AFPREA Conference, Abuja, Nigeria, 13-15 April 2015
The Quest for Peace and Security in Africa:
Socio-cultural, Economic, Political and Legal Considerations

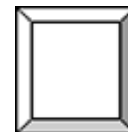# Commission 6:
Regional Integration and Resource Control for Equity

© Hans Günter Brauch,
Chairman, Peace Research and European Security Studies (AFES-PRESS)
Editor, Hexagon Series on Human, Environmental Security and Peace
Editor, SpringerBriefs in Environment, Security, Development & Peace

Climate Change Impacts on Security for (West) Africa:
Are there Sustainable Alternatives?

Freie Universität Berlin

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

AFES-PRESS

Springer
the language of science

Abstract

This paper addresses the questions as to how global environmental change and climate change may affect international, national and human security in Africa during the 21st century, whether there are alternatives to avoid possible climate-induced violent conflicts by moving towards a transition to a low carbon economy and what peace researchers may contribute by rising public awareness on both the human-induced challenges and to collaborative solutions. This paper is structured into ten parts. After a brief introduction the emergence of global environmental and climate change since the 1970s as a scientific, political and since 2004 as a security issues are reviewed as a result of the human intervention into the earth system and nature. We have changed earth and are now in the Anthropocene having become a major threat to the survival of humankind. The next two parts focus on the physical and societal effects of climate change in and on possible impacts for security in Africa during this century. The remaining parts introduce the new peace ecology approach by linking peace and environmental studies aiming at a conceptual analysis and policy actions guided by the triple goal of sustainable development, human security and sustainable peace, what requires a simultaneous approach toward conflict avoidance and proactive initiatives for peace and sustainability transition in Africa where AFPREA may contribute conceptually by agenda-setting.
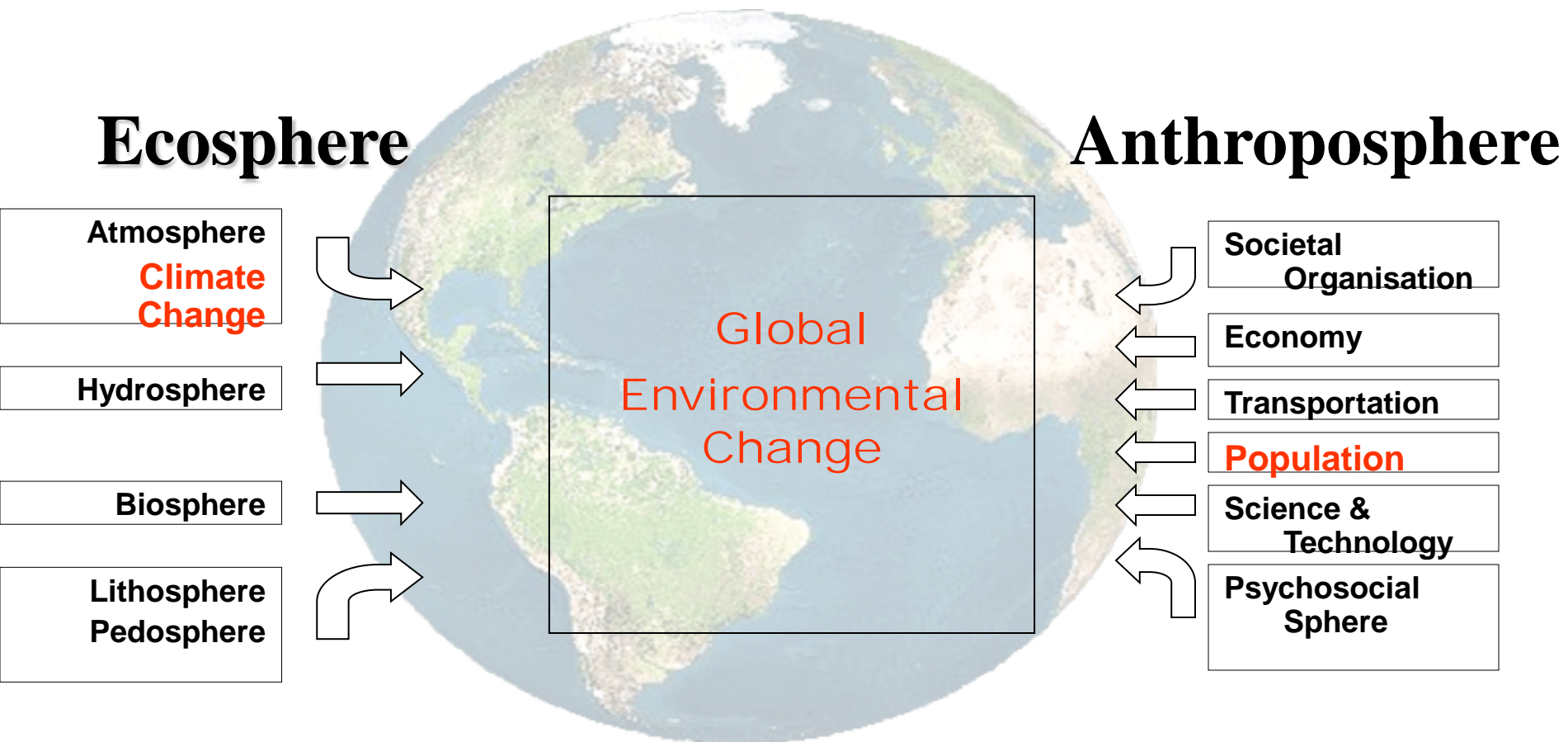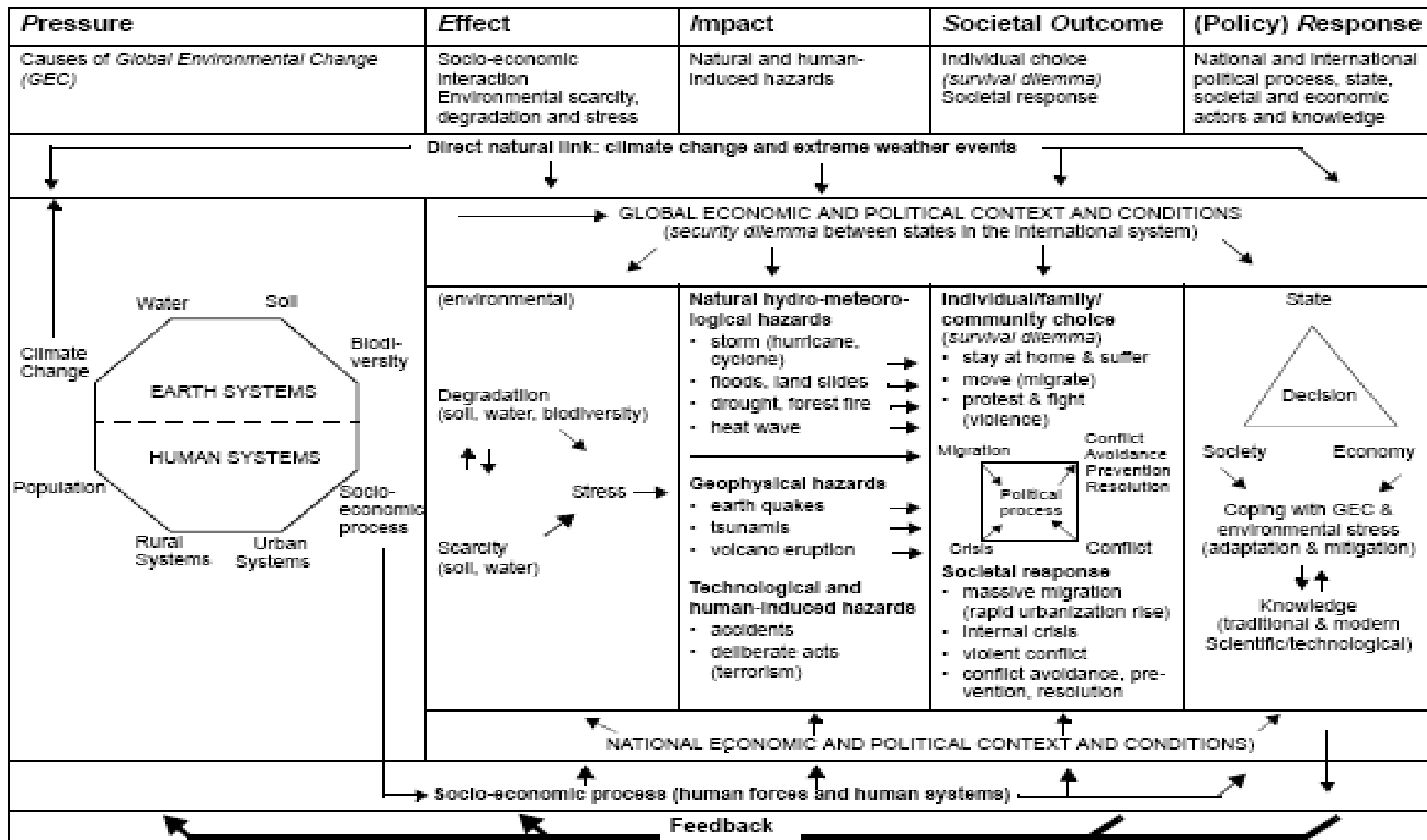
Contents

1. Introduction

- How may the physical and societal impacts of global environmental and especially global climate change affect human security in Africa in the 21st century?

