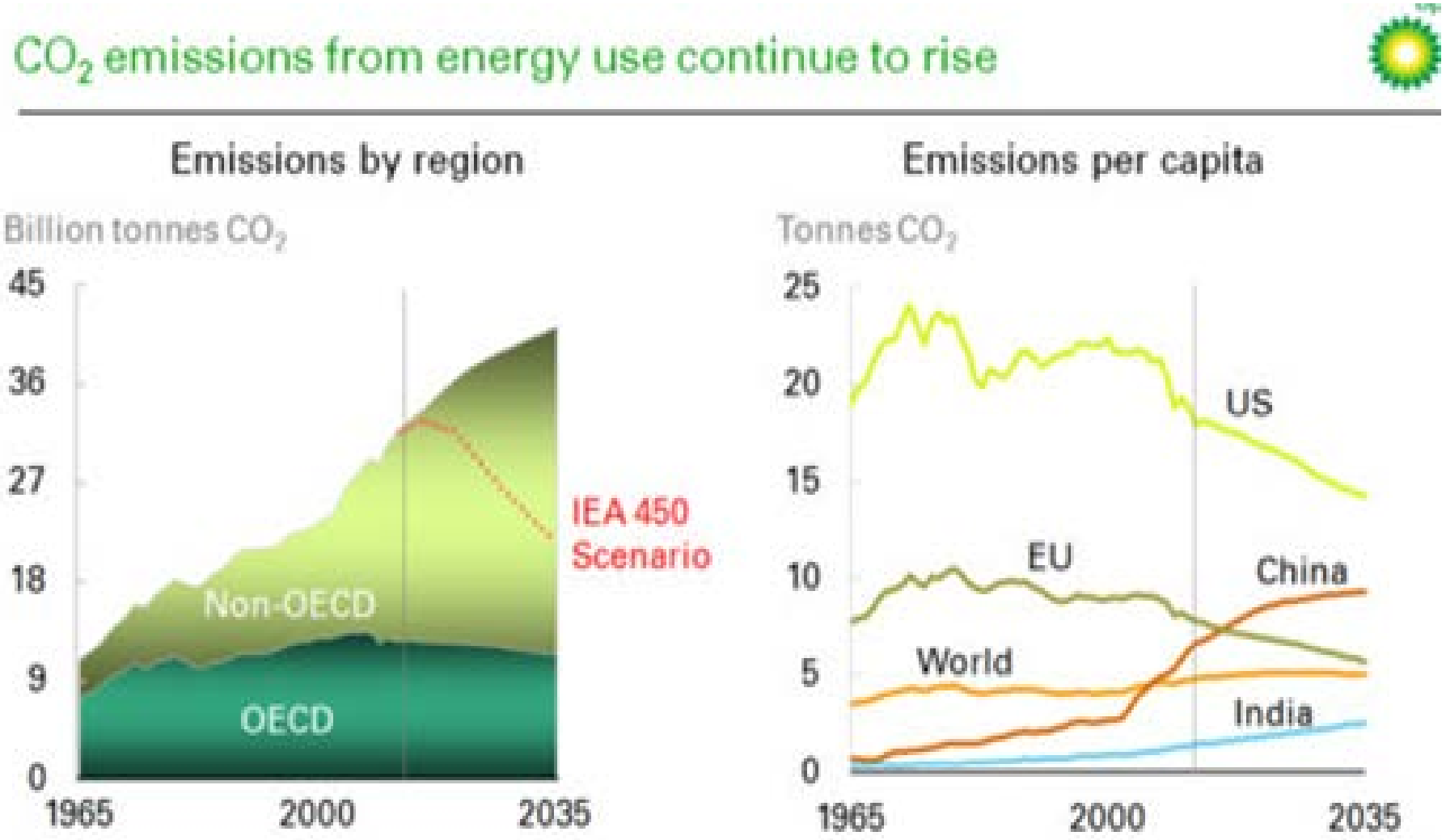
7.5 Global CO2 Emissions from fossil fuel and cement production (1990-2014) - Projections (2020)

Source: CDIAC, Friedlingstein et al. 2014, Global Carbon Project 2014. (CSIRO, 2014)



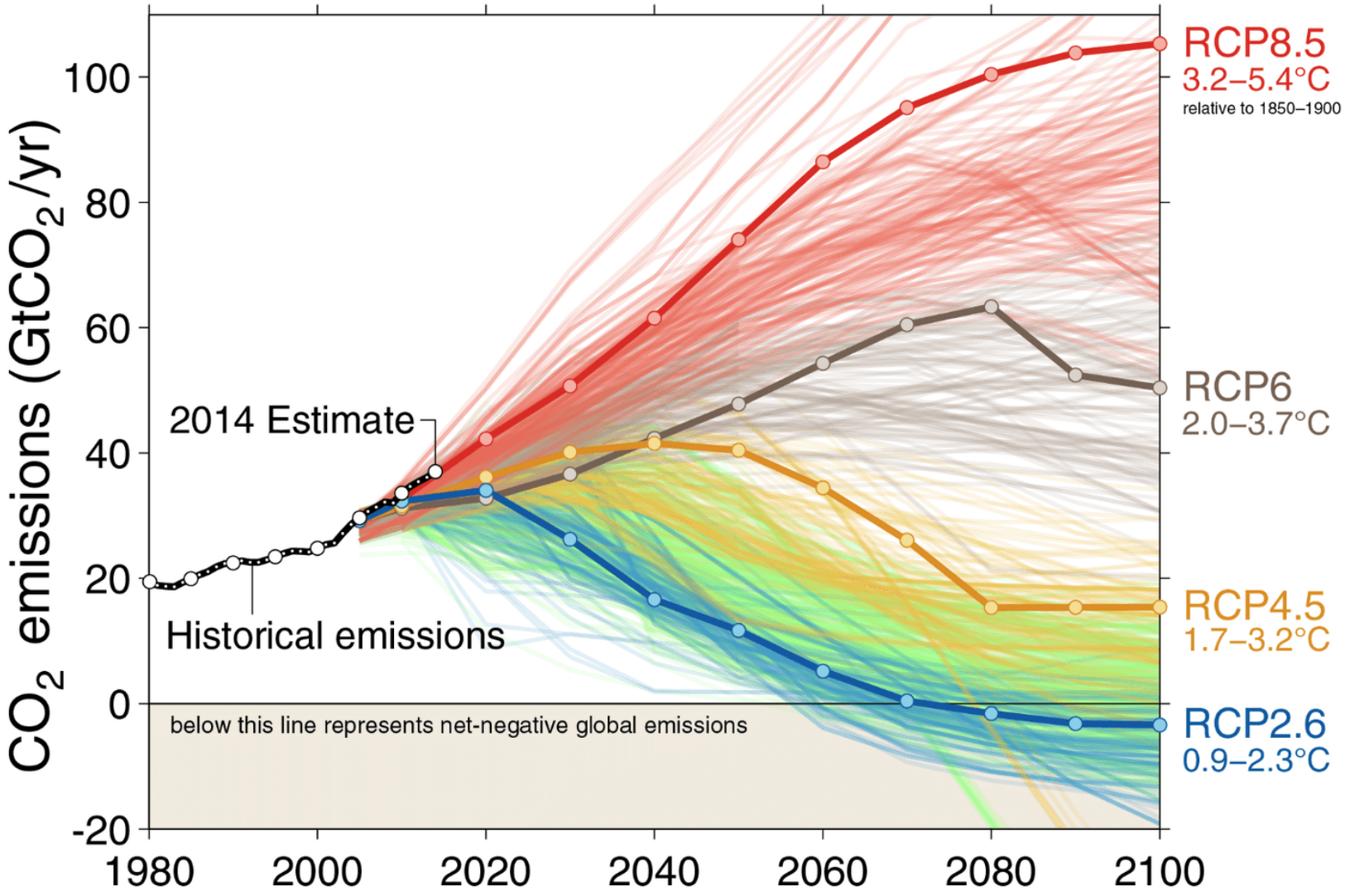
7.6 CO2 Emissions from energy use (1965-2035)

