



IPRA
International Peace Research Association

IPRA Global Conference

**‘Peace and Justice in a Globalized World: Opportunities & Challenges’
Tsu City, Mie University, Japan, 24-28 November 2012**

© Hans Günter Brauch,

Chairman, Peace Re-search and European Security Studies (AFES-PRESS)
Editor, Hexagon Series on Human, Environmental Security and Peace
Editor, SpringerBriefs in Environment, Security, Development & Peace

**From Rio 1 to Rio 2:
Climate Change Implementation Gap**

Ecology and Peace Commission

Saturday, 24 November 2012, 16:20-18:20

Session 2: Sustainability Transition and Sustainable Peace



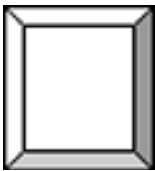
UNITED NATIONS
UNIVERSITY
UNU-EHS
Institute for Environment
and Human Security



Springer

the language of science

AFES-PRESS



Contents

1. Global Environmental & Climate Change
2. Scientization, Politicization & Securitization of Climate Change
3. From Rio 1 (1992) to Rio 2 (2012): Performance Gap
4. Climate Paradox Hypothesis
5. Performance of G-8: Mixed Performance
6. Performance of G-20: Lacking Commitment
7. Overcoming the Climate Paradox: Business as Usual vs. sustainability Revolution

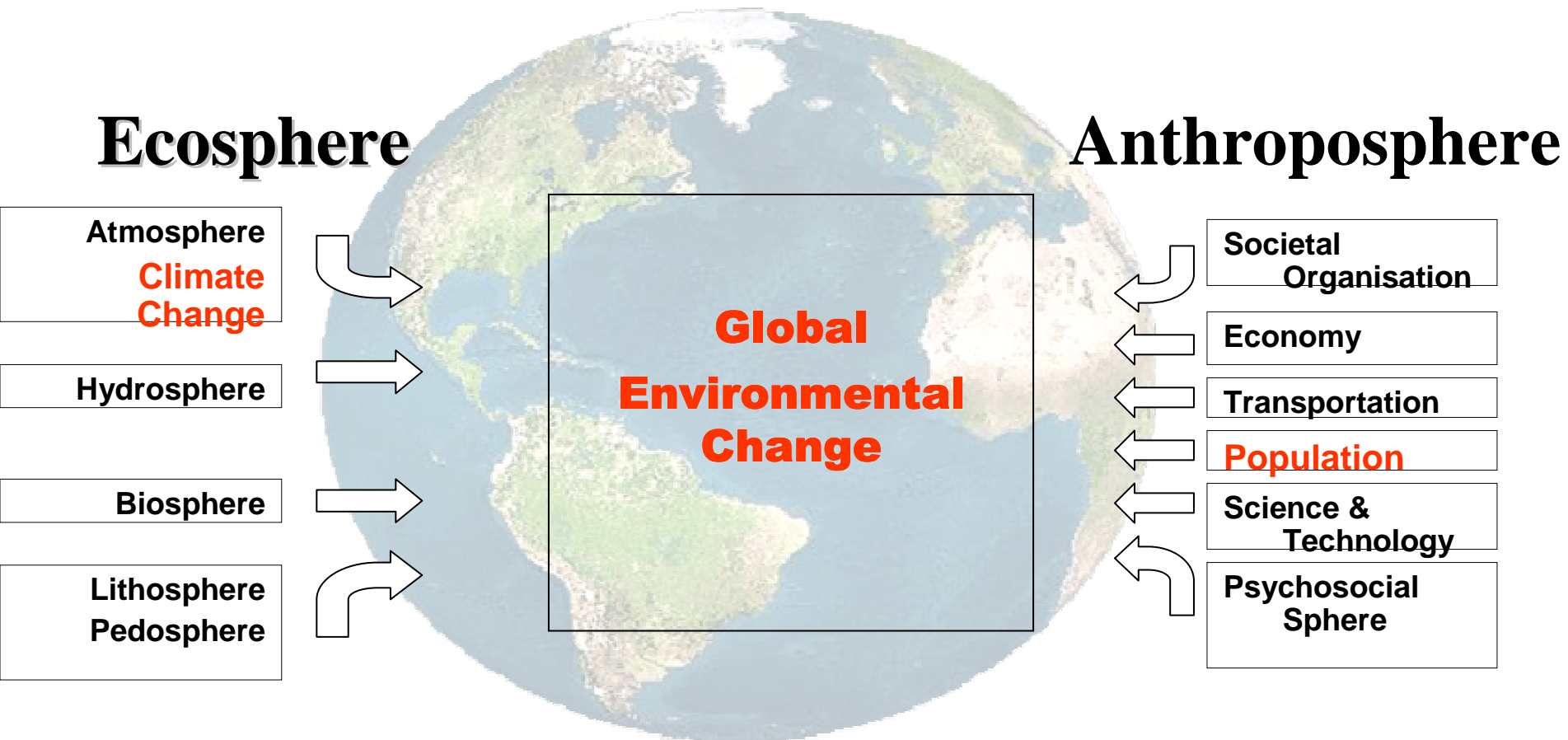
1. Major Achievements: 1972-2012

- **UNCED or first Earth Summit in Rio in June 1992**
 - 1972: Stockholm put environment on UN agenda, UNEP
 - 1987: Brundtland Commission: sustainable development
 - 1992: UNCED launched global environment governance with three major global environment regimes
- **UNFCCC (1992): Process of Conference of Parties**
 - COP 1 (1995): Berlin Mandate for a Protocol
 - **COP 3 (1997): Kyoto Protocol**, with QELROs for Annex B countries (OECD and former Comecon countries of -5% by 2012)
 - **COP 15 (2009): Copenhagen failure to agree on Post KP-Regime**
 - COP 16 (2010): Cancun Accords: voluntary commitments
 - **COP 17 (2011): Durban: nonbinding goal for new regime by 2020**
 - **COP 18 (2012): Doha under way: outcome uncertain!**
- **UNCBD**
 - **Cartagena Protocol on Biosafety (2000, entered into force 2003)**
 - **Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (2010, not yet in force)**
- **UNCCD: no legally binding protocol so far.**

1.1. Major Policy Failures: USA

- **Growing domestic opposition in the USA**
 - **UNCBD: signed 4 June 1993, never ratified it**
 - **Cartagena Protocol: never signed & ratified**
 - **Nagoya Protocol: never signed & ratified**
 - **UNFCCC: signed 12.6.1992 & ratified 15.10.1992**
 - **Kyoto Protocol: US reduction goal: -7% (Clinton Administration signed KP in 12.11.1998)**
 - **Failed to ratify KP due to Republican opposition in the US congress (Senate)**
- **USA became an environmental laggard since 1993 (UNCBD) & 1998 (KP, UNFCCC)**

2. Global Environmental Change (GEC)



GEC poses a threat, challenge, vulnerabilities and risks for human security and survival.