- Are there alternatives for peace and sustainability in Africa by gradually moving towards sustainability transition towards a low carbon economy?

- How can we address these mutual challenges from the perspective of a peace ecology that aims at a sustainable peace with nature?

2 Emergence of Global Environmental and Climate Change

Ecosphere

Anthroposphere

| Atmosphere **Climate Change** |
| Hydrosphere |
| Biosphere |
| Lithosphere Pedosphere |

Global Environmental Change

| Societal Organisation |
| Economy |
| Transportation |
| **Population** |
| Science & Technology |
| Psychosocial Sphere |

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

2.1 Global Environmental Change & Impacts: PEISOR Model

Pressure	*Effect*	*Impact*	*Societal Outcome*	*(Policy) Response*
Causes of *Global Environmental Change (GEC)*	Socio-economic interaction Environmental scarcity, degradation and stress	Natural and human-induced hazards	Individual choice *(survival dilemma)* Societal response	National and international political process, state, societal and economic actors and knowledge

Direct natural link: climate change and extreme weather events

GLOBAL ECONOMIC AND POLITICAL CONTEXT AND CONDITIONS
(*security dilemma between states in the international system*)

Pressure
Water   Soil
Biodi-versity
EARTH SYSTEMS
Climate Change
HUMAN SYSTEMS
Population
Socio-economic process
Rural Systems   Urban Systems

Effect
(environmental)
Degradation (soil, water, biodiversity)
Stress →
Scarcity (soil, water)

Impact
Natural hydro-meteoro-logical hazards
· storm (hurricane, cyclone)
· floods, land slides
· drought, forest fire
· heat wave

Geophysical hazards
· earth quakes
· tsunamis
· volcano eruption

Technological and human-induced hazards
· accidents
· deliberate acts (terrorism)

Societal Outcome
Individual/family/community choice (*survival dilemma*)
· stay at home & suffer
· move (migrate)
· protest & fight (violence)

Migration   Conflict Avoidance Prevention Resolution
Political process
Crisis   Conflict

Societal response
· massive migration (rapid urbanization rise)
· internal crisis
· violent conflict
· conflict avoidance, pre-vention, resolution

(Policy) Response
State
Decision
Society   Economy
Coping with GEC & environmental stress (adaptation & mitigation)
Knowledge (traditional & modern Scientific/technological)

NATIONAL ECONOMIC AND POLITICAL CONTEXT AND CONDITIONS)

Socio-economic process (human forces and human systems)

Feedback

3. Reconceptualizating Security:
Human Intervention into the Earth System

Three reasons: end of Cold War, globalization & GEC effects
This reconceptualization of Security has resulted in a
- *widening* from military & political dimensions to economic, societal & environmental dimens.
- *deepening* from 'state-centred' to 'human centred' concepts of human security;
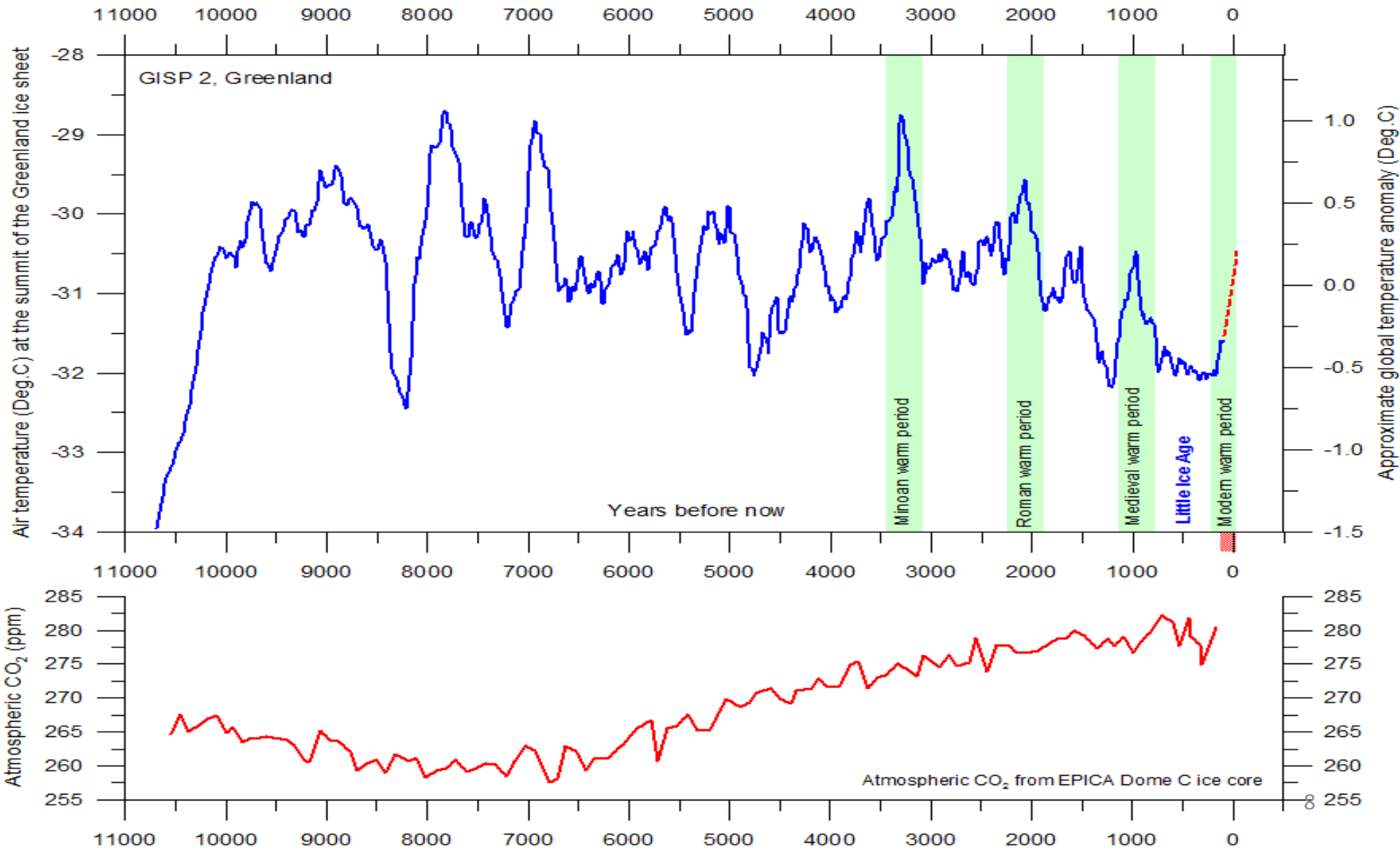- *sectorialization* to energy, food, water, health, soil, livelihood, climate security concepts

<u>Human Security:</u> freedom from fear, want, live in dignity (Annan), hazard imp.
<u>Environmental Security:</u> **eco-geopolitics and political geoecology**
<u>Climate Security</u>: **UK, M. Beckett**, 17.4.2007: tabled climate change to UNSC

Security dimension⇒ ⇓ Level of interaction	Mili-tary	Political	Economic	Environ-mental ⇓	Societal
Human individual ⇒			**Food sec.** **Health sec.**	**Cause** **& Victim**	**Food sec.** **Health sec.**
Societal/Community				⬇⬆	
National		**shrinking**	**Energy sec.**	⬇⬆	**Food, health**
International **Regional**			**Water** **security**	⬇⬆	**Water** **security**
Global/Planetary ⇒				**GEC**	

4. We have Changed Earth and are in the Anthropocene after Holocene (11600 BP)

GISP 2, Greenland

Air temperature (Deg.C) at the summit of the Greenland ice sheet

Approximate global temperature anomaly (Deg.C)

Minoan warm period

Roman warm period

Medieval warm period

Little Ice Age

Modern warm period

Years before now

Atmospheric CO_2 (ppm)

