Bangkok, Thailand  
Tuesday, 11 December 2012, 13:30  

Book launch:  
**Climate Change, Human Security and Violent Conflict**

Panel:  
- Dr. Chantana Banpasrichote  
- Prof. Dr. Kingkarn Thepkanjana  
- Prof. Dr. Supang Chantavanich  
- Dr. Taweewong Sriburi  
- Dr. Saengchan Limjrakarn  
- Jacques-Chai Chomthongdee, FOCUS  
- Pongtip Somranjit, Local Act  
- Dr. Bantoon Setsiroj (GSEI) and Human Security National Strategy Working Group (CU and MSDHS)

Hans Günter Brauch, Editor

Hexagon Series on Human, Environmental Security and Peace, vol. 8  
SpringerBriefs on Pioneers in Science & Practice, vol. 1
Contents

1. Introduction: Triple Launch as Editor of three series
2. Transition of Earth History: From Holocene to Anthropocene
4. Climate Paradox: Legal obligations & limited implementation
5. Paralysis of climate negotiations
6. 2 alternative perspectives and visions: business-as-usual vs. long-term transformative change to sustainable development
7. Emerging Discourse on Sustainability Transition
8. EU-27 climate & energy policy goals: GHG reductions:2020-50
9. Energy Transition: bottom-up vs. top-down
10. Sustainable Development and the Nexus between Climate Change and Energy Security
1. Triple Launch: 3 Springer Book Series

- Launching of Hexagon Series on Human, Environmental Security and Peace
  - Vol. 8: Scheffran, Jürgen; Brzoska, Michael; Brauch, Hans Günter; Link, Peter Michael; Schilling, Janpeter (Eds.): *Climate Change, Human Security and Violent Conflict: Challenges for Societal Stability*

- Noting Springer Briefs in Environment, Security, Development & Peace,
  - Vol. 1: Mely Caballero-Anthony, Youngho Chang and Nur Azha Putra (Eds.): *Energy and Non-Traditional Security (NTS) in Asia*

- Noting Springer Briefs on Pioneers in Science & Practice,
1.1 Three anniversaries and 2 debates

- **Three anniversaries & Two Topical Events (2012)**
  - 20 Years: Rio Earth Summit: UNFCCC (1992)
  - 15 years: Kyoto Protocol (1997)
  - UNCSD summit Rio+20 (2012): Future we Want!
  - UNFCCC-COP 18: Doha, paralysis & limited progress

- **Policy Debates & Scientific Discourses:**
  - Business as Usual: Climate Change and Security: Implications of GEC & CC for international, national, human security
  - Sustainability Transition: Longterm transformative change to sustainable development or: or Decarbonization or Greening of the Economy
1.2. Report of UN-Sec-General (11.9.2009)

- Climate Change → Impacts
  - Weak Adaptive Capacity
  - Vulnerable → Development
    - Food Security
    - Water Security
    - Human Health
    - ...Etc.
  - Uncoordinated Coping → Threat Multiplier
    - Migration
    - Resource Competition
    - Political destabilization
    - ...Etc.

Possible Security Threats
- Community
- National
- Regional
- International

Sustainable Development
- Adaptation
- Economic Development
- Governance
- Capacity Building
- Mitigation
- Conflict Prevention

Threat Minimizers
1.3. First Discourse: Securitization of Climate Change - Three Security Policy Debates

Climate change & internat. security discourse

– UN (17 April 2007): FM M. Beckett, UK presidency
– UN GA (June 2009) Res., Report by Sec. General

Climate change & national security discourse:

- US studies: CNA, CSIS, NIC (CIA), NSS 2010

Climate change & human security discourse

- IHDP (GECHS): Lonergan & Brklacich (chairmen)
  - 2005: conference in Norway on Climate change and human security
- HSN (Canada was a co-founder & a major sponsor)
- 2007/2008: Greek HSN presidency
- 2011-2014: IPCC, WG II, chapter on human security
1.4. Volumes on 2 Discourses


- Brauch, Hans Günter; Oswald Spring, Úrsula et al. (Eds.): Sustainability Transition & Sustainable Peace workshops. Hex. Series, vol. 11
  - Workshop 2: 2 April 2013, SF, USA
  - Workshop 3: in 2014 (in SE-Asia?)
1.5. Theme of this book