Source: BP: Energy Outlook 2035 (BP 2014)



Energy Outlook 2035

7.7 Global O2 emissions from human activity for four different possible futures in IPCC scenarios (2013). Source: Fuss et al. 2014 [CSIRO, Climate Resposne 2014]



PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY A

7.8 From a 2°C to 4°C world by 2100

- **Goal of UNFCC to stabilize CO2 (GHG) emissions with an increace of global average temperature of 2°C by 2100 is unrealistic**
- **Copenhagen Accord (2009):** increase in global temperature should be below 2°C despite growing views that this might be too high.
- **UK 4°C conference (2010)**: Even with strong political will, chances of shifting the global energy system fast to avoid 2◦C are slim. **Trajectories of eventual temperature rises of 3◦C or 4◦C are more likely with serious implications of these larger temperature changes.**
- **PIK Study for World Bank (2012):** ***Turn Down the Heat*** says that the world is on a path to a 4 degree Celsius(4°C) warmer world by end of this century and current GHG pledges will not reduce this by much.
- **PIK Chapter (2014):** *"Critical thresholds in the Earth system which, once breached, can give rise to non-linear impacts. … The ramifications of non-linear impacts and their uneven distribution are likely to be deleterious to the stability and wellbeing of our societies and will, we hope, never be realized. .. if we wish to understand the challenges associated with a 4°C world, such a world needs to be imagined.*
- **The term "4°C world" is used as shorthand for an increase of 4°C in global mean temperature above pre-industrial levels by the end of the century.**

7.9 Climatological hazards may pose political & security impacts

One physical effects of CC: increase in **hazards:** storms, floods, drought, forest fire heat waves
that **may pose political and security consequences**