Atmospheric CO_2 from EPICA Dome C ice core

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

Paul Crutzen,
Nobel Laureate for
Chemistry (1995)
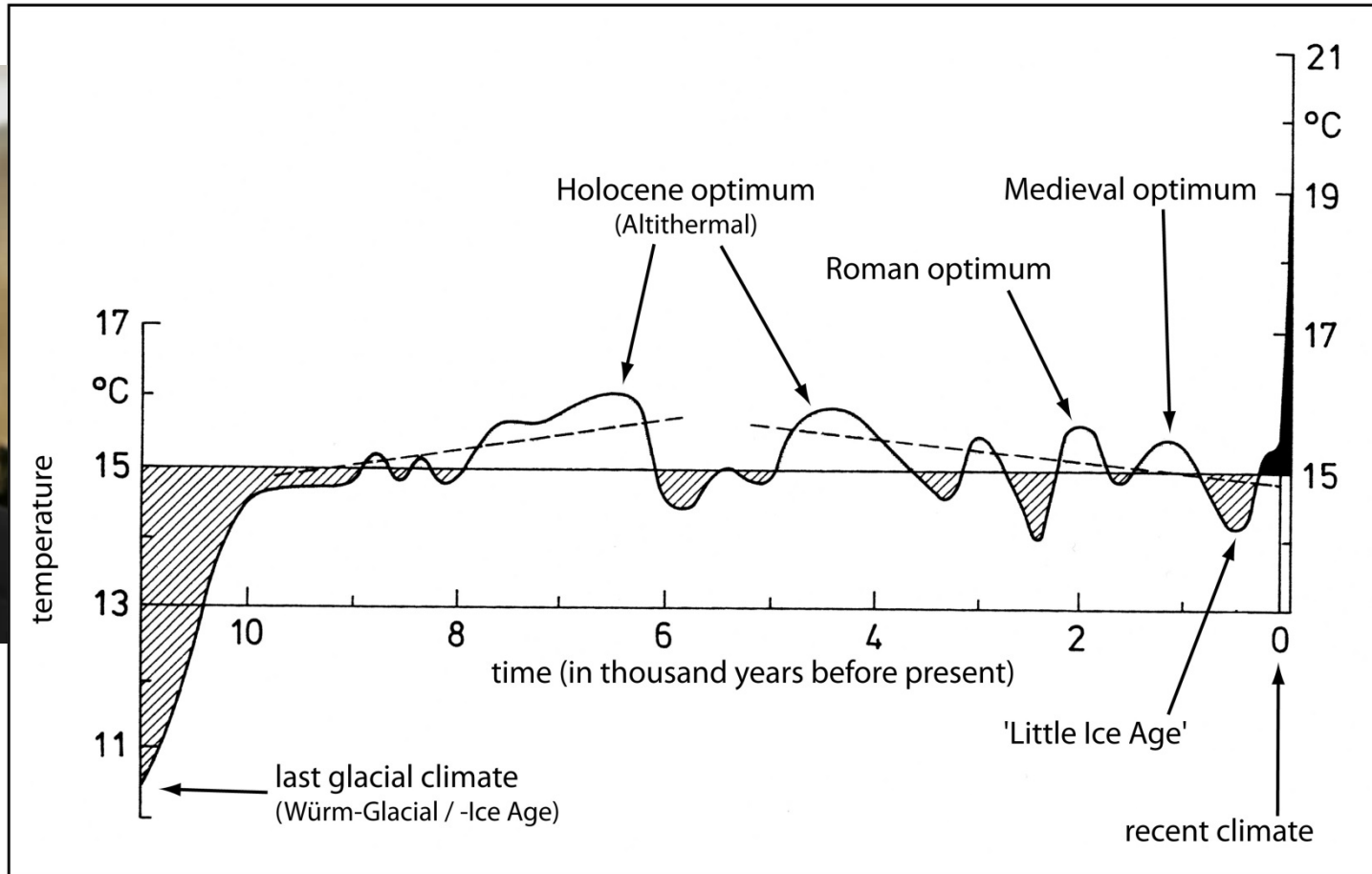
In Geology/geography: **Holocene** era of earth history since end of glacial period (10-12.000 years ago, Anthropocene, since industrial revolution (1784, J.Watt's invention of steam engine: anthropogenic climate changte: burning of coal.oil,gas➔GHG increase

4.2 Anthropogenic Climate Change in the Anthropocene Era (1750 to present)
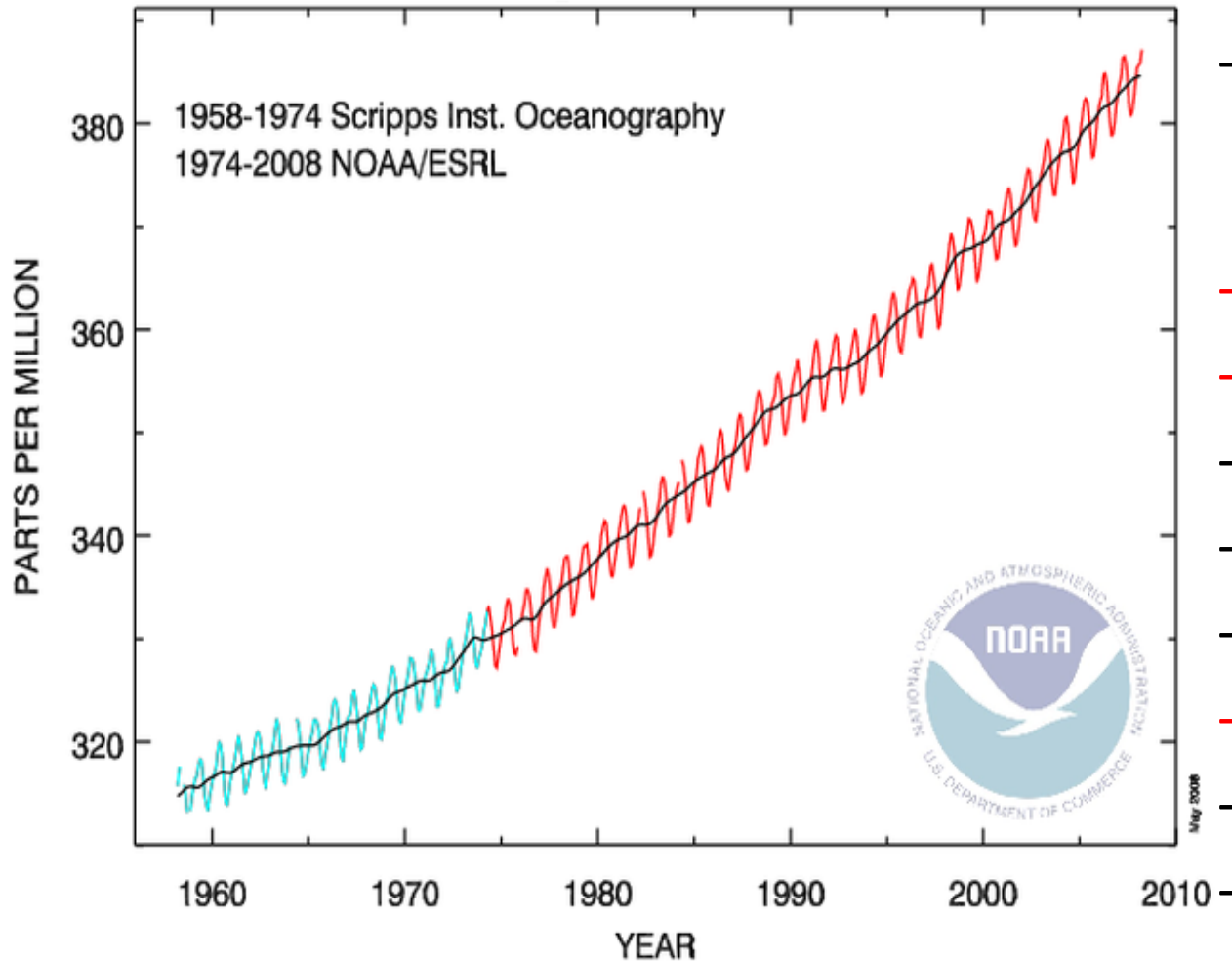
- **GHG concen-tration in the atmosphere**
- **1750: 279 ppm**
- **1958: 315 ppm**
- **1987: 387 ppm**
- **2011: 393 ppm**
- **2012: 396 ppm**
- **2013: 400pp,**
- **1/3: 1750-1958:**
- **2/3: 1958-2013: 315 to 400 ppm**