- 38 peer reviewed chapters by more than 60 authors from 4 continents (based on a workshop in Hamburg, in Nov. 2009)
- Climate change is becoming a focal point of security and conflict research and poses challenges to the world’s structures of policymaking and governance.
- This handbook explores empirical and theoretical links between climate change, environmental degradation, human security, societal stability and violent conflict that could trigger cascading events and critical tipping points in climate-society interaction.
- Based on an extensive analysis of the securitization discourse, various conflict constellations are assessed, including water scarcity, food insecurity, natural disasters and mass migration. The security risks of climate are discussed in detail with regard to regional climate hot spots in Africa, the Middle East, Asia and the Pacific.
- Constructive approaches are examined for improving climate security through capacity-building for sustainable peace and cooperative policies leading to local and global governance structures.
1.6. Structure & Forewords

With Forewords by
- Olusegun Obasanjo, former President of Nigeria;
- Connie Hedegaard, European Commissioner for Climate Action;
- Christiana Figures, Executive Secretary, UNFCCC;
- R.K. Pachauri, Director General, The Energy and Resources Institute (TERI), Chairman, Intergovernmental Panel on Climate Change (IPCC).

Contents:
- Part 1: Introduction. –
- Part II: Climate Change, Human Security, Societal Stability, and Violent Conflict: Empirical and Theoretical Linkages. –
- Part III: Climate Change and the Securitization Discourse. – Part IV: Climate Change and Migration.
- Part V: Climate Change and Security in the Middle East. – Part VI: Climate Change and Security in Africa.
- Part VII: Climate Change and Security in Asia and the Pacific.
- Part IX: Conclusions and Outlook.
1.7. Part VII: Climate Change and Security in Asia and the Pacific

28. Climate Awareness and Adaptation Efficacy for Livelihood Security against Sea Level Rise in Coastal Bangladesh
   Md. Mustafa Saroar and Jayant K. Routray

29. Security Implications of Climate Refugees in Urban Slums: A Case Study from Dhaka, Bangladesh
   Sujan Saha

30. A Psychological Perspective on Climate Stress in Coastal India
    Ruchi Mudaliar and Parul Rishi

31. Routine Violence in Java, Indonesia: Neo-Malthusian and Social Justice Perspectives
    Mohammad Zulfan Tadjoeddin, Anis Chowdhury, and Syed Mansoob Murshed

32. Territorial Integrity and Sovereignty: Climate Change and Security in the Pacific and Beyond
    Achim Maas and Alexander Carius
1.8. Hexagon Series: Volumes I-VIII

Forthcoming Volumes


1.9. Global Environmental and Human Security Handbook for the Anthropocene


1.10. Hexagon Series in the Internet

Website of publisher:
- http://www.springer.com/series/8090

Springer Link:
- http://www.springerlink.com/content/978-3-642-28626-1

Website of the editor:

Chapter download figures: HEX V
- Electronic download data: Since its online publication on 24 Jan 2011 until 30 June 2012 this vol. has received ca. 7,644 chapter download requests.

Year Usage
2011: 5326
1-6 2012: 2318

Website of each book
1.11. Spanish book & Ebook


- Úrsula Oswald Spring y Hans Günter Brauch
- Reconceptualizar la Seguridad en el Siglo XXI
- (Mexico D.F., Cuernavaca, UNAM/CRIM/CEIICH/CCA
- Mosbach, Germany: AFES-PRESS, 2009)
- ISBN 878-392-69-7578-0
- Ebook for Free download
ULUSLARARASI İLİŞKİLER
(INTERNATIONAL RELATIONS)
Academic Journal
Vol. 15, Number 18, Summer 2008, pp. 1-214
Guest Editors
Hans Günter Brauch, Free University of Berlin, Germany
Mustafa Aydin, University, Ankara, Turkey
Úrsula Oswald Spring, UNAM/CRIM, Cuernavaca, Mexico

http://www.afes-press-books.de/html/hexagon_03_tr.htm
1.13. Publication of chapters for a journal or book in Thai is Possible

- Publication of selected translated and updated chapters in Thai is possible:
- Coeditorship: 2 editors of the original volumes and local editor (translation, publication)
- Translation costs by local coeditor
- Free copyright request with Springer (as in previous publications)
- Publication of selected chapters together with other chapters by scholars from South-East Asia is possible (see books in Spanish/Turkish)
2. Transition of Earth History: From the Holocene to the Anthropocene