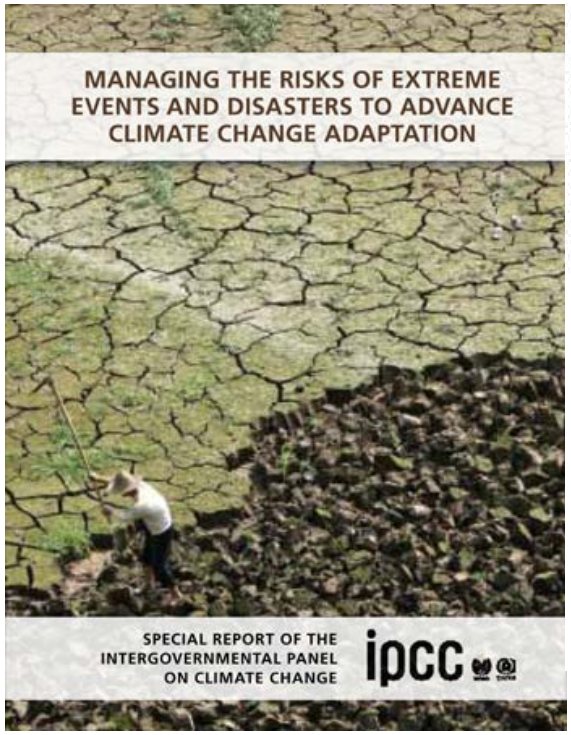
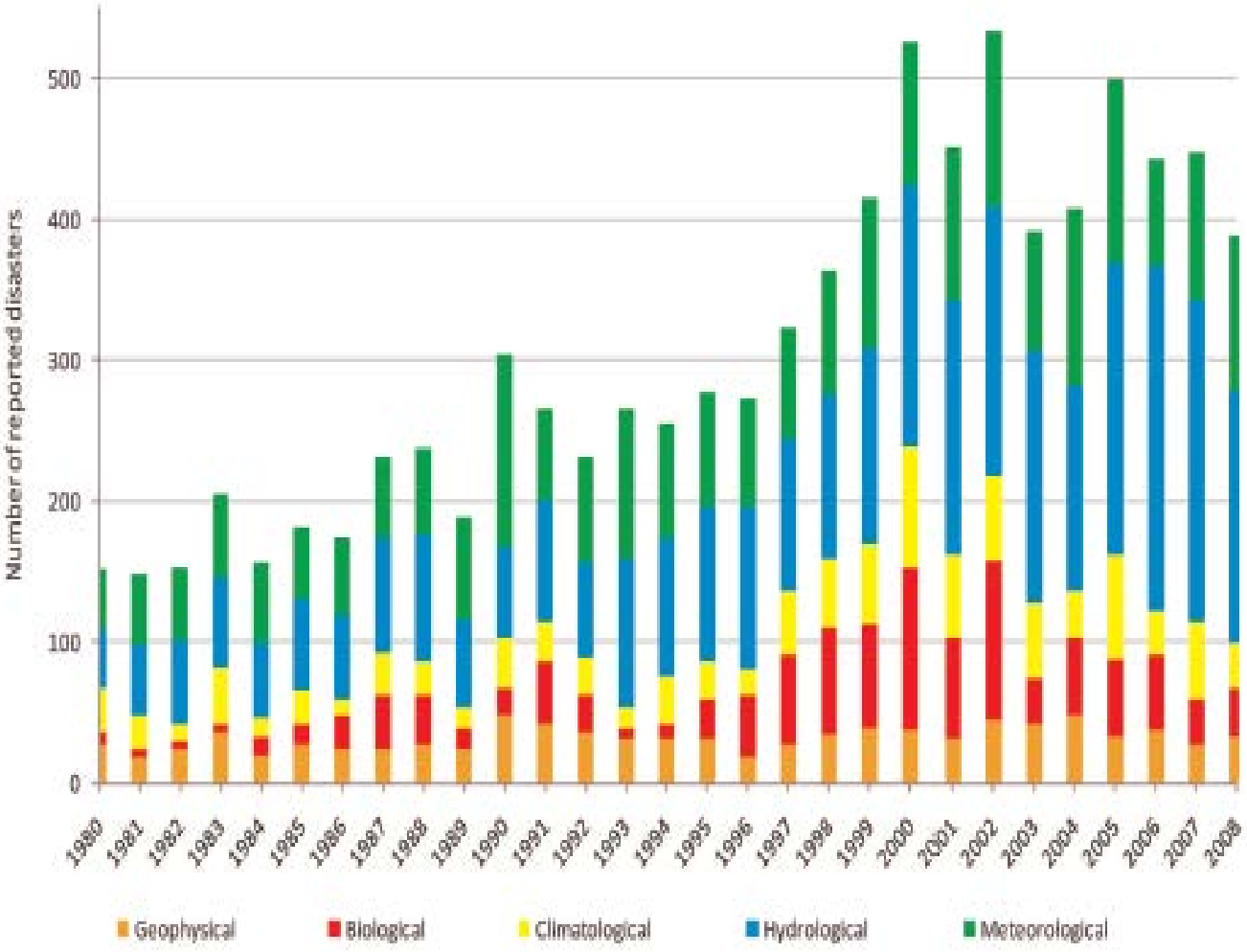
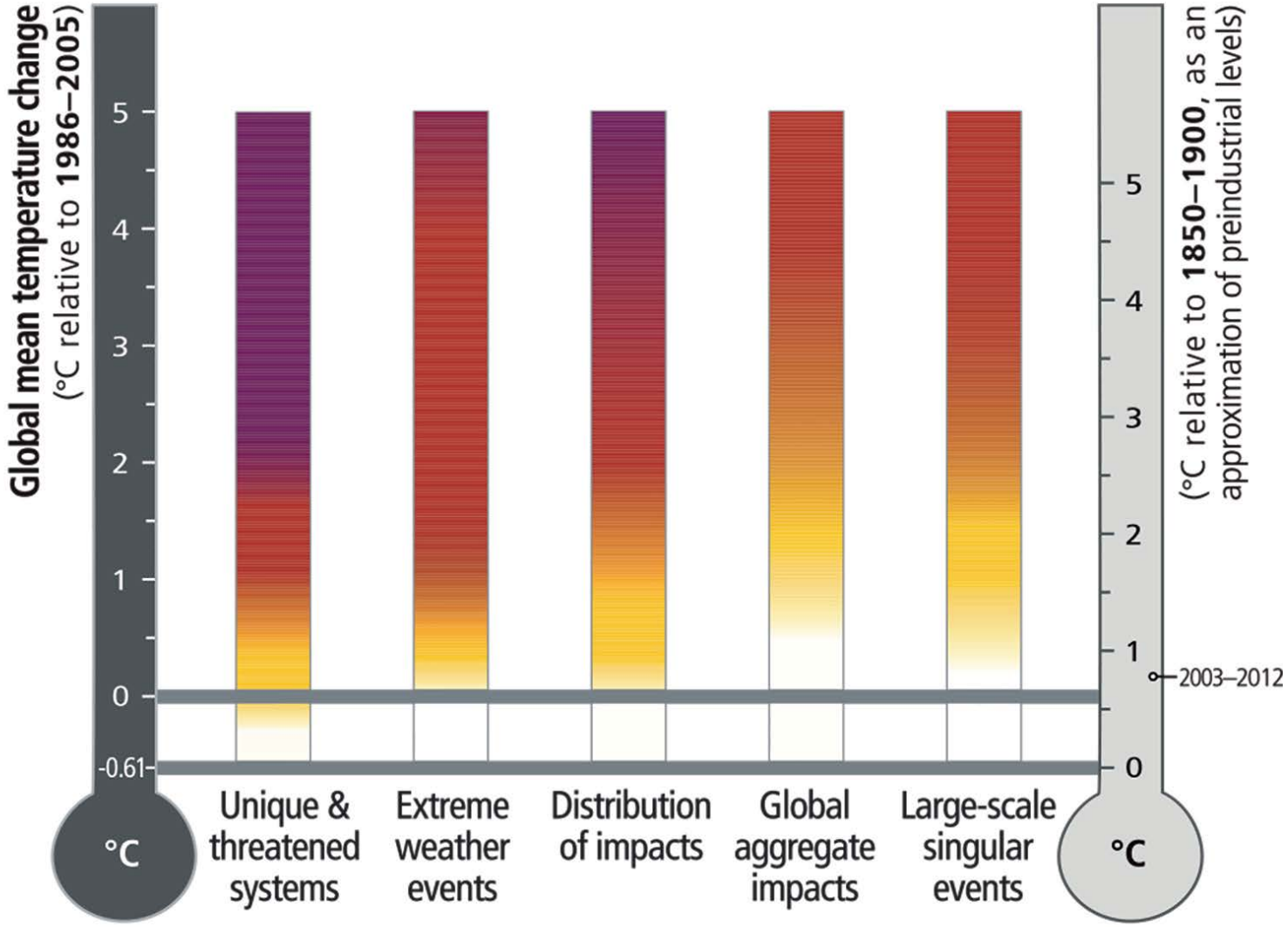
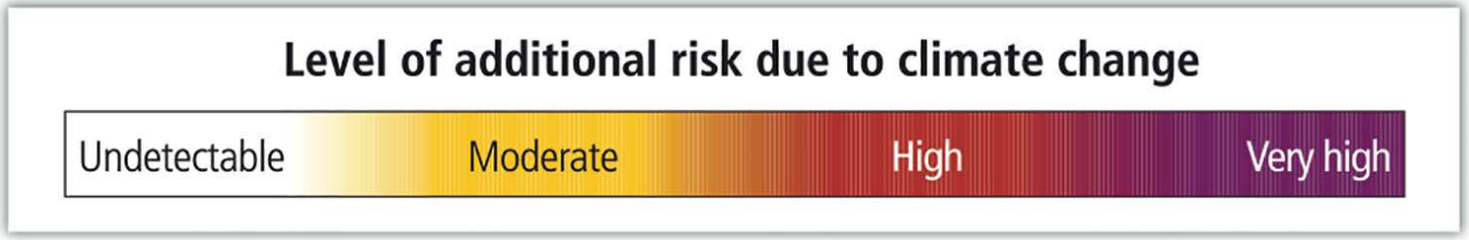