2.1 Global Environmental & Climate Change

- Global Environmental Change (GEC) & global climate change (GCC) have become
 - scientific issues since the 1970s,
 - political problems since the late 1980s & they have been discussed as
 - security-related threats, challenges and risks since early 21st century.
- The symbolic political takeoff occurred at the United Nations Conference on Environment and Development (UNCED) or at the first ‘earth summit’ in June 1992 at Rio de Janeiro when the
 - United Nations Framework Convention on Climate Change (**UNFCCC**)
 - United Nations Convention on Biological Diversity (**UNCBD**) signed
 - Policy documents were approved, e.g. **Agenda 21**,
 - **Rio Declaration on Environment and Development**,
 - **Statement of Forest Principles**
- In contrast, two decades later at the second Rio ‘earth summit’ (Rio+20) no legally binding document was signed and only a non-binding policy document was approved on the “Future we Want” with lowest common denominator of the governments.

2.2 Scientization, Politicization & Securitization of Climate Change

- Since 1970/80s: '*global environmental change*' (GEC) a new topic in natural & social sciences
- Since late 1980s and 1990s policy efforts on:
 - Climate Change: 1988: issue of G7; 1990: UN GA mandate; 1992: Rio summit: UNFCCC (1992) and Kyoto Protocol (1997)
 - Desertification: UNCCD (1994)
- Since 2000: both are seen as security issues
 - Climate change & international security (UN, EU)
 - Climate change & national security (primarily min USA)
 - Climate change & human security (HSN, GECHS, IPCC)

3. From Rio 1 (1992) to Rio 2 (2012): Performance Gap

- After end of Cold War, first 'earth summit' in Rio de Janeiro indicated a significant shift in global political priorities from military security to the new emerging global environmental challenges that required new multilateral cooperation.
- As only remaining superpower, US demonstrated at Rio 1992 its political will to demonstrate its leadership also on global environmental policies.
- This position came under attack during Clinton Administration when Republican controlled US Congress successfully blocked international commitments with the support of interest groups.
- With terrorist attack of 11 September 2001, George W. Bush re-established the dominance of the military agenda downgrading the urgency of GEC issues and climate change.

3.1. 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**

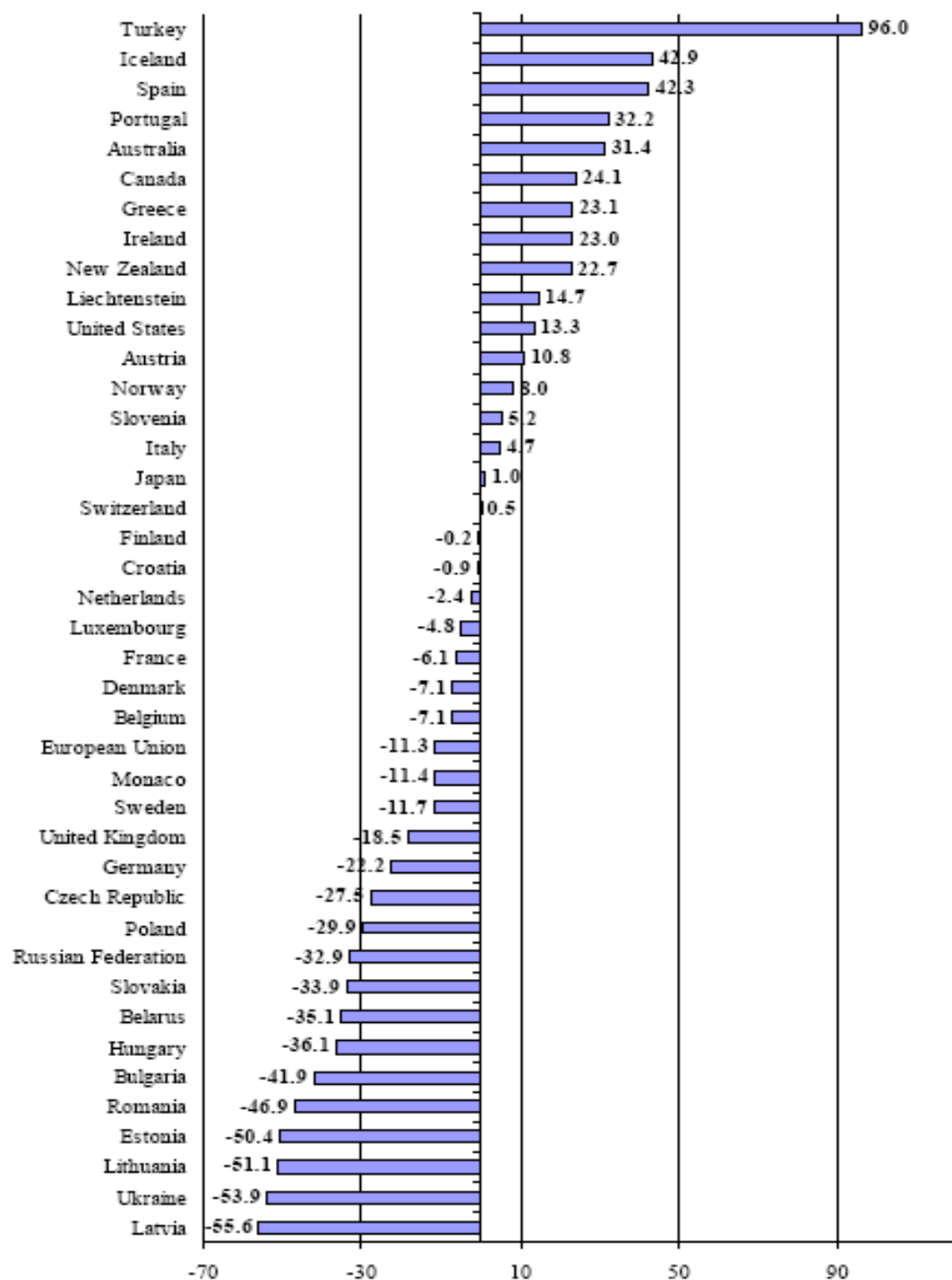
3.2. GHG Reduction Implementation Gap

QELRO, Kyoto Protocol

- 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 [-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]



3.3. Performance Assessment: UNEP GEO-5 (June 2012) & UNFCCC

- **Global Environmental Outlook (GEO-5)** of UNEP of 2012: only 3 of 90 indicators showed significant improvement.
- On achieving the approved goals on the “stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system” (UNFCCC, 1992) and of the political goal “to limit the increase in global average temperature to less than 2°C above pre-industrial levels” (UNFCCC COP 15-COP 17),
- **GEO-5 noted “very little to no progress”** due to “rising CO₂ & other greenhouse gas emissions, increasing concentrations.
- According to the Millennium Development indicators, the global development indicators noted some improvements but one of 7 billion people are still poor and hungry (UNMDG 2012).
- **At Rio+20 (2012) the outcome document called for developing “Sustainable Development Goals” that integrate environmental and development indicators but did not agree on specific targets.**