- We have mapped a fundamental and global **Reconceptualization of Security** since 1989 for three reasons:
  - What has triggered this global contextual & conceptual change?
    - End of the Cold War
    - Process of Globalization
    - Global environmental change: Transition from Holocene to Anthropocene
- Which conceptual innovations affecting the security analysis
  - Ole Wæver (1997): Theory of securitization (Copenhagen school of critical security studies)
  - Paul J. Crutzen (2000): Humankind was instrumental for transition in earth history from Holocene (12000 BP) to Anthropocene
2.1 Geological Time: Earth History
2.2 Geological times: 400 000 years of climate history
2.3 The Holocene (11600 BP-now)
2.4. From the **Holocene** (12,000 years b.p.) to the **Anthropocene** (1784 AD)

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

*Paul Crutzen, Nobel Laureate for Chemistry (1995)*
2.5. Anthropogenic Climate Change in the Anthropocene Era (1750 to present)

- GHG concentration in the atmosphere
  - 2011: 393 ppm
  - 2012: 396 ppm
  - 1/3: 1750-1958: 279 to 315 ppm
  - 2/3: 1958-2011: 315 to 393 ppm

Global Environmental Change

Anthroposphere

Ecosphere

GEC poses a threat, challenge, vulnerabilities and risks for human security and survival.
3.1. Climate Change & Security Nexus in Social Sciences

Four Schools

– Dramatizers: Climate wars
– Sceptics: lack of research (PRIO)
– Empiricists: PEISOR Model & linkages
– Trend & future scenarios

Political Science Approaches

• Policy & Scenario analysis
• Causal analysis

Objects of Security Analysis (Securitization)

• Physical Effects: e.g. temp, rise
• Impacts: Sectors & Regions
• Societal Effects (migration, crises, conflicts)

Whether they pose:

• Objective Security Dangers
• Subjective Security Concerns
3.2. Global Climate Change: Temperature Increases & Sea Level Rise

Climate Change Impacts: Temperature & Sea level Rise

- Global average temperature rise in 20\textsuperscript{th} century: +0.6°C

Projected temperature rise:
- TAR (1990-2100): +1.4-5.8°C
- AR4 (07): +1.1-6.4 (1.8-4)°C

Sources: IPCC 1990,1995,2001,’07

Sea level Rise:
- 20\textsuperscript{th} cent.: +0.1-0.2 metres
- TAR: 21st century: 9-88 cm
- AR4 (2000-2100): 18-59 cm
3.1. Global & Regional Change in Temperature
(IPCC 2007, WG 1, AR4, 11)
3.3. Average Value of Surface Temperature
(IPCC 2007, WG 1, AR4, p. 14)

**Multi-Model Averages and Assessed Ranges for Surface Warming**

Figure SPM.5. Solid lines are multi-model global averages of surface warming (relative to 1960–1999) for the scenarios A2, A1B and B1, shown as continuations of the 20th century simulations. Shading denotes the ±1 standard deviation range of individual model annual averages. The orange line is for the experiment where concentrations were held constant at year 2000 values. The grey bars at right indicate the best estimate (solid line within each bar) and the likely range assessed for the six SRES marker scenarios. The assessment of the best estimate and likely ranges in the grey bars includes the AOGCMs in the left part of the figure, as well as results from a hierarchy of independent models and observational constraints. (Figures 10.4 and 10.29)
3.4. From a 2°C to a 4°C World by 2100

- Many scientists agree that the goal of the stabilization of global average temperature at 2°C above the pre-industrial level by the year 2100 is becoming increasingly unlikely. An increase of 2–4°C is becoming more probable.
- This may result in a ‘dangerous climate change’, and an increase of 4–6°C above pre-industrial levels is becoming possible by 2100; this could result in a ‘catastrophic climate change’.
- In September 2009, a conference of the Royal Society (UK) addressed the impacts of a world experiencing the impacts of “four degrees and beyond” (New 2011), while Mark Lynas (2007) discussed Six degrees: Our future on a hotter planet.
- World Bank Study of November 2012 by Potsdam Institute of Climate Change Impact Research: We are moving to +4°C world
- Rahmsdorf study for COP 18 in Doha; Sea level rise: 50cm-1m
# Projected Impacts of Climate Change