Figure 40.5: Trend in global reported natural disaster occurrence per sub-group. **Source:** CRED, EM-DAT.



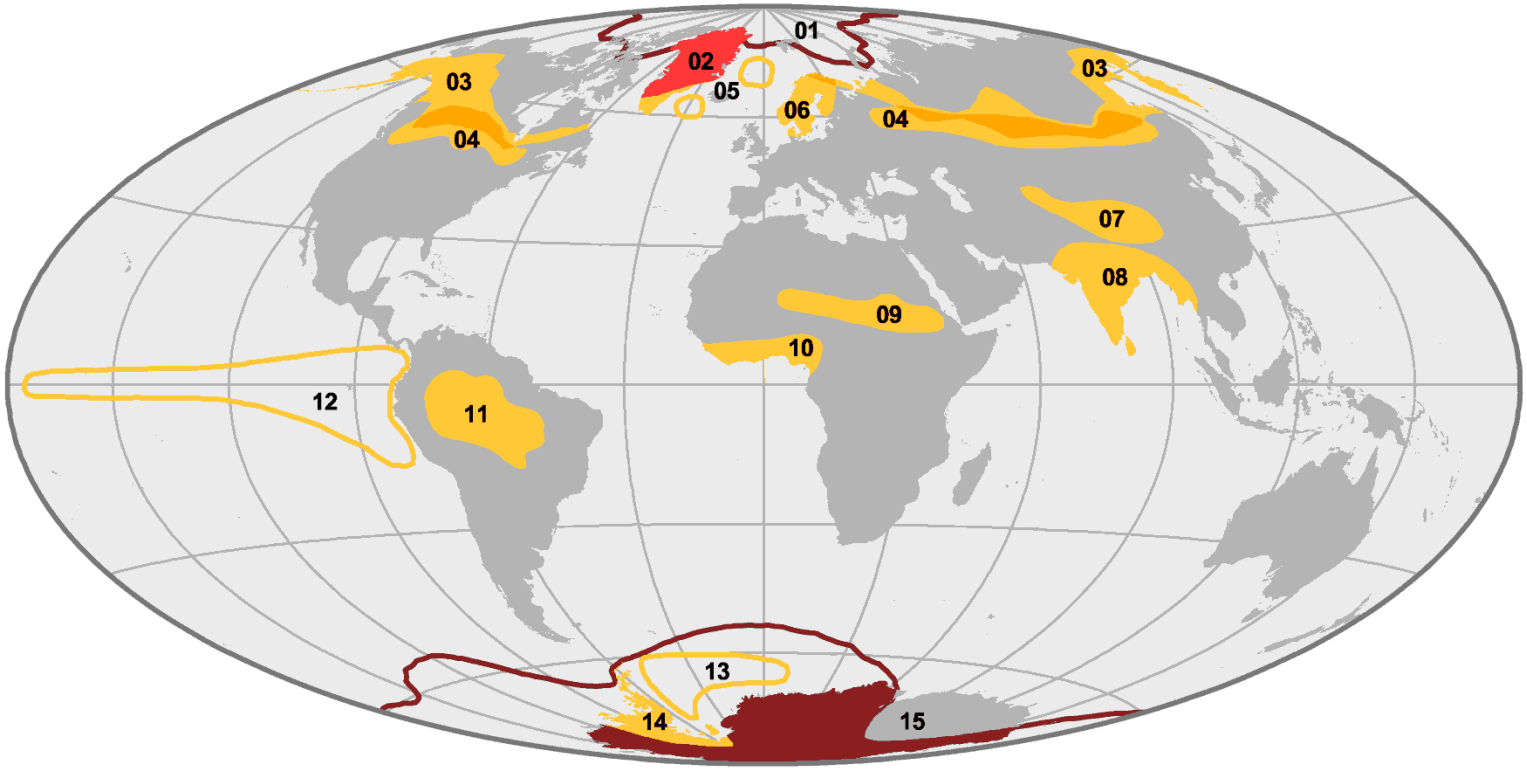




7.10 IPCC AR 5, WG II: 13

- Serious effects of **linear & nonlinear consequences** (tipping points)
- May pose manifold security threats for
- human beings, humankind (human security) & states (inter (nat.) security

Potential Anthropogenic Tipping Elements in the Earth System



tipped already | in limbo | still stable

01 Arctic Sea Ice Loss

02 Greenland Ice Sheet

03 Thawing Permafrost / Methan Escape

04 Boreal Forest Dieback

05 Suppression of Atlantic Deep Water Formation

06 Climatic Change-Induced Ozon Hole over Northern Europe

07 Albedo Tibetan Plateau

08 Indian Monsoon

09 Re-Greening Sahara / Sealing of Dust Sources

10 West African Monsoon

11 Dieback of Amazon Rainforest

12 Southern Pacific Climate Oscillation

13 Antarctic Deep Water Formation / Nutrients Upwelling

14 Westantarctic Ice Sheet

15 Antarctic Ozone Hole

7.12. Our Governments do not Seem to Care UN Climate Change Negotiations are Blocked!

- **UNFCC (1992)**
- **Kyoto Protocol (1997)**
  - Annex I country: obligations
  - Non-annex I countries: no reduction obligations
- **COP 15 (Copenhagen) 2009**
- **COP 16 (Cancun) 2010**
- **COP 17 (Durban) 2011**
- **COP 18 (Doha) 2012)**
- **COP 19 (Warsaw) 2013**
- **COP 20 (Lima, Peru) in 2014**
- **COP 21 (Paris) in 2015**