3.4. UNCBD & Cartagena Protocol

- October 2012, UNCBD had 193 State Parties (192 States, EU). The United States has signed the UNCBD on 4 June 1993 but never ratified it. Besides USA, Andorra, Vatican, South Sudan are no parties to the UNCBD.
- Cartagena Protocol on Biosafety governs movements of living modified organisms (LMOs) resulting from modern biotechnology counted 163 Parties in October 2012. It was adopted on 29 January 2000 and entered into force on 11 September 2003.
- Cartagena Protocol has so far not been ratified by Argentina, Australia, Canada, Chile, the Russian Federation, the USA, Israel, several Arab (Iraq, Kuwait, Lebanon, South Sudan, UAE) and Pacific Small island States.
- **Nagoya – Kuala Lumpur Supplementary Protocol** on Liability & Redress was adopted on 16 October 2010 and signed until September 2012 by 51 signatories but ratified so far by no country. It will enter into force 90 days after being ratified by at least 40 Parties to the Cartagena Protocol on Biosafety.

4. Climate Paradox: Policies without Implementation

- Most governments agree that climate change is due to human interventions into the earth system and supported the goal to stabilize global average temperature at 2°C above the pre-industrial level by 2100. Since 2007, G8 countries supported the goal, most recently in May 2011 in Deauville (France):
 - of developed countries reducing emissions of greenhouse gases in aggregate by 80% or more by 2050, compared to 1990 or more recent years.
 - Consistent with this ambitious long-term objective, we will undertake robust aggregate and individual mid-term reductions. Similarly, major emerging economies need to undertake quantifiable actions to reduce emissions significantly below business-as-usual by a specified year.

5. Performance of G-8: Mixed Performance: GHG Emissions

Country	UNFCCC (1992)		Kyoto Protocol (1997)		Reduction goal (%)	EU-15 Reduction goal (%) Burden-sharing agreement (1998)	Performance (1990-2009) GHG reductions in % 1990 (base year)		
	Annex 1	Annex 2	Annex B	In transition			EU Eurostat (2011) IEA [2011]	UNFCCC (2009) Landuse change and forestry (LULUCF) Excl.	Incl.
1) USA	X		X		-7		+6.7	+7.2	+5.6
2) Canada	X		X		-6		+20.4	+17.0	+29.8
3) Japan	X		X		-6		+2.7	-4.5	-5.0
4) Germany	X		X		-8	-21	-25.4[-21.9]	-26.3	-23.0
5) UK	X		X		-8	-12.5	-27.1[-15.2]	-26.9	-27.7
6) France	X		X		-8	0	-8.3[+0.6]	-7.7	-12.9
7) Italy	X		X		-8	-6.5	-5.0[-2.0]	-5.4	-13.3
8) Russia		X		X	0		-29.7	-36.9	-57.2

5.1. US Climate Performance

- In 2008, the USA had contributed about 18.11% to global total of CO₂ emissions, 2nd rank between China and the European Union (E-27).
- Its per capita emissions amounted to 17.3 tons CO₂ and the average annual % growth from 1970 to 2008 was -0.6%.
- According to IEA's statistics from 1990 to 2009, the total CO₂ emissions of the USA increased by 6.7% and were thus 13.7% above its targets under Annex B of the KP.

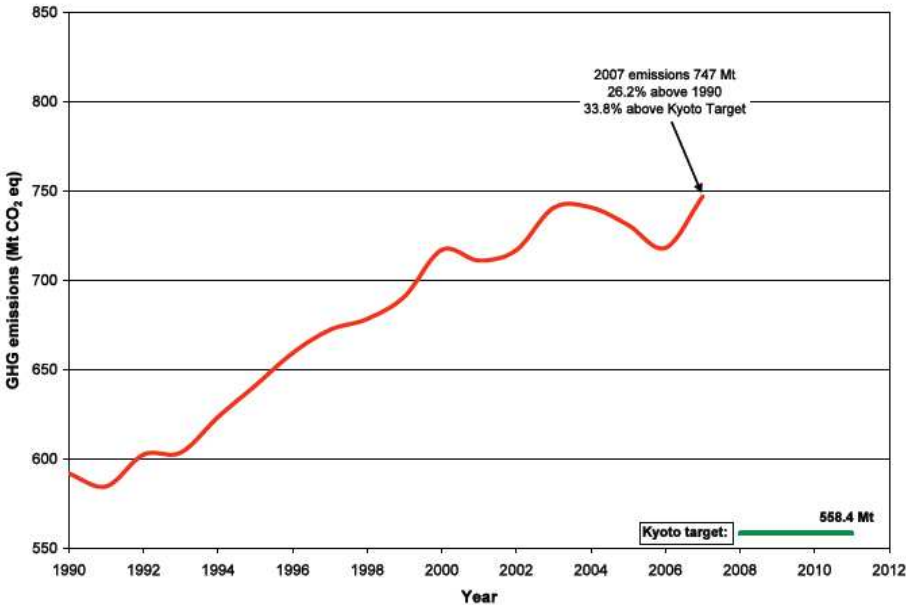
5.2. Climate Policies of NAFTA

Countries: Performance of Canada

- In 2008, Canada had contributed 1.8% to global total and took the 7th rank between Germany and Iran.
- Canada's per capita emissions in 2008 amounted to 16.4 tons of CO₂ and average annual % growth from 1970 to 2008 amounted to +0.1%.
- According to IEA's statistics from 1990 to 2009, Canada's CO₂ emissions increased by 20.4% and were thus 27.4% above its targets under Annex B of the KP.
- In its 5th NC to the UNFCCC of 12 February 2010 the Government of Canada described its performance as follows:

5.3. Climate Policies of NAFTA

Countries: Performance of Canada



In its 5th NC the government admitted that in 2007 Canada's GHG emissions were 33.8% above its Kyoto target.

- 1990-2007, Canada's GHG emissions increased faster than its population, only the GHG per capita and per energy use and the GHG intensity declined. Emissions increased in all sectors, except for land-use change and forestry.
- **On 11 December 2011, Canada unilaterally withdrew from the KP. Canada would join a new global commitment with China and the US.**
- Canada's Prime Minister Harper claimed that the **KP hurt the competitiveness of its economy.**
- The huge performance & implementation gap and the increasing pressure of the energy industry to **exploit Canada's huge potential of oil sands** persuaded Canada's Cons. Harper government as first country to opt out of the KP (1997) to give preference to domestic economic interests over global commitments.

5.4. From Leaders to Laggards: Canada and USA

- **USA was a leader of global climate policy from 1988-1992/1997:**
 - Reagan tabled climate change on G-7 agenda
 - Supported start of UNFCCC negotiations & IPCC establishment in December 1988
 - George Bush signed & ratified UNFCCC in 1992
- **Since 1998 US climate policy was blocked in US Congress by Republican majority:**
 - In 1998 US could sign but not ratify KP due to a lacking 2/3 majority in US Senate.