<table>
<thead>
<tr>
<th>Global temperature change (relative to pre-industrial)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°C</td>
</tr>
<tr>
<td>Food</td>
</tr>
<tr>
<td>Falling crop yields in many areas, particularly developing regions</td>
</tr>
<tr>
<td>Possible rising yields in some high latitude regions</td>
</tr>
<tr>
<td>Falling yields in many developed regions</td>
</tr>
<tr>
<td>Water</td>
</tr>
<tr>
<td>Small mountain glaciers disappear – water supplies threatened in several areas</td>
</tr>
<tr>
<td>Significant decreases in water availability in many areas, including Mediterranean and Southern Africa</td>
</tr>
<tr>
<td>Sea level rise threatens major cities</td>
</tr>
<tr>
<td>Ecosystems</td>
</tr>
<tr>
<td>Extensive Damage to Coral Reefs</td>
</tr>
<tr>
<td>Rising number of species face extinction</td>
</tr>
<tr>
<td>Extreme Weather Events</td>
</tr>
<tr>
<td>Rising intensity of storms, forest fires, droughts, flooding and heat waves</td>
</tr>
<tr>
<td>Risk of Abrupt and Major Irreversible Changes</td>
</tr>
<tr>
<td>Increasing risk of dangerous feedbacks and abrupt, large-scale shifts in the climate system</td>
</tr>
</tbody>
</table>
3.6. Precipitation Change by 2100: Projections and model consistency of relative changes in runoff by the end of the 21st century
3.7. Projected Increase of Sea Level Rise (IPCC chair, Pachauri, 2008)

<table>
<thead>
<tr>
<th>Stabilization level (ppm CO₂-eq)</th>
<th>Global mean temp. increase (°C)</th>
<th>Year CO₂ needs to peak</th>
<th>Global sea level rise above pre-industrial from thermal expansion (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>445 – 490</td>
<td>2.0 – 2.4</td>
<td>2000 – 2015</td>
<td>0.4 – 1.4</td>
</tr>
<tr>
<td>490 – 535</td>
<td>2.4 – 2.8</td>
<td>2000 – 2020</td>
<td>0.5 – 1.7</td>
</tr>
<tr>
<td>535 – 590</td>
<td>2.8 – 3.2</td>
<td>2010 – 2030</td>
<td>0.6 – 1.9</td>
</tr>
<tr>
<td>590 – 710</td>
<td>3.2 – 4.0</td>
<td>2020 – 2060</td>
<td>0.6 – 2.4</td>
</tr>
</tbody>
</table>

Comparison of Peer-reviewed Research Estimates: Global Sea Level Rise by 2100

- Jevrejeva 2010
- Vermeer 2009
- Pfeffer 2008
- Horton 2008
- Rahmstorf 2007
- IPCC 2007
- IPCC 2001
- NRC 1987

Sea Level Rise (meters)
3.8. Climate-related natural hazards

Changes of Hydro-meteorological Hazards (Guha-Sapir 2010)

Reported Death of Natural Hazards globally (1974-2003): 2,066,273 persons
Affected persons of Natural Hazards globally (1974-2003): 5,076,494,541 persons
3.9. Tropical Cyclones: Threat to Megacities

Figure 6.4-1
Tropical cyclone threat to urban agglomerations.
Source: WBGU
3.10. IPCC: SREX Special Report
Bangkok Flood. 5 August 2011

- Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX)

- Bangkok Flood (5 August 2011)
  - 813 killed (2nd)
  - 9,500,000 persons affected (2nd)
  - 40,000,000 US $ economic damage (1st)
Potential Anthropogenic Tipping Elements in the Earth System

- **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**
10. Potential Societal Impacts of the Physical Effects of Climate Change

Hans Günter Brauch
Adj. Prof. [PD], Free University Berlin, Otto-Suhr-Institute
Senior Fellow, (UNU-EHS), Bonn
Chair, Peace Research and European Security Studies
Editor, Hexagon-Book Series on Human, Environmental Security & Peace