Goal by 2015 agreement to enter into force by 2020: At present doubtful

8. Long-term security challenges and short-termism (media & politics)

- **2007-2008**: high political interest in climate security
- **2008ff:** Containing global financial &Euro crisis and its severe consequences: economic crisis management
- **2011:** Climatic causes: food price increases: Arab Spring (Mazo, IISS thesis; Fetzek/Mazo, Survival Oct./Nov. 2014)
- **2014:** Multiple (non) traditional security threats (Syria, Gaza, Ukraine, ISIS, Ebola: security crisis management
- **Difficulty to keep long-term ‚abstract' security impacts of CC in the media (e.g. synthesis report of IPCC, 27-31 October 2014 in Copenhagen, Denmark)**

9. Reactive Politics – Lack of Proactive Policies

Declaratory Politics: Dominance of Reactive Politics

- **"Securitization" (Theory of Ole Waever): since 2007 Climate Change became an issue of utmost importance**
- **Securitization failed after Copenhagen (2009)**: was declared an issue of utmost importance but since then **no extraordinary measures were taken**. (**securitiz. failed!**)
- **Economic interest groups fuelled climate scepticism (since 2009)**

IPCC AR5 (2013/2014) & ch. 12 WG II on Climate Change & Human Security:

- **Human security will be progressively threatened as the climate changes (high agreement, robust evidence)**
- **Climate change will have significant impacts on forms of migration that compromise human security (high agreement, medium evidence)**
- **Some of the factors that increase the risk of violent conflict within states are sensitive to climate change (medium agreement, medium evidence).**
- **People living in places affected by violent conflict are particularly vulnerable to climate change (high agreement, medium evidence).**
- **Climate change will lead to new challenges to states and will increasingly shape both conditions of security and national security policies (med agreement, evid.).**
  - Physical aspects of climate change, such as sea level rise, extreme events and hydrologic disruptions, pose major challenges to vital transport, water, and energy infrastructure . Some states are experiencing major challenges to their territorial integrity, including, small island states and other states highly vulnerable to sea level rise. Some transboundary impacts of climate change, such as changes in sea ice, shared water resources, and the migration of fish stocks, have the potential to increase rivalry among states. The presence of robust institutions can manage many of these rivalries such that human security is not severely eroded

10. Two Alternative Policy and Scientific Debates Business-as-Usual vs. Sustainability Transition

Business-as-usual:

- **Hobbesian thinking (power)**
  - police/military means to cope with consequences, e.g. border US/Mexico)
  - We must be able to operate our forces under conditions of climate change
  - US Army/Navy major research funder
  - **Cannot fight climate change but adapt and cope with it societal effects**
- **Cornucopian technical fixes**
  - **We must not change our production, consumption, lifestyle**
  - **Technology will solve** (CCS, clean coal, fracking of gas etc,)
  - **Geoengineering offers solutions** (without due assessment on their environmental impact)

Sustainable Development

- **Sustainability Revolutions**
- **Sustainability Transition**
  - Green growth
  - Efficiency revolution
  - Decoupling (growth & energy)
  - New forms of governance
- **Decarbonization of energy sector & economy**
  - 80-95% Reduction of GHG by 2050 (EU Longterm goal)
  - **Sustainable production & consumption**
  - **Change of way of life (life style)**

10.1. Alternative Visions & Strategies

- **Both visions refer to totally different strategies for coping with Global Environmental Change (GEC):**
  - In the first vision of **business-as-usual,** Cornucopian perspectives predominate that suggest primarily market mechanisms, technical fixes, and the defence of economic, strategic and national interests by adaptation strategies that are in the interests of OECD countries.
  - In the alternative vision of a **comprehensive transformation, a sustainable perspective** has to be implemented and developed into effective new strategies and policies with different goals and using different means, based on global equity and social justice.

10.2. Consequences of Both Visions

- The consequences of both opposing scientific visions and the competing policy perspectives are:
  - **The vision of business-as-usual** with minimal reactive adaptation and mitigation strategies will most likely increase the probability of a '**dangerous climate change' or catastrophic GEC** with both linear and chaotic changes in the climate system and their sociopolitical consequences. This represents a high-risk approach.
  - To avoid these consequences the **alternative vision and sustainability perspective requires a change in culture (thinking on the human-nature interface), world views (thinking on systems of rule, e.g. democracy vs. autocracy, and on domestic priorities and policies, as well as on interstate relations in the world), mindsets** (strategic perspectives of policymakers), and **new forms of national and global governance.**

10.3. Three Obstacles & Alternative

Results of Business as Usual: The Climate Paradox

- Canada, USA, Japan and rapidly industrializing threshold countries (G-20) that account for more than 80 % of GHG emissions, have faced a **climate paradox** due to their **inability or lack of political will to implement their legal commitments or policy declarations**.
- Different performance of the climate laggards and new climate change leaders show that it is not the 'system of rule' but rather the **different political cultures in Europe and in North America that have influenced different policy performance**.

Neo-Malthusian Dead End: Securitization to Militarization

- Hobbesian pessimists, concerned about the national security implications of global environmental and climate change that are being interpreted by the dominant realist policy mindset, have used this argument to adjust their force structure and military means to be able to cope with these major challenges. From this, primarily US-focused, national security perspective on climate change, the securitization of the impacts of climate change as a force multiplier may result in militarization.

The Cornucopian Dead End: Technical Fixes & Geo-engineering

- From the opposite 'Cornucopian' perspective, the solution to the challenges posed by global environmental and climate change may be technical fixes that have been offered by those who call for macro-scale projects of geo-engineering.