4.4 IPCC 5th Assessment Report (2013/2014): Africa & Human Security
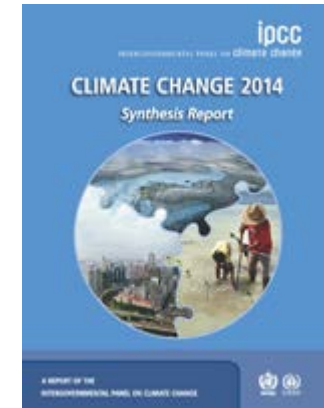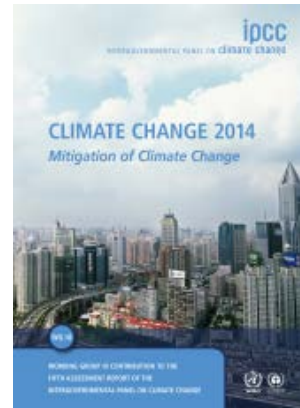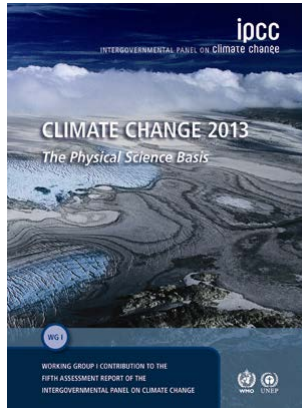
- **Chapter 12: on human security**
  - **Coordinating lead authors: W. N. Adger (UK), Pulhin (Philippines)**
  - **Lead authors: Barnett (Australia), Dabelko & Levy (USA), Hovelsrud (Norway), Oswald Spring (Mexico), Vogel (South Africa)**
- **Chapter on Africa**
  - **Coordinating lead authors: Niang (Senegal), Ruppel (Namibia)**
  - **Lead authors: Adrabo (Egypt), Essel (Ghana), Lennard, Padgam (South Africa), Urquhart (USA)**

4.5 IPCC, AR5, WG 1 (Sep. 2013)
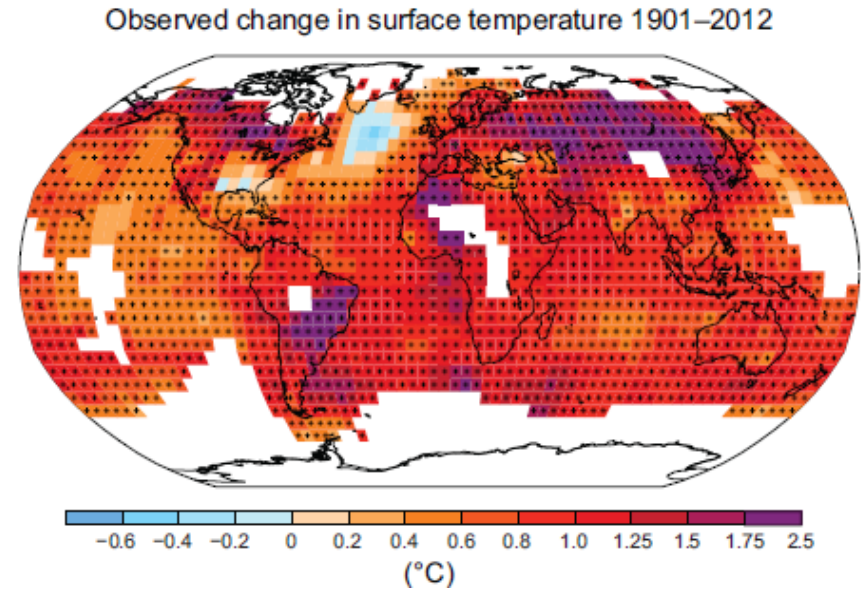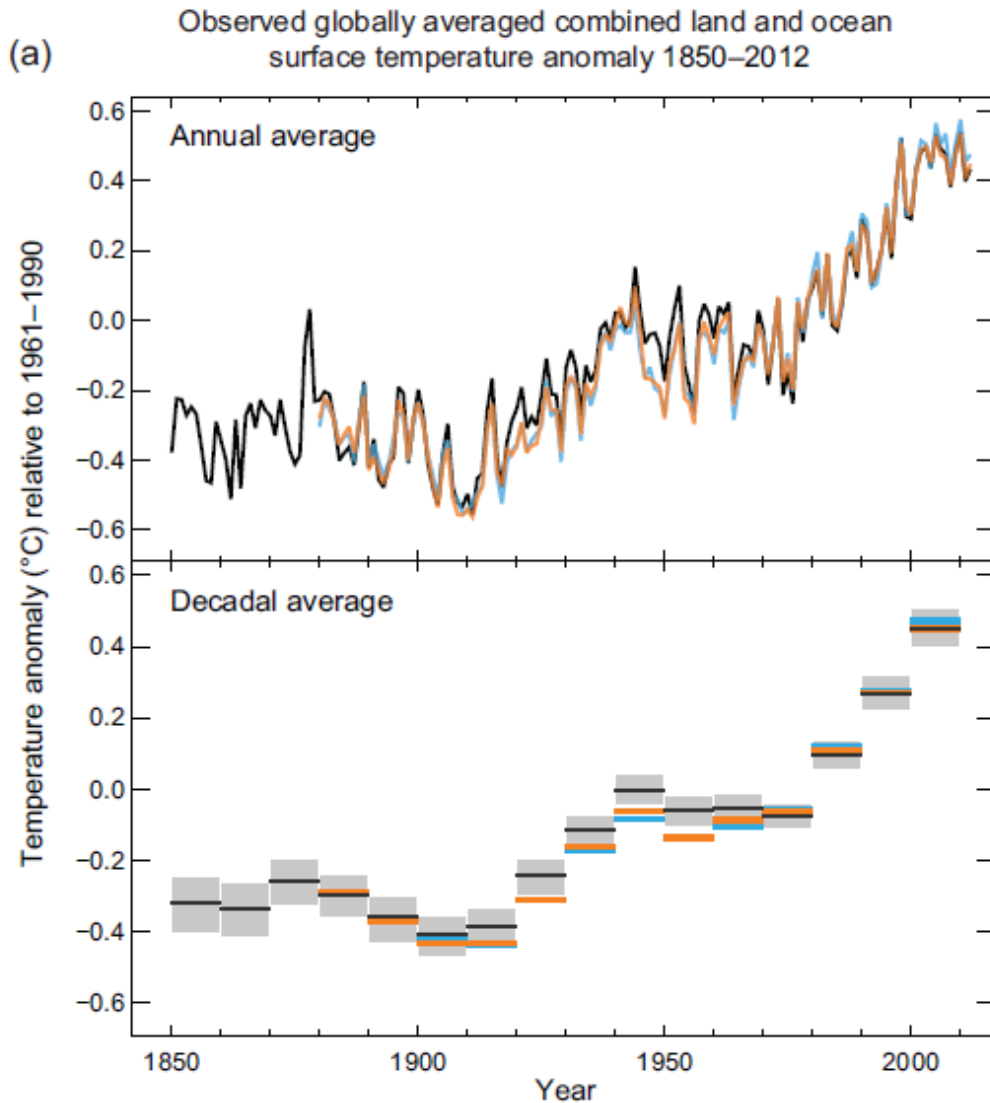
Cumulative total anthropogenic CO₂ emissions from 1870 (GtCO₂)
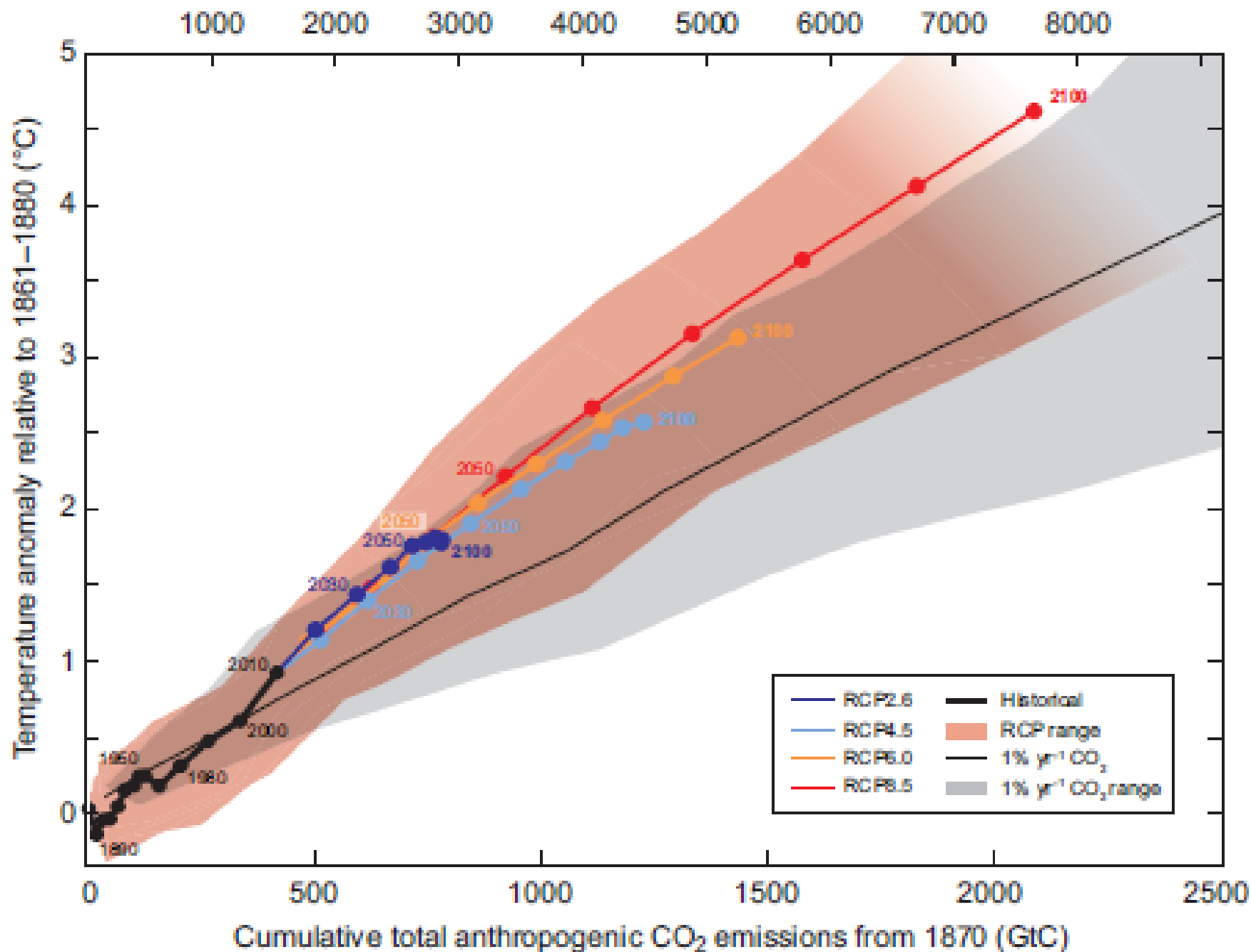
4.7 IPCC, AR5, WG 1 (2013)