<table>
<thead>
<tr>
<th>Country</th>
<th>SLR (cm)</th>
<th>Potential land loss</th>
<th>Population exposed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>km²</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>million</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Bangladesh</td>
<td>45</td>
<td>15,668</td>
<td>10.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>29,846</td>
<td>20.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.5</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14.8</td>
<td>13.5</td>
</tr>
<tr>
<td>India</td>
<td>100</td>
<td>5,763</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Indonesia</td>
<td>60</td>
<td>34,000</td>
<td>1.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.0</td>
<td>1.1</td>
</tr>
<tr>
<td>Japan</td>
<td>50</td>
<td>1,412</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.9</td>
<td>2.3</td>
</tr>
<tr>
<td>Malaysia</td>
<td>100</td>
<td>7,000</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;0.05</td>
<td>&gt;0.3</td>
</tr>
<tr>
<td>Pakistan</td>
<td>20</td>
<td>1,700</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Vietnam</td>
<td>100</td>
<td>40,000</td>
<td>12.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17.1</td>
<td>23.1</td>
</tr>
</tbody>
</table>

Vietnam is the most vulnerable country to climate change due to sea-level rise in South East Asia. In South-East Asia food & fibre, biodiversity, coastal ecosystems, human health and land degradation are highly vulnerable to climate change while water resources and human settlements are moderately vulnerable.
4. Climate Paradox: Legal Obligations & Limited Implementation

• A ‘climate paradox’ has emerged due to a growing implementation gap in Canada, USA & Japan, while Russia, Germany, UK, France & Italy fulfilled their GHG reduction obligation.

• As Annex-1 & Annex-B countries, G8 share a major responsibility for this policy failure, together with other G20 countries, which contribute more than 80% of global GHG emissions.

• Three G8 countries face a ‘climate paradox’ due to their inability to implement their legal obligations and policy declarations for GHG reduction targets for 2050.

• Overcoming the ‘climate paradox’ in North America requires a deliberate climate leadership of EU countries and a willingness to unilaterally implement their climate reduction goals & their different roadmaps for 2050.

• Implementing a sustainability transition with increasing energy efficiency reduces energy costs and enhances the competitiveness of European products. It may also reduce the dependence on fossil imports and thus the involvement in resource conflicts over the control of fossil energy resources.
4.1. 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.**

  • USA: -7% under KP (signed but never ratified)
  • Canada: -6% under KP (signed, ratified and withdrew on 31 December 2011)
  • Mexico: no legal obligations but voluntary commitments: -50% (by 2050) base year 2000
4.2. GHG Reduction Implementation Gap

QELRO, Kyoto Protocol

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


- EU countries: \(-11.3\) [-11.3]
- Canada: \(+24.1\) [+33.6]
- USA: \(+13.3\) [+15.3]
- Japan: \(+1\%) [-0.2]
- Australia: \(+31.4\) [+33.1]
- Turkey: \(+96.0\) [101.1]
## 4.3. Performance of G-8: Mixed Performance: GHG Emissions

<table>
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</thead>
<tbody>
<tr>
<td>1) USA</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-7</td>
<td></td>
</tr>
<tr>
<td>2) Canada</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-6</td>
<td></td>
</tr>
<tr>
<td>3) Japan</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-6</td>
<td></td>
</tr>
<tr>
<td>4) Germany</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-8</td>
<td>-21</td>
</tr>
<tr>
<td>5) UK</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-8</td>
<td>-12.5</td>
</tr>
<tr>
<td>6) France</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-8</td>
<td>0</td>
</tr>
<tr>
<td>7) Italy</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-8</td>
<td>-6.5</td>
</tr>
<tr>
<td>8) Russia</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
4.4. Performance of G-20: No Commitment

- Between 1950 and 2010 the population of the G20 increased significantly what coincided with a major increase in CO2 emissions since 1971 to 2009.
- With regard to the population projections until 2050 and 2100, population of 4 G8 is projected to continue to grow from 2010-2100 (USA, France, Canada, UK), while it will decline for Japan, Russia, Germany, Italy.
- During past 60 years the population of India & China together has grown by 1,643 million people but the projections until 2100 for China and India differ significantly with a projected increase of 326 million for India and a projected decline of 400 million people for China by 2100 compared with 2010.
4.6. Energy-related CO2 Emissions per cap. for EU27, US, Japan, Russia, China & India

4.7. IEA/OECD: Energy projections & GHG emissions until 2050: 2 scenarios

Figure 4: Total greenhouse gas emissions (by region), 1970-2050. Source: IEA

StatLink: http://dx.doi.org/10.1787/258472880870
5. Paralysis of Climate Negotiations