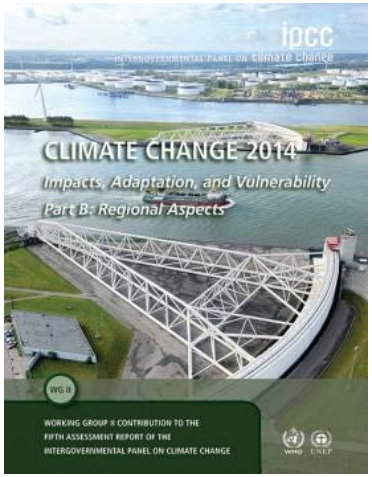
Alternative: Sustainable Development & Sustainability Transition

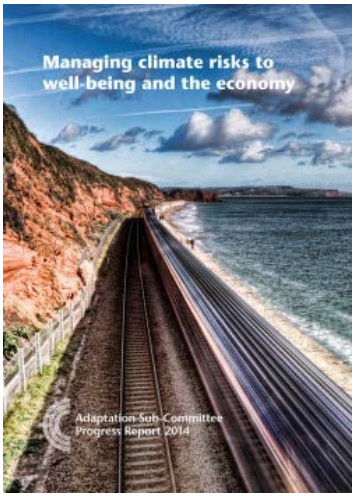
- **Strategies and policies of Sustainability Transition may offer a process for a decoupling of growth and fossil energy consumption for a decarbonization of our energy sector and our economies and for sustainable production & consumption**

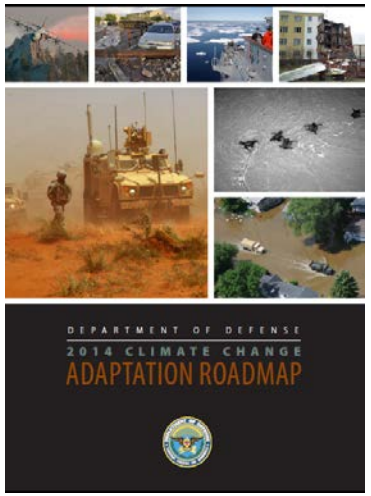
10.4. Counter Resource Conflicts: Access & Control of Oil, Gas & Coal

- In 1972, a contested Report to the Club of Rome referred to the „**Limits of Growth“** pointing to major global resource constraints
- The debate on **„peak oil“** refers to limited reserves of non-renewable fossil energy sources and the model projections on an increasing use of fossil energy resources has pointed to the physical and societal effects of both linear & non-linear consequences of global warming
- As a **decoupling of growth from energy consumption** is possible with energy efficiency improvement by a factor 4,5 or 10 & a replacement of fossile with renewable energy sources, the dependence on energy imports will also gradually decline and resource (oil) wars may decline
- **Business-as-usual: exporters of coal** (Australia), **oil** (Saudi Arabia) from tar sands (Canada) and of **natural gas** from fracking (in USA),
- **Special interest groups have financed climate sceptics & ideologues**