5.5. Japan: Impact of Fukushima

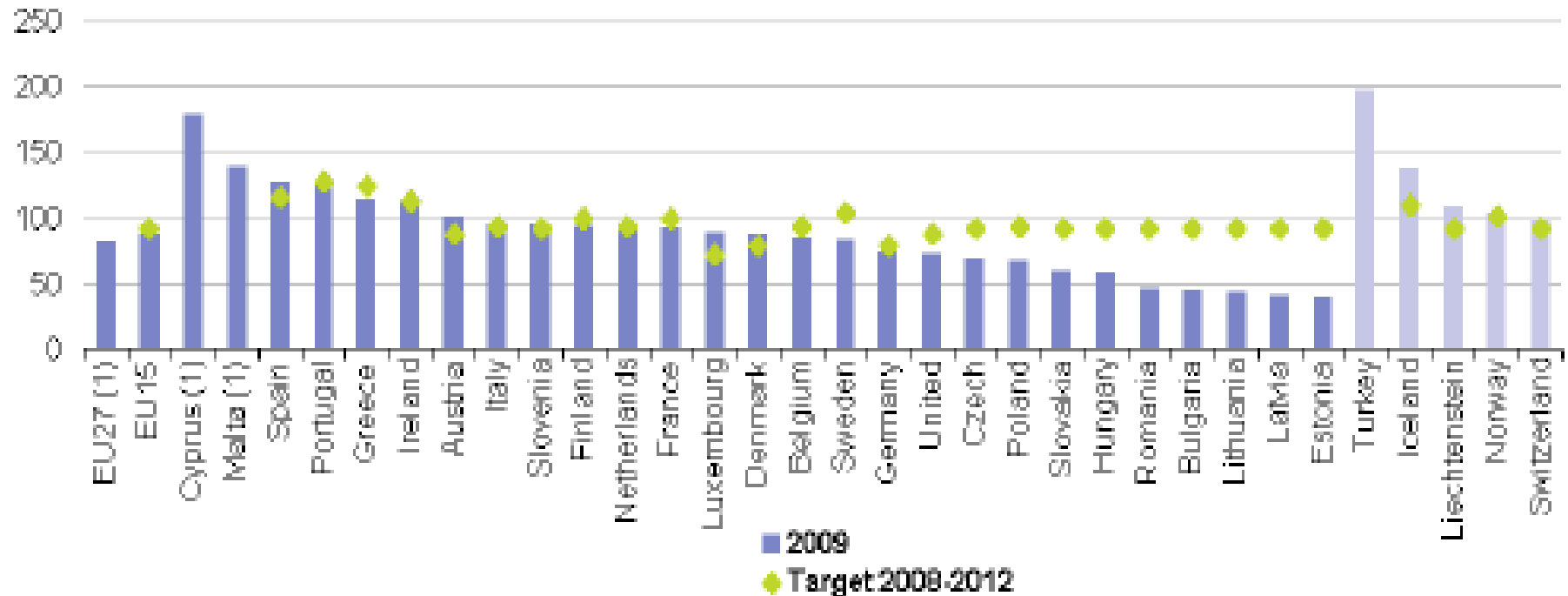
- **2008, Japan 6th rank between India & Germany. Japan's per capita emissions in 2008 amounted to 9.5 tons CO₂ & average ann. growth 1970- 2008 +0.7%. According to IEA's statistics (1990-20099, Japan's CO₂ emissions were 8.7% above its targets under the KP.**
- **Since 1960s Japan held a technological lead in energy-efficient technologies. Ohta (2011) argued that "a lack of strong and stable political leadership on climate change... has also allowed well-organized economic interests and the economy ministry to solidify an industry-oriented policy coalition".**
- **With the Fukushima nuclear catastrophe in March 2011 the vulnerability of Japan's energy policy relying heavily on nuclear energy became obvious.**
- **Japan's policies to achieve its more ambitious long-term emissions reduction targets (25 per cent by 2020, and 80 per cent by 2050) depended heavily upon expanded use of nuclear power. ... But in the aftermath of the Fukushima Daiichi nuclear crisis, these plans have been abandoned, leading many observers to express severe doubts that Japan will meet its long-term emissions targets.**
- **Whether Japan will be able to meet its GHG reduction goals by 2020 and 2050 depends on fundamental decisions on its future energy policy and on an efficient political strategy for a transition towards a sustainable development path in the first half of the 21st century.**

5.6. Russia: Economic Transition

- 2009, Russia s 4th largest CO2 emitter aftere China, USA & India, for all GHG emissions, including defore-station, Russia 5th place behind China, US, Brazil & Indonesia.
- In cumulative emissions for 1850-2007 with 8% Russia was the third largest emitter.
- According to UNFCCC's (2009) with land-use change Russia reduced its GHG emissions since 1990 by -57.2%, without land-use change and forestry by -36.9% and according IEA's (2011) analysis by -29.7% .
- Russia's major decline in GHG emissions since 1990 coincided with dissolution of Soviet Union & transition of Russia from a socialist to a market economy. Prior to COP 15 (2009) in Copenhagen, Russia considered reducing its GHG by 25 % until 2020.

5.7. Implementing Legal Obligations & Policy declarations: EU (Germany, UK, France, Italy

Greenhouse gas emissions and targets per country (Index Kyoto base year = 100):
 Source: Eurostat: Climate change statistics (June 2011); at: <



(1) No target under the Kyoto Protocol (1990=100).

Source: Eurostat (tsien010), European Environment Agency, European Topic Center on Air and Climate Change

5.8. Leaders & Laggards of EU-27

- Among EU-27, Germany, UK, France, Italy) were responsible for **54.9%** of the **GHG** weighted emissions in CO2 equivalents. Of these by 2009 Germany had reduced its emissions by -21.1%, Sweden by -20.9, UK by -15.2%, Denmark by -7.2%, Belgium by -7% since 1990. For EU-15's 'burden-sharing' targets, Sweden had reduced its emissions by -20.9%, the UK by -14.6%, France by -8.3%, Finland by -6.6% and Germany by -4.5%.
- However, there were also several laggards that missed both their reduction targets under Annex B of KP and under the EU-15's 'burden-sharing' approach, led by Spain (+37.7/+11.8%), Portugal (+35.3/-3.0%), Ireland (+32.4/-0.8%) and Greece (28.6/-10.5%), **whose combined share of the EU-27 was only 13.7% in 2009.**

5.9. EU GHG Reduction Goals 2020

The EU also adopted in 2008 a decision to aim by 2020 at a 20/20/20 target:

- A reduction in EU greenhouse gas emissions of at least 20% below 1990 levels
- 20% of EU energy consumption to come from renewable resources
- A 20% reduction in primary energy use compared with projected levels, to be achieved by improving energy efficiency.