Global mean sea level rise
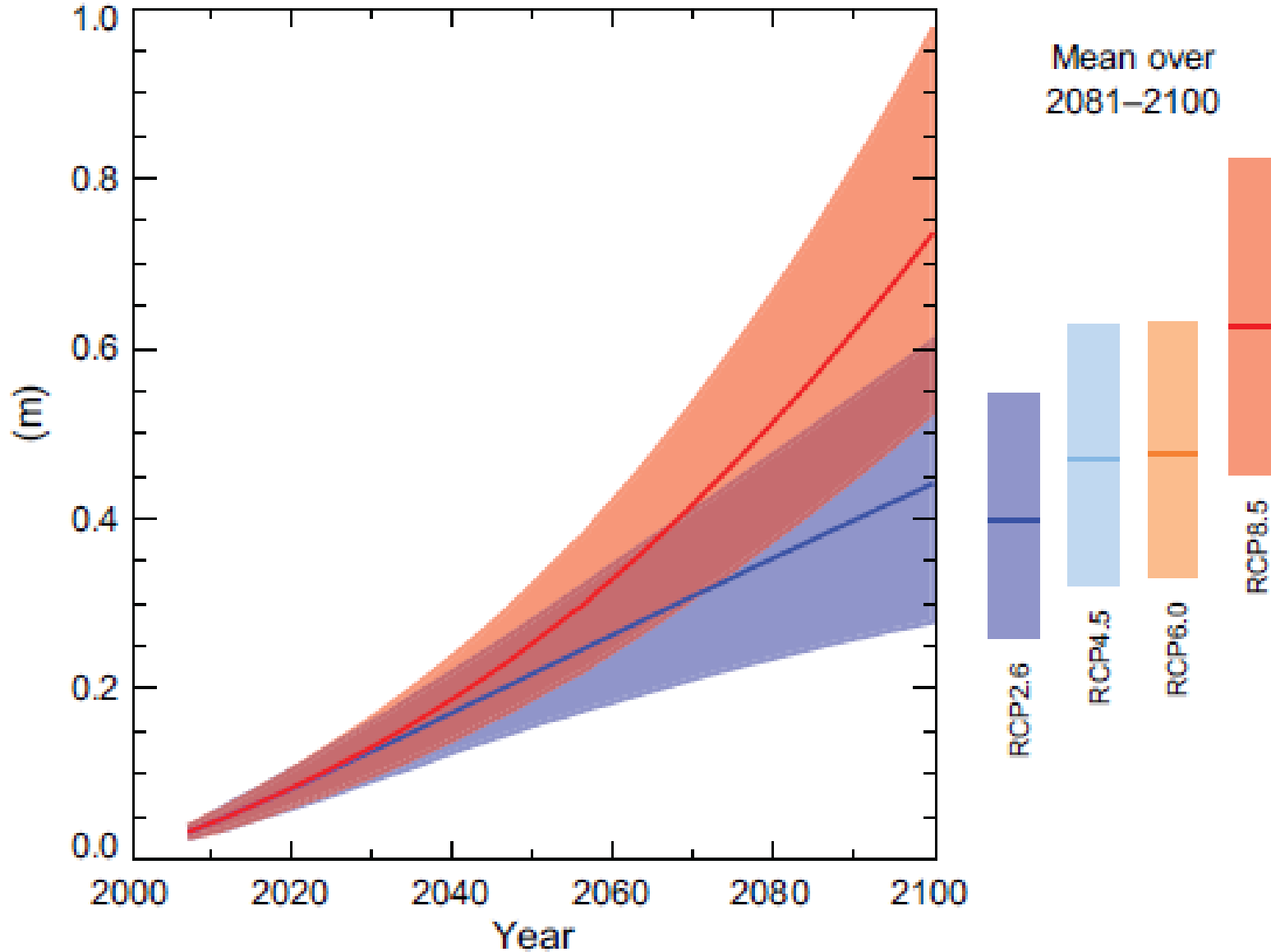
4.8 IPCC, AR5, WG 1 (2013)

RCP 2.6   RCP 8.5

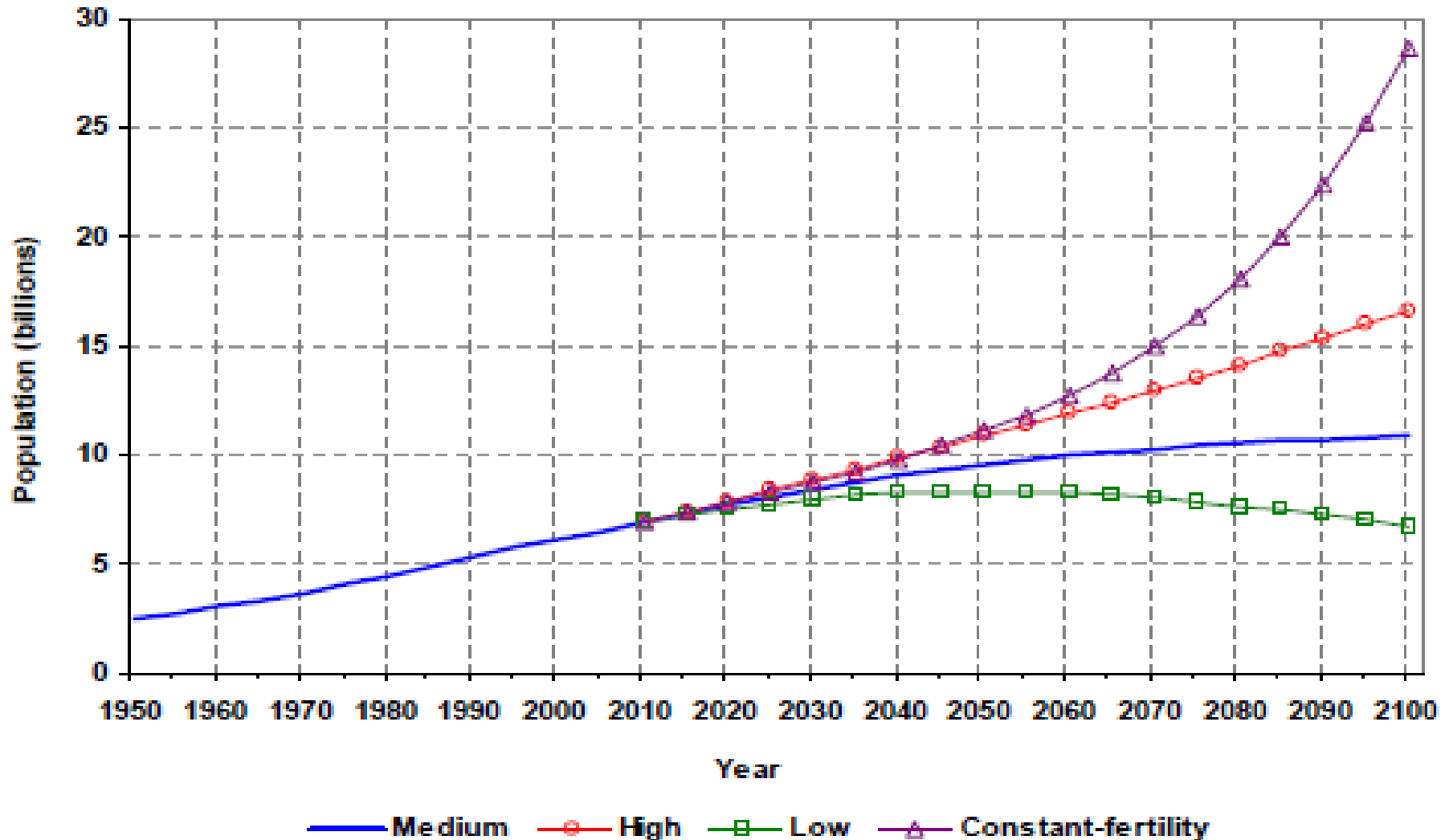(a) Change in average surface temperature (1986−2005 to 2081−2100)