10.5 Concluding Remarks

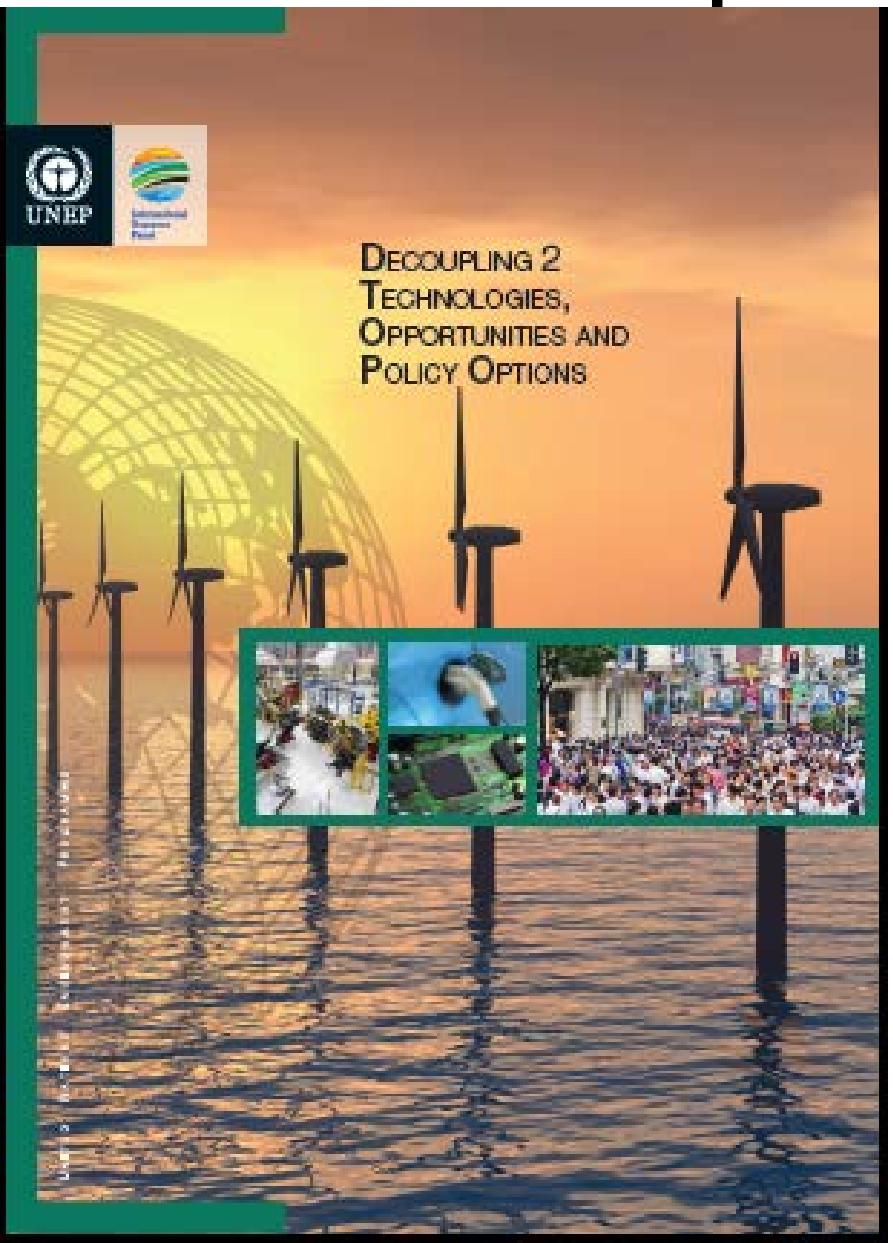






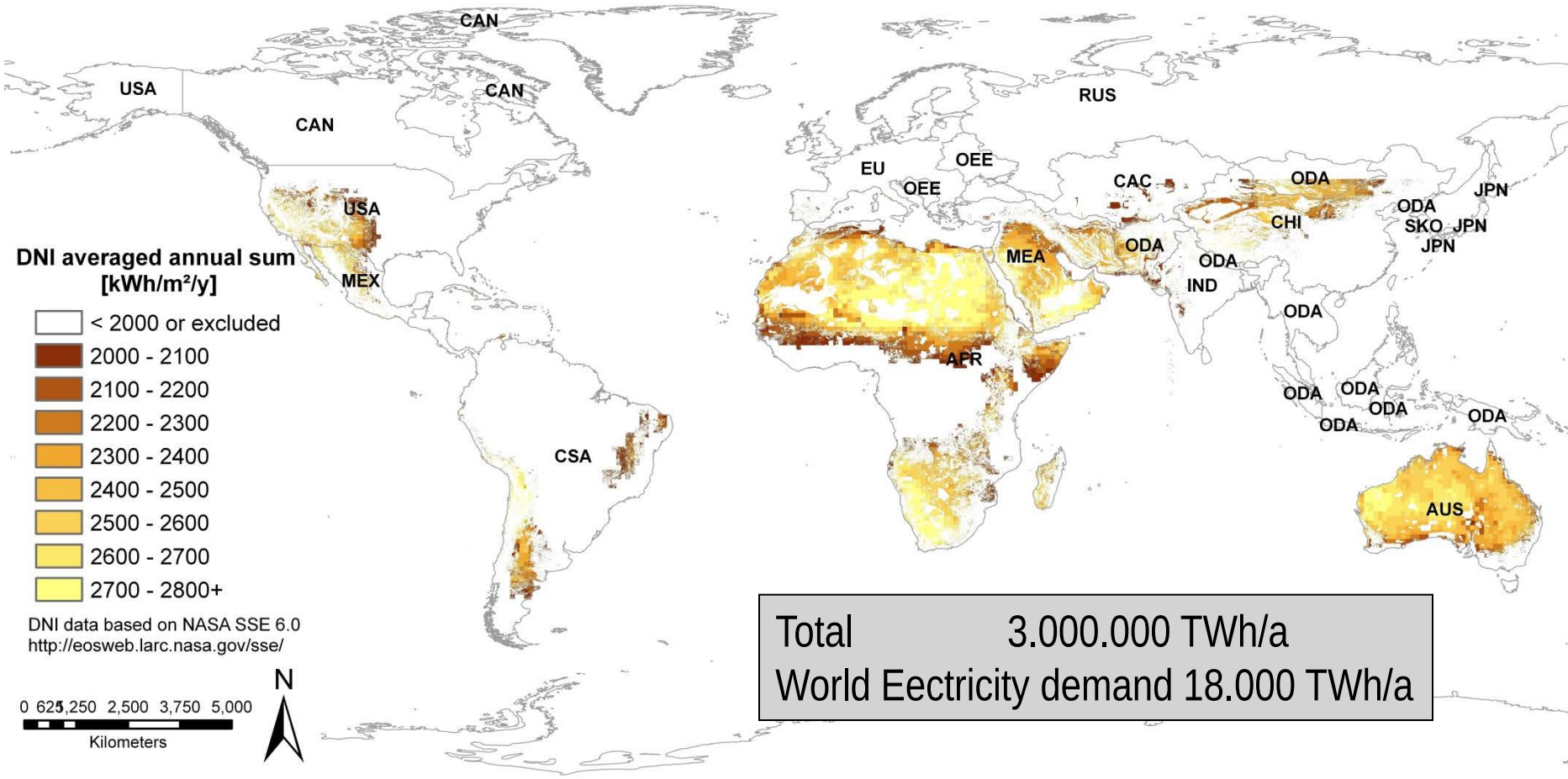
- Since Blockade at UNFCCC COP15 in Copenhagen (2009) policy goals: mitigation -> adaptation -> loss & damages: Reactive Policies prevail
- Adaptation is necessary but not sufficient
- We (humankind, governments, international organizations, society, business community) must understand: „we are the threat“ our unstainable lifestyles (production, consumption, transportat.)
- We must address the causes (GHG - burning of hydrocarbons: coal, oil, gas) in the Anthropocene
- Business-as-Usual (tar sands, fracking of gas etc.) will intensify the physical effects and societal outcomes (human misery, migration & conflicts)
- We need a sustainability revolution (thinking), policies of sustainable development (goals) and strategies for sustainability transition (process)

10.6. Policies, strategies and measures aiming at sustainable development & sustainability transition



- **UNEP – International Resource Panel:** We must decouple econ. growth from energy consumption and of fossil energy sources
- **EU Commission:** We must reduce GHG emissions by 20% by 2020 and by 80% until 2050 (1990 b.y.)
- **Enhanging energy & resource efficiency** (factor 4, 5 or 10)
- We must **reduce** our **individual carbon & eological footprint**
- We need: **sustainable production & consumption strategies**

10.7. Alternatives: World Potential of Solar PV & Thermal Power Plants

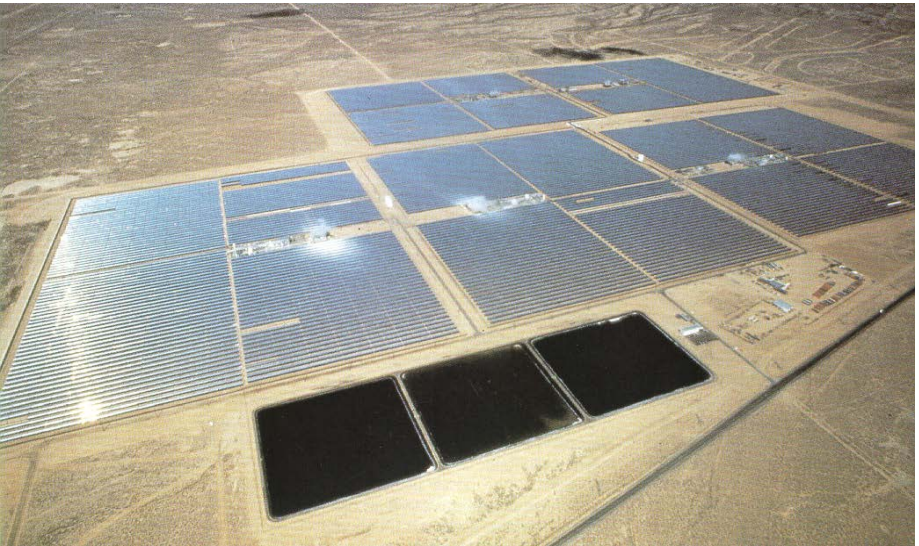


Source: Presentation of Dr. Franz Trieb, 24.7.2009 (Stuttgart)