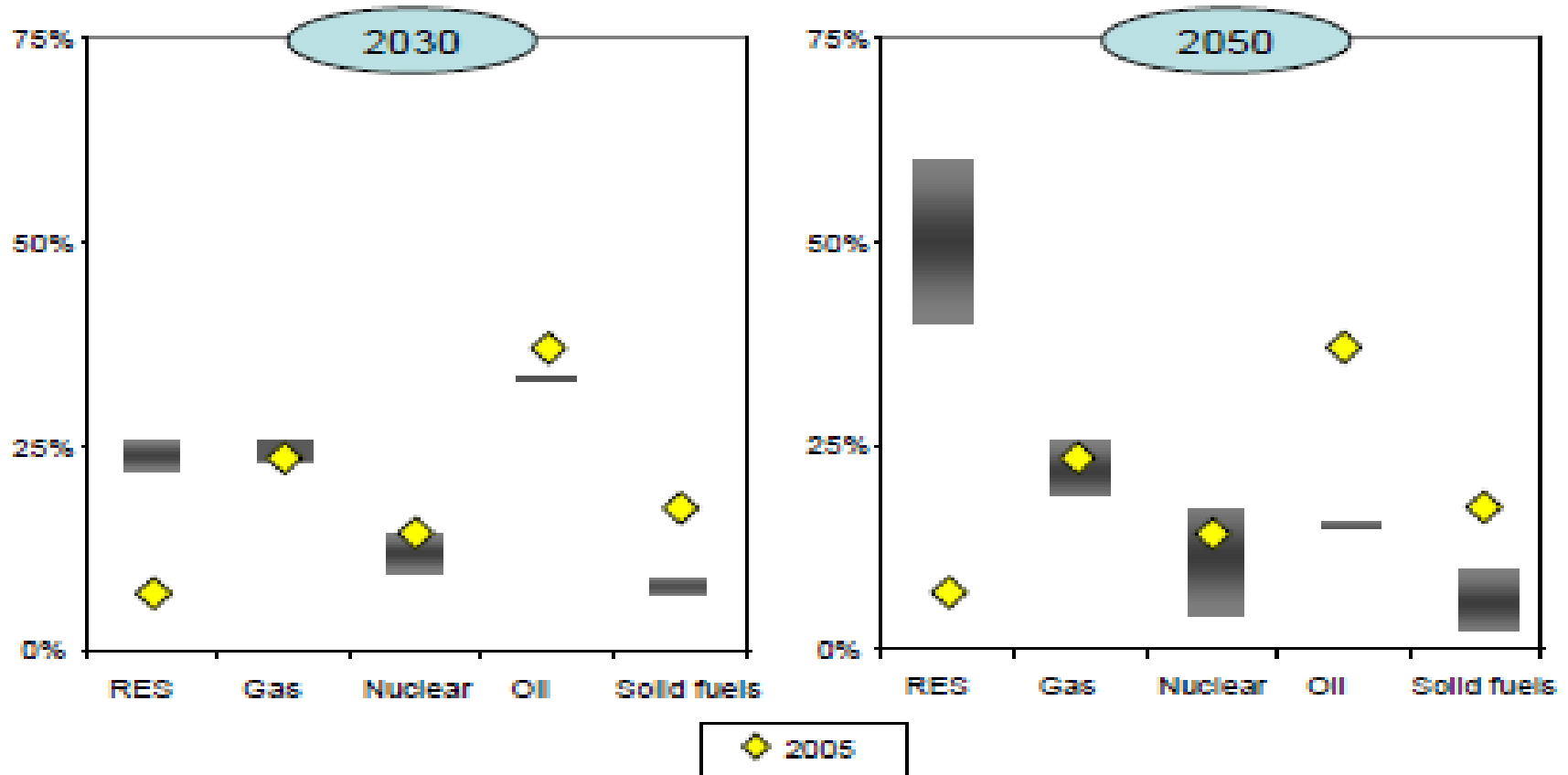
10–11 December 2009, before COP 15 in Copenhagen
European Council offered to increase its emissions reduction to 30% if other major emitting countries would commit to significant reductions under a global climate agreement.

5.10. 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 the energy sector.**

5.11. EU Decarbonization scenarios - 2030 and 2050 (comp. with 2005 in %)

Graph 1: EU Decarbonisation scenarios - 2030 and 2050 range of fuel shares in primary energy consumption compared with 2005 outcome (in %)



6. 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.

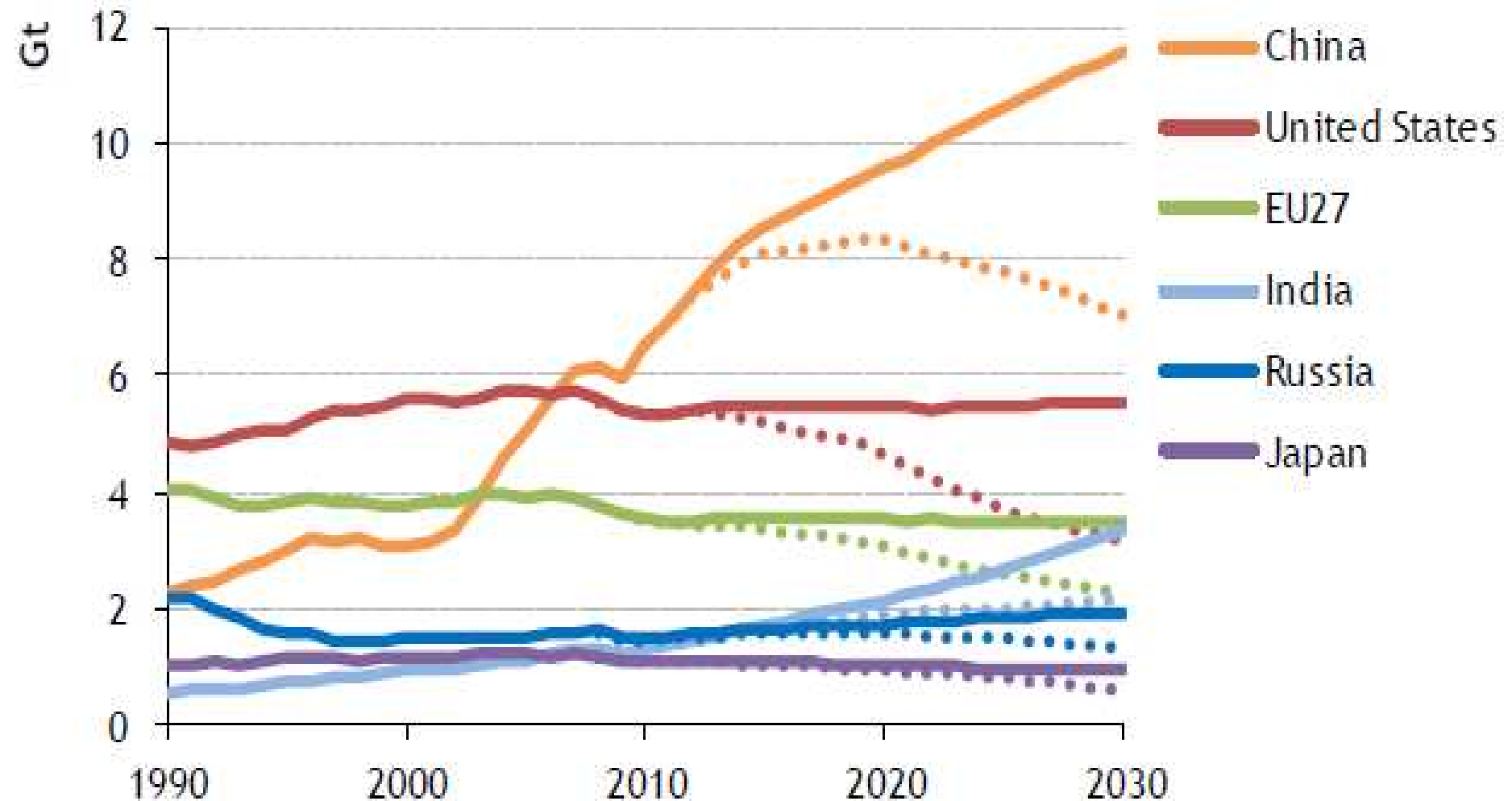
6.1 Population change & projections for the G20 from 1950 until 2100.