- **Reagan Admin.** put climate change on G-7 agenda
- Domestic economic & ideological opposition: USA: Kyoto Protocol signed but not ratified
- Canada: withdrew in December 2011 from KP
- Canada, US, Japan (Australia) failed: Annex B targets
- COP 15 (Copenhagen) failed: US bypass UN negot.
- COP 16 (Cancun) Accords: voluntary commitments
- COP 17 (Durban): goal 2015 agreement, 2020 in force

Kyoto Protocol will run out by end of 2012: no agreement on legally binding GHG reduction targets:

My thesis: If present trends continue: security consequences of climate change may occur!
5.1. Global Climate Change Hotspots & Conflict Constellations

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

Security-related challenges in MENA region:
- Water scarcity to rise due to demand increase and supply decline
- Rising food deficits
- Rising environmentally induced migration
5.2. Conflict Constellation Climate-induced Increase in Storm & Flood Disasters

Boxes 1–4: Dimensions of influence with key factors

Central causal chain

Influence of key factors on the central causal chain
6. Alternative perspectives & visions: Business-as-usual vs. Sustainability Transition

Oswald Spring and Brauch (2011) argued that:

- Vision of business-as-usual with minimal reactive adaptation & mitigation strategies will most likely increase the probability of a ‘dangerous climate change’ or catastrophic GEC with linear and chaotic changes in the climate system & socio-political consequences that represent 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), worldviews (thinking on the 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 policy-makers) and new forms of national and global governance.

- Alternative vision of a new fourth ‘sustainability revolution’: 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.

- 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
- 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.
- No Need for a Sustainability Revolution
6.2. Fourth Sustainability Revolution

• 2\textsuperscript{nd} 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.
6.3. 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”
6.4. 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.
7. Discourse on Sustainability Transition: Four Hypotheses

- We are in the midst of a **global transition in earth history** from the ‘Holocene’, to the ‘Anthropocene’ that began with human interventions into the **earth system** and that has resulted in a rapid increase in GHG emissions in the atmosphere.

- The **impacts of the grand transformations** of the first and second industrial revolution have resulted in a complex global environmental change and in anthropogenically-induced climate change, besides as well as the increasing destruction of the biodiversity, natural climatic variations. This has resulted in an exponentially growing accumulation of GHG in the atmosphere this has also affected almost all environmental services.

- The **societal impacts** of four physical effects of ‘anthropogenic global climate change’ and of biodiversity loss may result in **major international, national, and human security dangers**.

- Since 2005 an alternative discourse on ‘sustainability transitions’ or on ‘transitions to sustainable and resilient development’ has begun to evolve. It addresses new directions in the ‘study of long-term transformative change’ that also needs to focus on resilient societies.
7.1. 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.
7.2. Emerging Scientific ST Discourse

- **2001**: Amsterdam conference on Earth Systems Science (ESSP)
- **2004**: Clark/Crutzen/Schellnhuber provided conceptual context for the Dahlem Workshop on “Earth Systems Science and Sustainability” (2003), where they pointed to “the need for harnessing science and technology in support of efforts to achieve the goal of environmentally sustainable human development in the Anthropocene”
- **2005**: KSI started to work on Sustainability transition (John Grin, co-chair)
- **2009**: Amsterdam Conference on Sustainability Transition resulted in Sustainability Transition Research Network (STRN)
- **2010**: Routledge Series on Sustainability Transitions was launched
- **2011**: Elsevier: Environmental Innovation and Sustainability Transition
- **2011**: Oswald Spring/Brauch: Fourth Sustainability Revolution (FSR)
- **2011**: Brauch/Dalby/Oswald Spring: A Political Geoeconomy for the Anthropocene
  - We are currently witnessing the emergence of a new scientific paradigm that is driven by unprecedented planetary-scale challenges, operationalized by transdisciplinary centennium-scale agendas, and delivered by multiple-scale co-production based on a new contract between science and society.
- **2012**: Third STRN Conference in Copenhagen: 30-31 August 2012
- **2013**: Fourth STRN Conference in Zürich in June
7.3. 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.e. 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.
In a talk at the first sustainability transition and sustainable peace (STSP) workshop I distinguished among 7 dimensions of ST:

1. Temporal Dimension of Sustainability Transition
2. Spatial Dimension of Sustainability Transition
3. Scientific Dimension of Sustainability Transition
4. Societal Dimension of Sustainability Transition
5. Economic Dimension of ST
6. Political Dimension of ST
7. Cultural Dimension of ST
7.5. Discourse on Sustainability Transition

• **Research & Dialogue Project: Sustainability Transition and Sustainable Peace (STSP)**

• *Second debate* is partly policy driven, by debate on a *green economy* that has been launched by UNEP, OECD and by different DGs of the European Commission.