32   39

(°C)

−2   −1.5   −1   −0.5   0   0.5   1   1.5   2   3   4   5   7   9   11
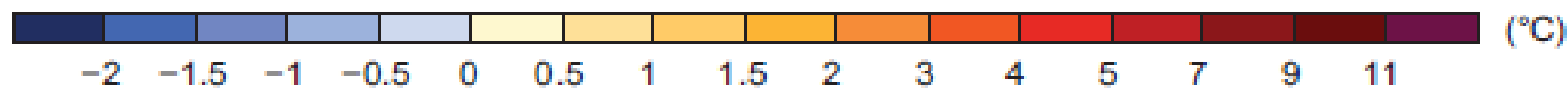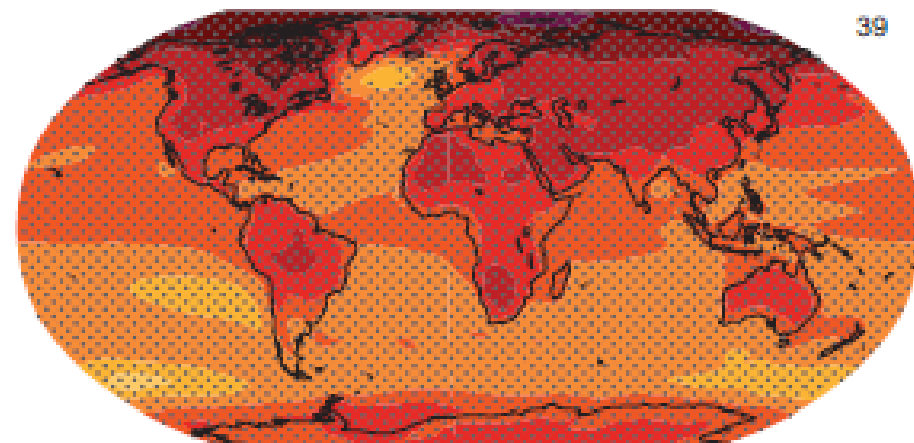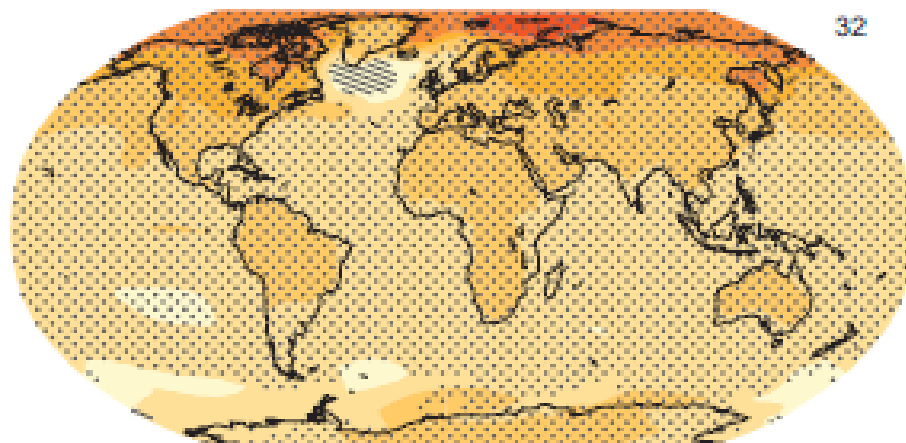
(b) Change in average precipitation (1986−2005 to 2081−2100)

32   39

(%)

−50   −40   −30   −20   −10   0   10   20   30   40   50
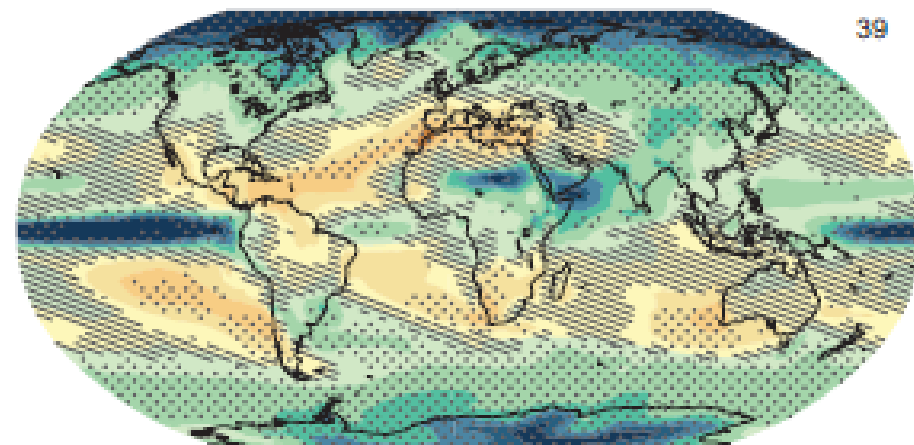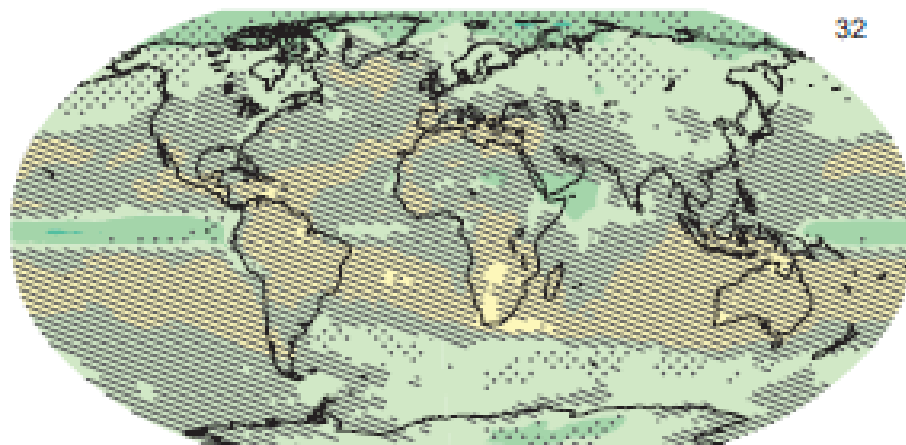
4.9 UN Population Rev. (2013): Alternatives

Figure 1. Population of the world, 1950-2100, according to different projections and variants