	Population change (in 1 000)				Population projection (in 1 000)				Population increase	
	1950	1970	1990	2010	2030	2050	2075	2100	1950-2010	2010-2100
G-8	With GHG reduction obligations under the Kyoto Protocol									
1) USA	157 813	209 464	253 339	310 384	361 680	403 101	446 428	478 026	+152 571	+167 642
2) Canada	13 737	21 717	27 701	34 017	39 850	43 642	46 767	48 290	+20 280	+14 273
3) Japan	82 199	103 710	122 251	126 536	120 218	108 549	95 984	91 330	+44 337	-35 206
4) Germany	68 376	78 169	79 098	82 302	79 469	74 781	70 482	70 392	+13 926	-12 910
5) UK	50 616	55 645	57 214	62 036	69 314	72 817	74 371	75 676	+11 420	+13 640
6) France	41 832	50 763	56 708	62 787	68 467	72 442	76 420	80 288	+20 955	+17 501
7) Italy	46 367	53 325	56 832	60 551	60 851	59 158	55 330	55 619	+14 184	-4 932
8) Russia	102 702	130 392	148 244	142 958	136 429	126 188	114 585	111 057	+40 256	-31 901
G-20	With GHG reduction obligations under the Kyoto Protocol									
9) EU-15/27										
10) Australia	8 177	12 728	17 096	22 268	27 771	31 385	34 114	35 908	+14 091	+13 640
	Without GHG reduction obligations under the Kyoto Protocol									
11) Turkey	21 238	35 464	54 130	72 752	86 665	91 617	86 998	79 200	+51 514	+6 448
12) South Korea	19 211	31 443	42 980	48 184	50 335	47 050	40 467	37 221	+28 973	-10 963
13) Mexico	27 866	51 868	84 307	113 423	135 398	143 925	138 407	127 081	+85 557	+13 658
14) China	550 771	814 623	1 145 195	1 341 335	1 393 076	1 295 604	1 085 948	941 042	+790 564	-400 293
15) India	371 857	553 874	873 785	1 224 614	1 523 482	1 692 008	1 692 208	1 550 899	+852 757	+326 285
16) Brazil	53 975	96 078	149 650	194 946	220 492	222 843	202 651	177 349	+140 971	-17 597
17) South Africa	13 683	22 502	36 794	50 133	54 711	56 757	56 863	54 477	+36 450	+4 344
18) Argentina	17 150	23 983	32 642	40 412	46 761	50 560	51 079	49 201	+23 262	+8 789
19) Indonesia	74 837	118 362	184 346	239 871	279 659	293 456	278 207	254 178	+165 034	+14 307
20) Saudi Arabia	3 121	5 772	16 139	27 448	38 481	44 938	45 818	42 427	+24 327	+14 979

6.2 Change of CO₂ Emissions (1971-2009) and projections up to 2030

Countries	CO ₂ emissions: Sectoral Approach in mill, tonnes (IEA 2011)					% change 1990-2009	CO ₂ emission per cap. (UNDP 2011)		CO ₂ emissions projections (IEA)			
	1971	1980	1990	2000	2009		Tonnes (2008)	Average annual growth % 1970/2008	% of global total		2020	2030
									2007	2020		
G-8	With GHG reduction obligations under the Kyoto Protocol											
1) USA	4 291.3	4 661.6	4 868.7	5 698.1	5 195.0	6.7%	17.3	-0.6	20	16		
2) Canada	339.4	426.9	432.3	532.8	520.7	20.4%	16.4	0.1				
3) Japan	758.8	880.7	1 064.4	1 184.0	1 092.9	2.7%	9.5	0.7				
4) Germany	978.6	1 055.6	950.4	827.1	750.2	-21.1%	9.6					
5) UK	623.5	571.1	549.3	523.8	465.8	-15.2%	8.5	-0.8				
6) France	431.9	461.4	352.3	376.9	354.3	0.6%	6.1	-0.9				
7) Italy	292.9	359.8	397.4	426.0	389.3	-2.0%	7.5	0.8				
8) Russia			2 178.8	1 505.5	1 532.6	-29.7%	12.1		6	5		
G-20	With GHG reduction obligations under the Kyoto Protocol											
9) EU-27			4 051.9	3 831.2	3 576.8	-11.7%			14	11		
10) Australia	144.1	208.0	260.1	338.8	394.9	51.8%	19.0	1.3				
G-20	Without GHG reduction obligations under the Kyoto Protocol											
11) Turkey	41.4	70.9	126.9	200.6	256.3	102.0%	3.9	3.2				
12) South Korea	52.1	124.4	229.3	437.7	515.5	124.8%	10.6	5.0				
13) Mexico	97.1	212.1	264.9	296.6	399.7	50.9%	4.4	1.8				
14) China	809.6	1 419.8	2 244.1	3 077.2	6 877.2	206.5%	5.2	4.6	21	27		
15) India	200.2	283.3	582.3	972.5	1 585.8	172.3%	1.5	3.8	4	6		
16) Brazil	91.1	180.3	194.3	302.8	337.8	73.9%	2.1	2.0				
17) South Africa	173.8	214.5	254.7	298.2	369.4	45.0%	8.8	0.7				
18) Argentina	83.1	95.9	100.4	139.0	166.6	66.0%	4.8	0.9				
19) Indonesia	25.1	68.8	142.2	264.0	376.3	164.7%	1.8	4.8				
20) Saudi Arabia	12.7	99.1	158.9	252.4	410.5	158.4%	17.2	2.1				
									65	65		