10.8. Solar Electricity Generating System - SEGS, in California, USA (1985), Spain (2009)

California, USA (354 MW, since 1985)

ANDASOL 1, Guadix, Spain
(50 MW, 7 h storage, 2009)



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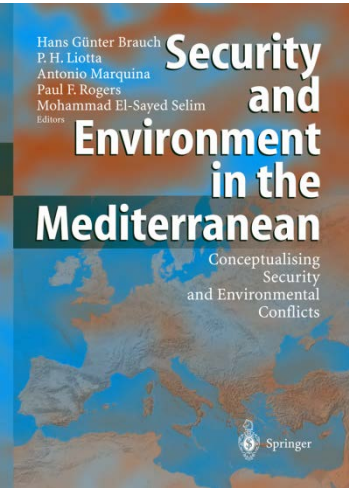
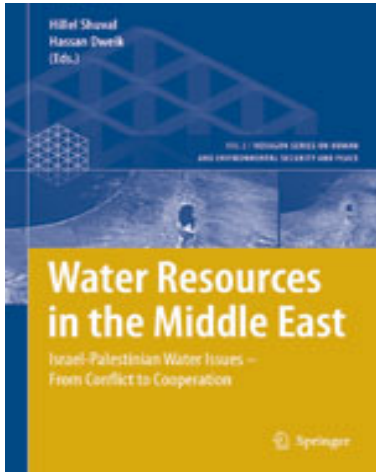
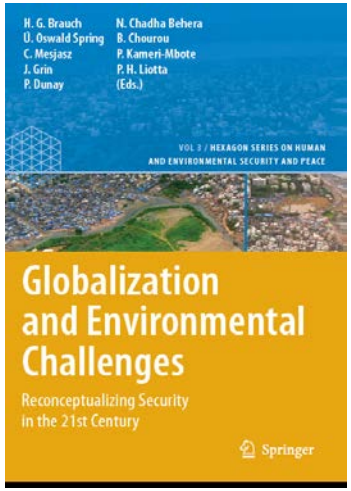
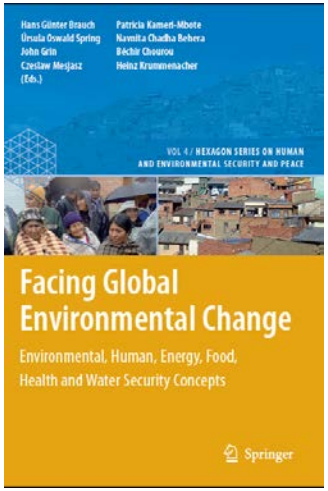
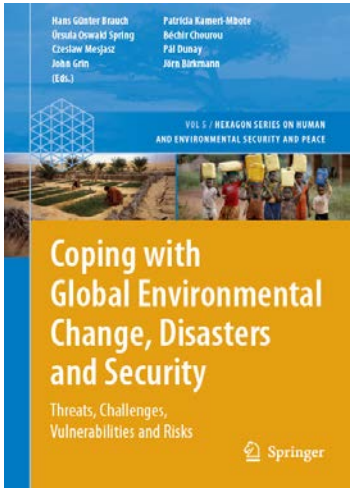
8.8. Hexagon Series: Volumes I-X

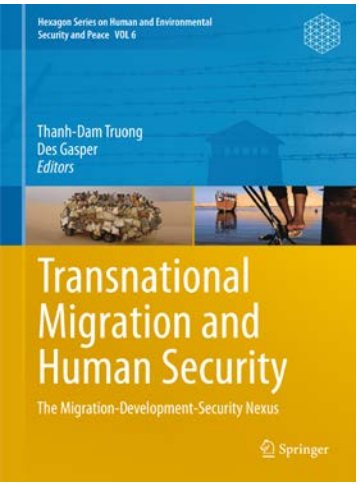


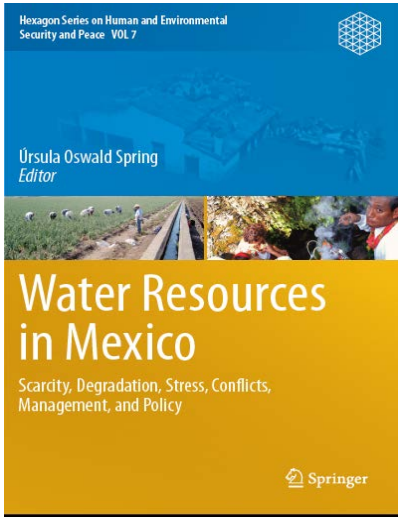


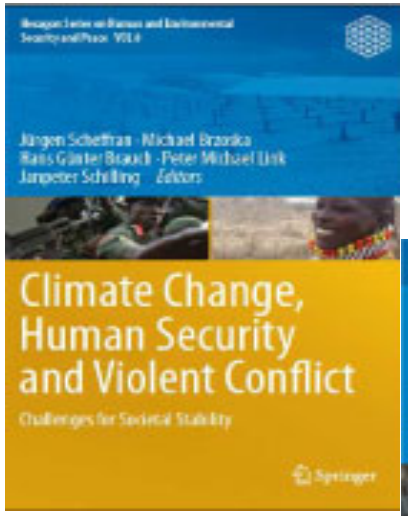


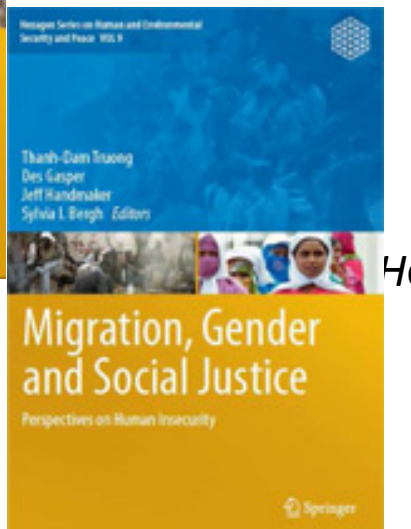












Forthcoming Volume:

H. G. Brauch, Ú. Oswald Spring, J. Grin, J. Scheffran (Eds.):

Handbook on Sustainability Transition and Sustainable Peace.

Hexagon Series 10 (Springer, 2015),