4.10 UN Population Rev. (2013): Fertility Trajectories

Figure II.1. Total fertility trajectories for the world and development groups, 1950-2100 (medium variant)
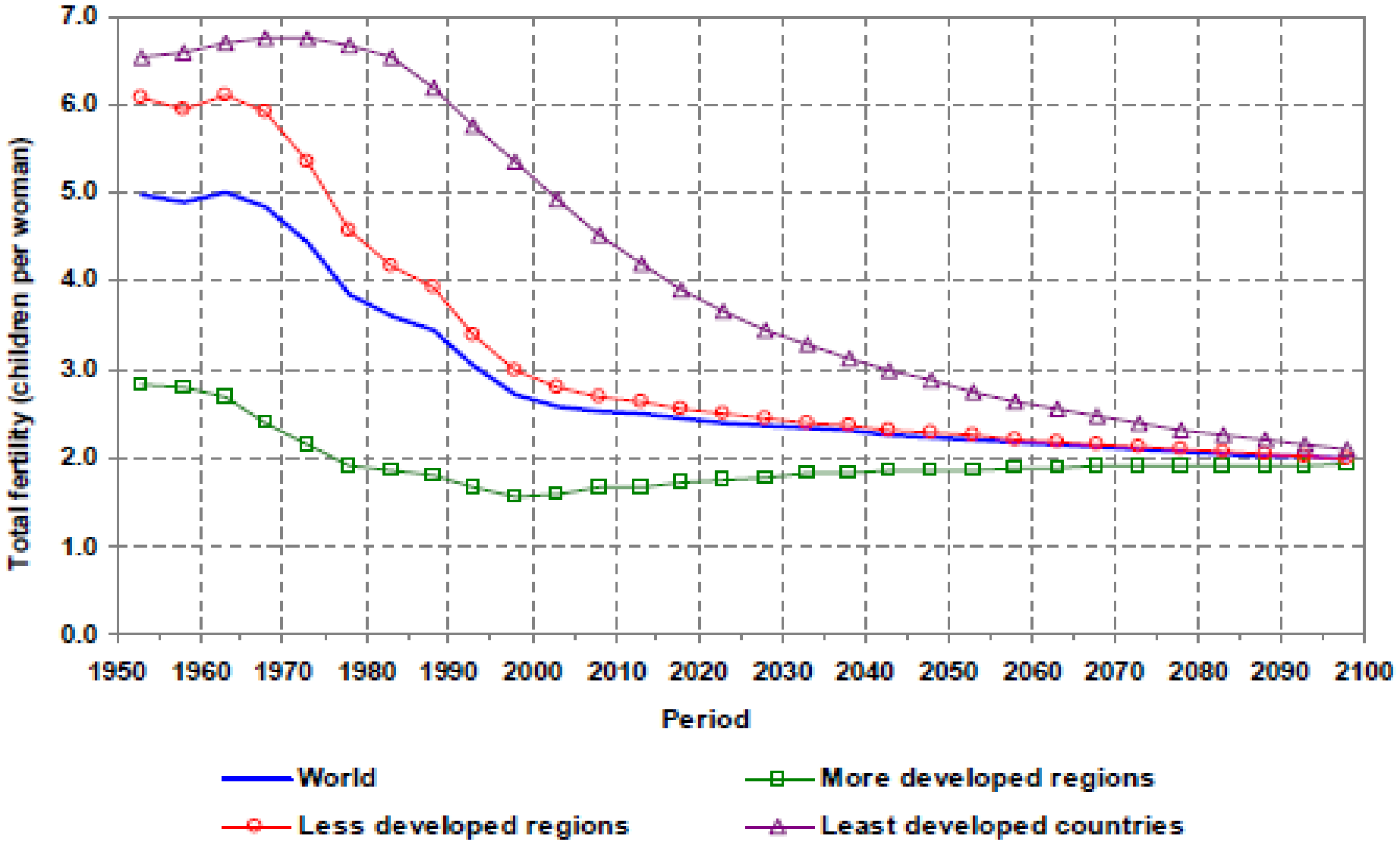
4.11 Nigeria Fertility Estimates

Figure V.6. Nigeria 1970-2015 total fertility rate estimates based on various data sources and estimation methods, and WPP estimates for the *2010 and 2012 Revisions*
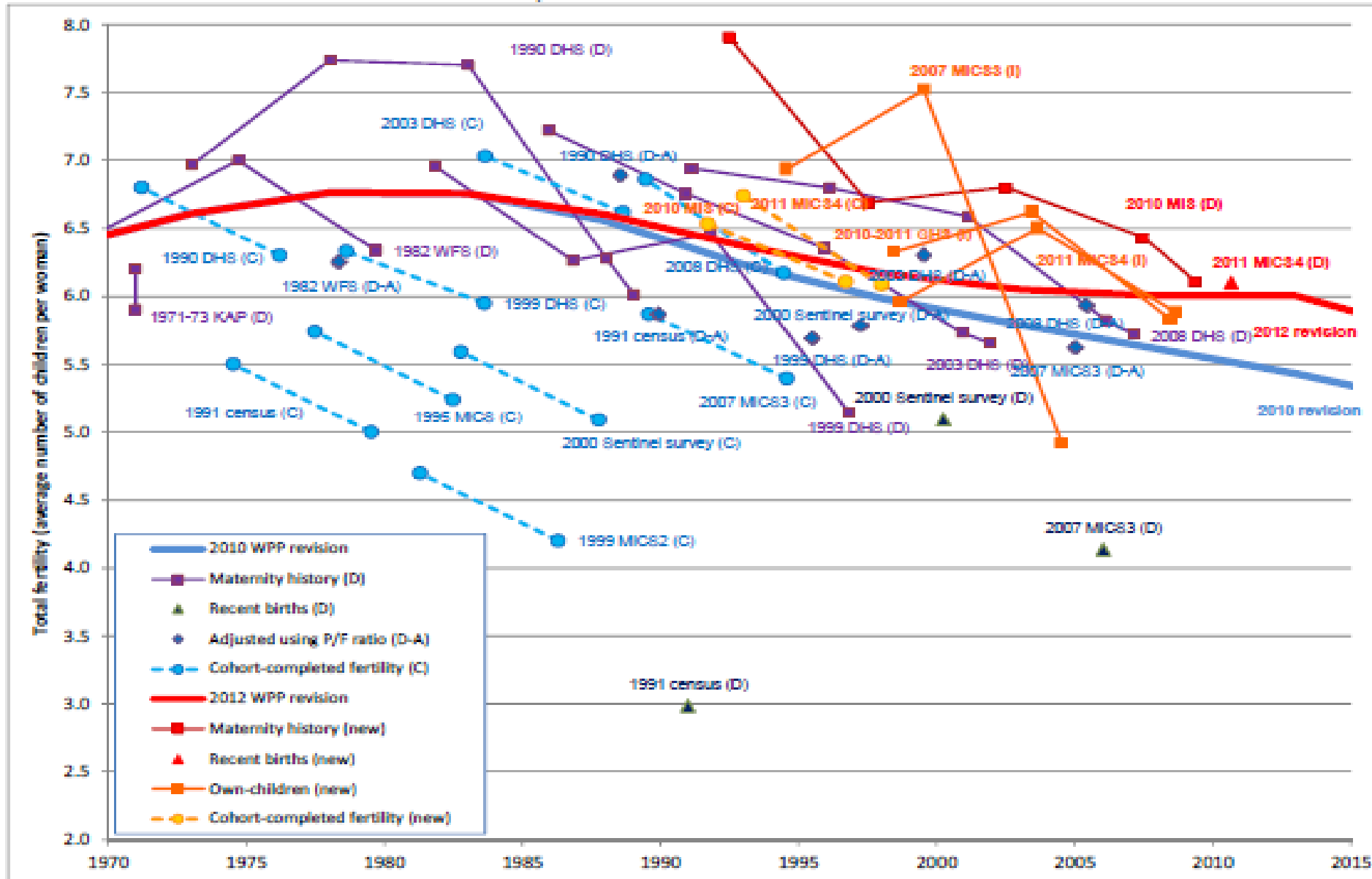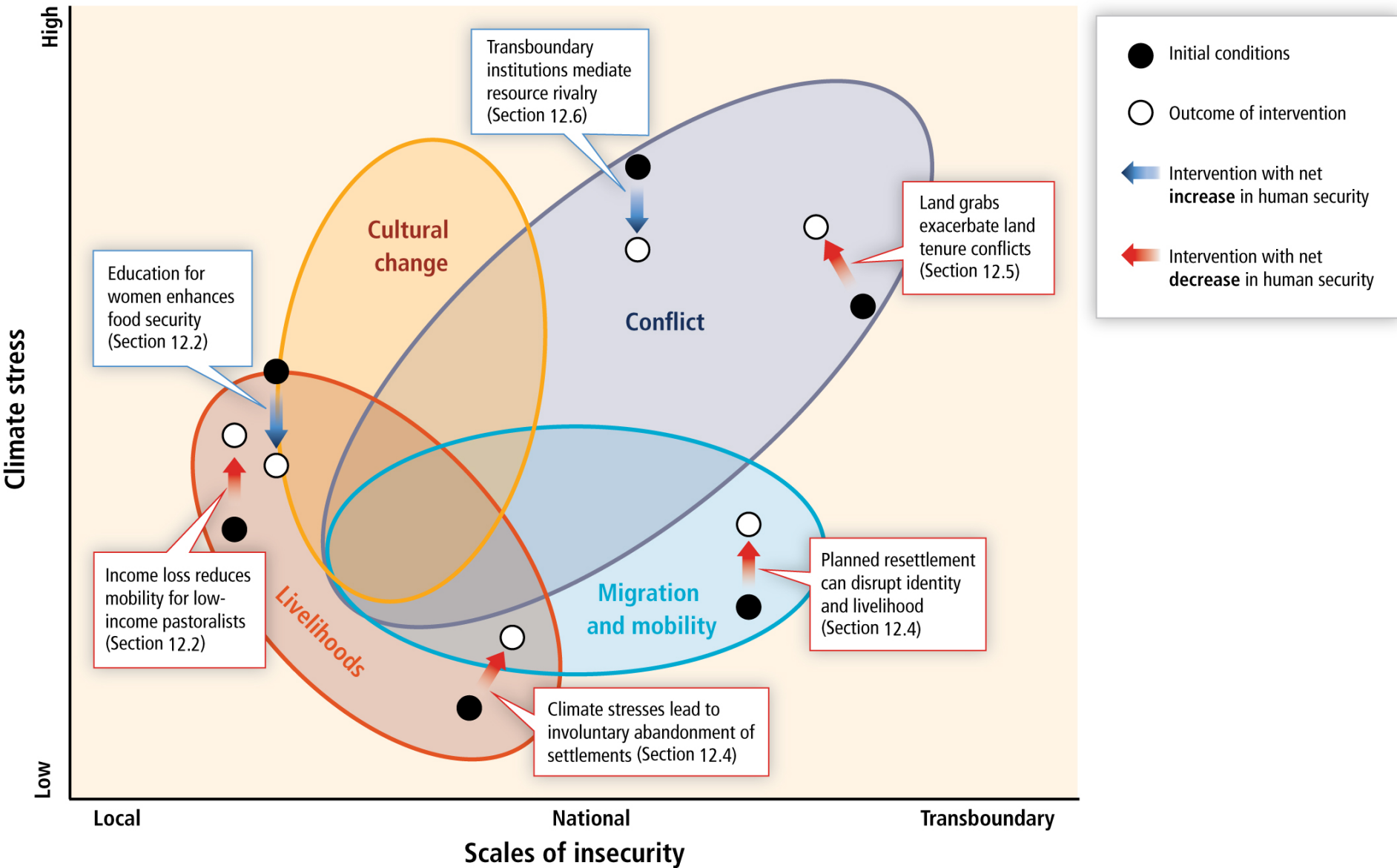
4.12 UN Population Rev. (2013): 1950-2100