6.3 Energy-related CO2 Emissions for EU27, US, Japan, Russia, China & India (1990-2030)



6.4. Australia: Annex 1 (UNFCCC) and Annex B Country (KP)

- In 2008, Australia had contributed about 4.01% to the global CO₂ and took 16th rank between Indonesia & Brazil. Australia's per capita emissions in 2008 19 tonnes CO₂ and average annual % growth 1970 -2008 +1.3%. According to IEA's statistics 1990-2009, Australia's CO₂ emissions increased by 51.8% and were thus +41.8% above its targets under Annex B of the KP.
- Australia's emission reduction targets of 2010 aimed to reduce its emissions below the level of 2000 by 2020 by 25% "if the world agrees at a stabilization goal of or below 450 ppm", by 15% if major developing countries substantially constrain their emissions and developed countries accept similar obligations and by 5% irrespective of the actions of other states. Australia's climate change strategy is based on three pillars: a) to reduce emissions, b) adapt to unavoidable climate change, and c) help to shape a global solution.
- Australia's 80% reliance on coal & 15% on gas for electricity generation in 2007-2008 and as a major exporter of coal made carbon industry a major employer and a powerful political voice.
- In 2007-2008, the reliance on hydropower was only 1.7%, on wind and solar energy 0.8% and on other renewables 0.8%. Therefore the goal "to achieve by 2020 a 20% contribution of renewables to the generation of its electricity" remains politically ambitious.

6.5. Threshold OECD countries: Turkey, South Korea and Mexico

- Three OECD & economic threshold countries have no GHG reduction obligations under KP.
- While **Turkey** has been an Annex-1 country of UNFCCC, it **did not join Annex B of the KP**.
- In 1997, **South Korea** objected to become an Annex-1 country,
- **Mexico** was then not yet an OECD member.
- **CO2 emission increases since 1990-2009:**
 - South Korea had the highest (124.8%),
 - followed by Turkey (102%) and
 - Mexico (50.9%).

6.6. BASIC countries: Brazil, South Africa, India & China

- The population of the four BASIC countries (Brazil, South Africa, India, China) increased between 1950 and 2010 by 1,820,742,000 and they represented in 2010 about 2.811 billion of a global population of 7 billion people or about 40% of the global populations.
- Their combined CO₂ emissions amounted in 2008 to about 31.86% of the global emissions.
- Given the projected emissions growth rates until 2030 & the still growing population in all BASIC countries, the economic growth and the increase in energy consumption and emissions most particularly in China and India will have global ramifications.
- Strategies for moving to a low carbon economy in China & India with a higher degree of energy efficiency & an increasing share of renewable energy sources for electricity generation & transportation will have a global impact in reducing GHG emissions.

6.7. Remaining G20 countries: Indonesia, Saudi Arabia, Argentina

- **Indonesia (2008)** contributed 1.35% of CO₂ emissions to the global total, its per cap. em. in 2008 ca. 1.8 tonnes of CO₂ & average annual growth (1970-2008); 4.8%. from 1990 to 2009, Indonesia's CO₂ emissions increased by +164.7%.
- **Saudi Arabia (2008)** contributed 1.44% of global CO₂, 14th rank between South Africa and Indonesia. Its per capita emissions in 2008 amounted to 17.2 tonnes of CO₂, its average ann. growth (1970-2008): 2.1%. From 1990 to 2009, Saudi Arabia's CO₂ emissions increased by +158.4%.
- In 2008, **Argentina** had contributed with 192,378 thousand metric tones of CO₂ emissions and about 0.64% to the global total and took the 28th rank between **Malaysia and The Netherlands**. Argentina's per capita emissions in 2008 amounted to 4.8 tonnes of CO₂ and the average annual growth from 1970 to 2008 amounted to 0.9%. According to IEA's statistics from 1990 to 2009, Argentina's CO₂ emissions increased by +66%.

6.8. GHG Emissions Reduction Pledges of the Non-Annex I G20 countries

GHG emissions (Gt CO ₂ eq)	1990	2005	Business-as usual 2020	Unconditional pledge	Conditional pledge
Turkey	187	330	503	503	503
South Korea	308	569	678	569	569
Mexico	581	774	784	784	617
China	3,594	7,233	13,450	12,964	12,894
India	1,106	1,859	3,121	3,537	3,537
Brazil	1,854	2,279	2,497	2,068	1,977
South Africa	334	422	608	608	491
Argentina					
Indonesia	913	1,195	1,487	1,604	1,280
Saudi Arabia					
Other non-Annex I	4,569	6,587	9,303	9,303	9,303
Non-Annex I total (incl. land-use CO ₂)	18,036	24,595	35,051	34,599	33,494
Annex I (excluding Turkey)	19,019	18,034	18,646	17,868	15,368
World strict rules	37,856	44,063	55,746	54,517	50,912
World lenient rules	37,856	44,063	55,746	55,374	54,269

7. Overcoming the Climate Paradox

- **Many OECD states – among them three G8 countries – failed to implement their legal obligations and to adopt a Post-Kyoto regime.** The Durban outcome “included a decision by Parties to adopt a universal legal agreement on climate change as soon as possible, and no later than 2015”. This refers to a ‘business-as-usual’ mentality among government representatives to postpone legally-binding commitments to their successors.
- **Democratic governance did not determine the different climate performance of the G-8. Rather, there is a significant implementation gap among democracies between a majority of EU countries (leaders) and large OECD countries in North America and in the Asia-Pacific (laggards).** Among the G-8 countries different strategies of ‘business first’ and reformist approaches towards a ‘long-term transformative change to sustainability’ could be observed.
- **All 11 non Annex-1 G-20 countries have also significantly increased their GHG from 1990 to 2009 and most have so far rejected to adopt any legally binding quantitative reduction commitments.** If the two versions of the business-as-usual strategies and policies as business-first (in the North) as development-first (in the South) prevail, the probability may increase that global environmental change and global climate change pose multiple security threats, challenges vulnerabilities and risks for international, national and human security during this century., which also reduce the policy prospects for policies aiming at a positive and sustainable peace with a higher degree of social justice.