• *Scientific discourse* on sustainability transition evolved
  – *Sustainability Transitions Research Network (STRN)*
  – journal on *Environmental Innovation and Sustainability Transition (EIST)*

• This new project tries to link this emerging debate with the experience of international relations and environment, security, development and peace (ESDP) studies by addressing possible impacts of both alternative policy trends for international peace and security.
8. EU-27 Climate & Energy Policy Goals: GHG Reductions by 2020 & 2050

- Among EU-27 **Germany, UK, France & Italy**: 54.9% of GHG weighted emissions in CO2 equivalents who complied with their EU reduction targets.
- Among the 27 EU countries several laggards missed their reduction targets under Annex B of the KP and EU-15 ‘burden-sharing’ approach, **Spain (+37.7/+11.8%), Portugal (+35.3/-3.0%), Ireland (+32.4/-0.8%), Greece (28.6/-10.5%)**; their combined share of the EU-27 was 13.7% in 2009.
- EU-27 are the global leaders in implementing their commitments under KP.
- **In March 2007**, the European Council decided for a 20/20/20 target by 2020:
  - reduction in EU GHG emissions 20% cent below 1990 levels;
  - 20% of EU energy consumption to come from renewable resources;
  - 20% reduction in primary energy use compared with projected levels, to be achieved by improving energy efficiency.
- On 10–11 December 2009, the European Council offered to increase its emissions reduction to thirty per cent if other major emitting countries would commit to significant reductions under a global climate agreement.
- **On 15 December 2011 the European Commission (2011) released its Energy Roadmap 2050**
8.1. EU-27 Reduction Goal for 2050

- On 15 December 2011 the European Commission (2011) released its *Energy Roadmap 2050*, according to which:
  - The EU is committed to reducing greenhouse gas emissions to **80-95% below 1990 levels by 2050** in the context of necessary reductions by developed countries as a group. The Commission analysed the implications of this in its ‘Roadmap for moving to a competitive low-carbon economy in 2050’.
  - The ‘Roadmap to a Single European Transport Area’ focused on solutions for the transport sector and on creating a Single European Transport Area.
  - In this Energy Roadmap 2050 the Commission explores the challenges posed by delivering the EU’s decarbonization objective while at the same time ensuring security of energy supply and competitiveness. It responds to a request from the European Council.
  - This requires a sustainable transition in energy sector.
8.2. EU Decarbonization scenarios 2030 and 2050 (comp. with 2005 in %)
9. Energy Transition: Bottom-up vs. top-down

• Energy transition has started globally & accelerated since 2009: China major producer

• Energy transition in Germany: bottom-up
  – State set the legal framework (national renewables)
    • Electricity Feed-In Law
  – Customers: Investment in Wind and Solar Power

• Top-down: Macro Scale Proposals
  – Import of renewable electricity from the desert
  – As part of a co-development strategy between Europe and MENA Region
9.1. Solar Thermal Technologies for Electricity Generation in the Deserts

Concentrating Solar Power Technologies:

- alternatives: a) Fresnel concentrators, b) parabolic trough (400-600 °C),
  c) solar tower concept with surrounding heliostat field (1200 °C, up to 50 MW),
  d) solar dish (for small applications up to 50 kW).
9.2. System of Solar Electricity Generation
SEGS, California, USA (354 MW, since 1985)
ANDASOL 1, Spain (50 MW, 7h storage, 2009)
Trans-Mediterranean Renewable Energy Cooperation (TREC) is an initiative that campaigns for the transmission of clean power from deserts to Europe.

Since 2003 TREC has developed the DESERTEC Concept.
9.4. Annual electricity demand & generation within the countries analysed in the MED-CSP scenario
9.5. Desertec Vision: An Intercontinental Mega Project

- **Goal:** conceptual quartet:
  - 4 key concepts and linkages among: Environment, Security, Development & Peace

- **Goal:** global, multidisciplinary, peer-reviewed
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