7.1. Overcoming the Climate Paradox

Business as Usual vs. Sustainability Revolution

- ‘Climate paradox’ resulted between COP 15 & COP 17 in a strategy of postponement of legally binding GHG reduction goals to the next government and due to policies humankind may face dangerous climate change in a 4°C world or even a catastrophic climate change in a 6°C world.
- To avoid both alternative developments until the end of this century a fundamental paradigm shift is needed with a “transformation of global cultural, environmental, economic ... and political ... relations” by aiming at a “sustainability revolution and sustainable peace”. Both visions refer to different coping strategies with GEC:
 - In the first vision of business-as-usual cornucopian perspectives prevail that suggest primarily technical fixes ..., defense of economic, strategic and national interests with adaptation strategies that are in the interest of the ‘top billion’ of OECD countries
 - 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.
- Both opposite scientific visions imply different policy consequences:
 - 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 socio-political consequences that represent a high-risk approach.
 - To avoid these consequences the alternative vision and sustainability perspective requires a change in culture ..., worldviews ..., mindsets ... and new forms of national and global governance (

**Thank you
for your attention!**

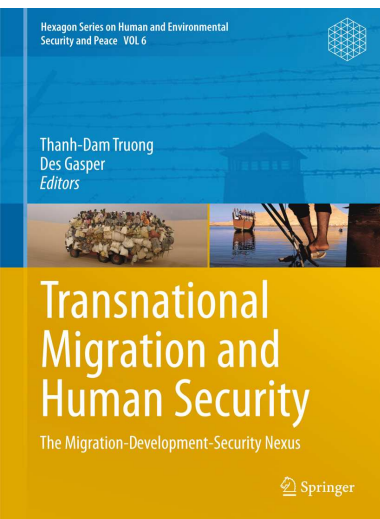
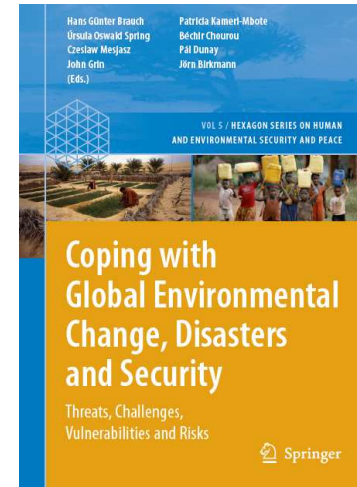
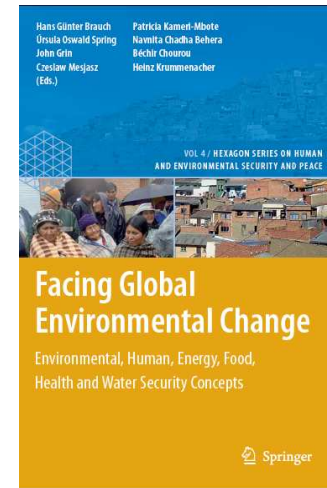
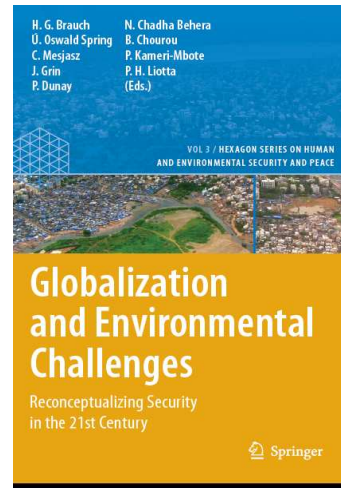
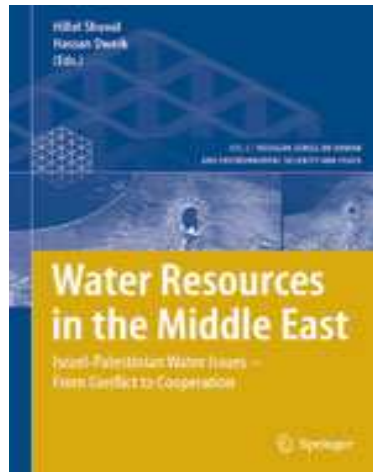
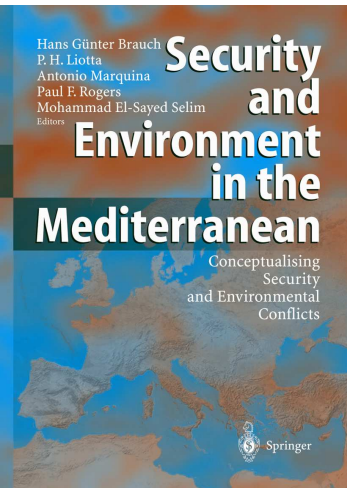
This text is soon for download at:

<http://www.afes-press.de/html/download_hgb.html>

Send your comments to:

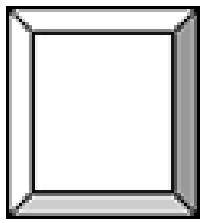
Brauch@onlinehome.de

Hexagon Series: Volumes I-VIII



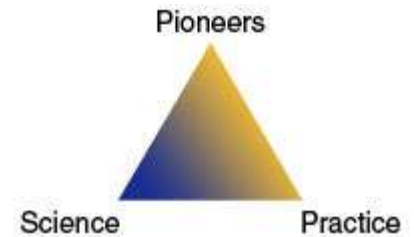
Forthcoming Volumes

- Truong, Thanh-Dam; Bergh, S.I.; Gasper, Des; Handmaker, J. (Eds.): Migration, Gender and Social Justice - Perspectives on Human Security. Hexagon Series on Human and Environmental Security and Peace, vol. 9 (Heidelberg – Dordrecht – London – New York: Springer, 2012).
- Czeslaw Mesjasz: *Stability, Turbulence or Chaos? Systems Thinking and Theory and Policy of Security*. Hexagon Series on Human and Environmental Security and Peace, vol. 10 (Berlin et al. Springer-Verlag, 2013).



Springer

the language of science



- **SpringerBriefs in Environment, Security, Development and Peace (ESDP): Peer Reviewed Book Series**
- Mely Caballero-Anthony, Youngho Chang and Nur Azha Putra (Eds.) [Singapore]: Energy and Non-Traditional Security (NTS) in Asia. [ESDP] vol. 1 (Heidelberg – Dordrecht – London – New York: Springer-Verlag, 2012).
- Mely Caballero-Anthony, Youngho Chang and Nur Azha Putra (Eds.) [Singapore]: Rethinking Energy Security in Asia: A Non-Traditional View of Human Security. [ESDP] vol. 2 (Heidelberg – Dordrecht – London – New York: Springer-Verlag, 2012).
- Philip Jan Schäfer [Germany]: Human and Water Security in Israel and Jordan. ESDP, vol. 3 (Heidelberg et al: Springer-Verlag, 2012).
- **SpringerBriefs on Pioneers in Science & Practice (PSP)**
- **Subseries: Pioneers in Science and Practice – Texts and Protocols (PSP-TP)**
- Arthur H. Westing [USA]: Arthur H. Westing: Pioneer on the Environmental Impact of War. PSP No. 1 – presented by Hans Günter Brauch (Heidelberg et al: Springer-Verlag, 2012).
- Vol. 2: Rodolfo Stavenhagen [Mexico]: Pioneer on Indigenous Rights. – presented by Ursula Oswald Spring (Heidelberg, 2013).
- Vol. 3: Rodolfo Stavenhagen [Mexico]: The Emergence of Indigenous Peoples. (Heidelberg – et al: Springer-Verlag, 2013).
- Vol. 4: Rodolfo Stavenhagen [Mexico]: Peasants, Culture and Indigenous Peoples: Critical Issues. (Heidelberg et al.: Springer-Verlag, 2013).
- Vol.6: Dieter Senghaas [Germany]: Pioneer of Peace and Development Research.– presented by Michael Zürn (Heidelberg et al.: Springer-Verlag, 2013).