TABLE I.1. POPULATION OF THE WORLD, DEVELOPMENT GROUPS AND MAJOR AREAS, 1950, 1980, 2013. 2050 AND 2100, ACCORDING TO DIFFERENT VARIANTS

Development group or major area	Population (millions)			Population in 2050 (millions)				Population in 2100 (millions)			
	1950	1980	2013	Low	Medium	High	Constant-fertility	Low	Medium	High	Constant-fertility
World	2 526	4 449	7 162	8 342	9 551	10 868	11 089	6 750	10 854	16 641	28 646
More developed regions	813	1 083	1 253	1 149	1 303	1 470	1 268	801	1 284	1 960	1 152
Less developed regions	1 713	3 366	5 909	7 193	8 248	9 398	9 821	5 949	9 570	14 682	27 494
Least developed countries	195	393	898	1 594	1 811	2 043	2 552	1 944	2 928	4 266	13 590
Other less developed countries	1 518	2 973	5 011	5 599	6 437	7 355	7 269	4 005	6 642	10 416	13 904
Africa	229	478	1 111	2 119	2 393	2 686	3 210	2 826	4 185	6 007	17 221
Asia	1 396	2 634	4 299	4 482	5 164	5 912	5 805	2 739	4 712	7 558	8 971
Europe	549	695	742	622	709	804	673	383	639	1 005	508
Latin America and the Caribbean	168	364	617	674	782	902	885	420	736	1 215	1 298
Northern America	172	255	355	395	446	500	453	335	513	754	535
Oceania	13	23	38	50	57	64	62	46	70	102	114

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). *World Population Prospects: The 2012 Revision.* New York: United Nations.

4.13 IPCC, : AR5, II, 12: CC & Human Security

4.14: IPCC, AR5, II, 12: CC & Human Security

Climate-related drivers of impacts

Warming trend | Extreme temperature | Drying trend | Extreme precipitation | Damaging cyclone | Storm surge | Sea level | Ocean acidification | Carbon dioxide fertilization

Level of risk & potential for adaptation

Potential for additional adaptation to reduce risk

Risk level with **high** adaptation — Risk level with **current** adaptation

Key risk	Adaptation issues & prospects	Climatic drivers	Timeframe	Risk & potential for adaptation
Displacement associated with extreme events (*high confidence*) [12.4.1]	Adaptation to extreme events is well understood but poorly implemented even under present climate conditions. Displacement and involuntary migration are often temporary. With increasing climate risks, displacement is more likely to involve permanent migration.		Present / Near term (2030 – 2040) / Long term 2°C (2080 – 2100) 4°C	Very low — Medium — Very high
Loss of land, cultural and natural heritage disrupting cultural practices embedded in livelihoods and expressed in narratives, world views, identity, community cohesion, and sense of place (*high confidence*) [12.3.2, 12.3.4]	Cultural values and expressions are dynamic and inherently adaptable and hence adaptation is possible to avoid losses of cultural assets and expressions. Nevertheless cultural integrity will be compromised in these circumstances.		Present / Near term (2030 – 2040) / Long term 2°C (2080 – 2100) 4°C	Very low — Medium — Very high
Violent conflict arising from deterioration in resource dependent livelihoods such as agriculture and pastoralism (*high confidence*) [12.5.1]	Adaptation options: Buffering rural incomes against climate shocks, e.g., through livelihood diversification, income transfers, and social safety net provision; Early warning mechanisms to promote effective risk reduction; Well-established strategies for managing violent conflict that are effective but require significant resources, investment, and political will.		Present / Near term (2030 – 2040) / Long term 2°C (2080 – 2100) 4°C	Very low — Medium — Very high
Geopolitical competition over access to Arctic resources that escalates into dangerous tensions and crises (*high confidence*) [12.6.2]	There are international organizations and elements of international law that regulate competition and access and provide mechanisms for resolving disputes. There are strong transnational networks that are relevant for joint problem solving. Hence adaptation action has significant potential to reduce risks associated with geopolitical rivalry.		Present / Near term (2030 – 2040) / Long term 2°C (2080 – 2100) 4°C	Very low — Medium — Very high
New or exacerbated conflict through land acquisition for climate change mitigation and adaptation (*medium confidence*) [12.5.2]	Climate change mitigation (e.g., expansion of biofuel production area) and adaptation action (e.g., set-back of coastal land) can exacerbate conflicts when they are already manifest around land and water availability and scarcity. The extent of insecurity and instability from such mitigation and adaptation activities depends on the displacement of populations and the inclusiveness of the planning processes. Careful planning processes can therefore be used to ameliorate the risk of conflict	*Cumulative climate risks act as incentives for mitigation and adaptation action*	Present / Near term (2030 – 2040) / Long term 2°C (2080 – 2100) 4°C	Very low — Medium — Very high
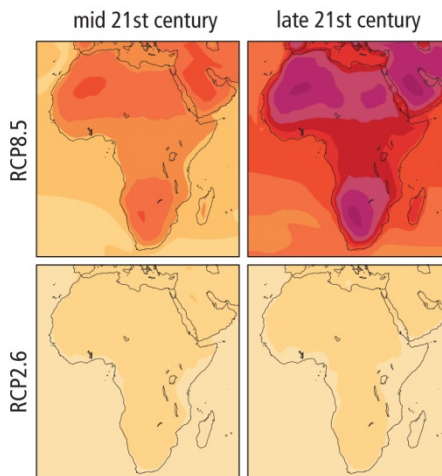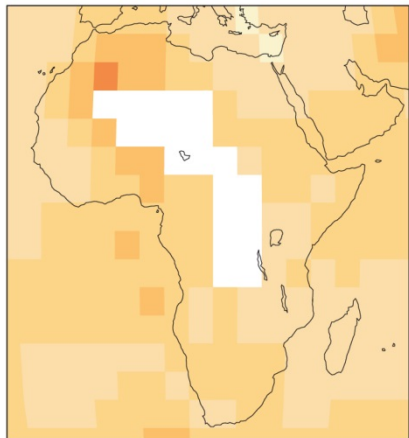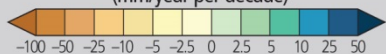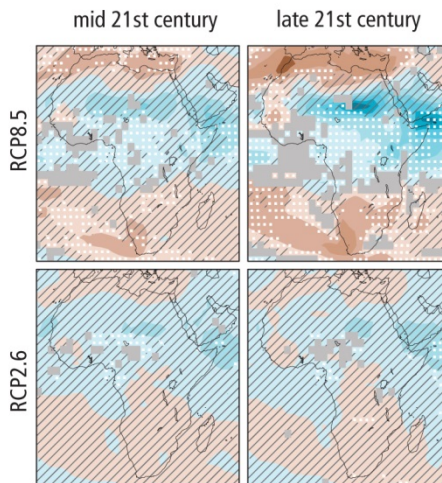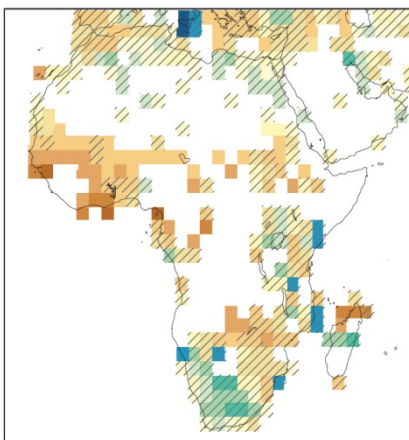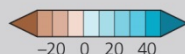
5. IPCC, AR5, WG II (2014): Physical Impacts: Temperature & Precipitation Change in Africa During 21st Century
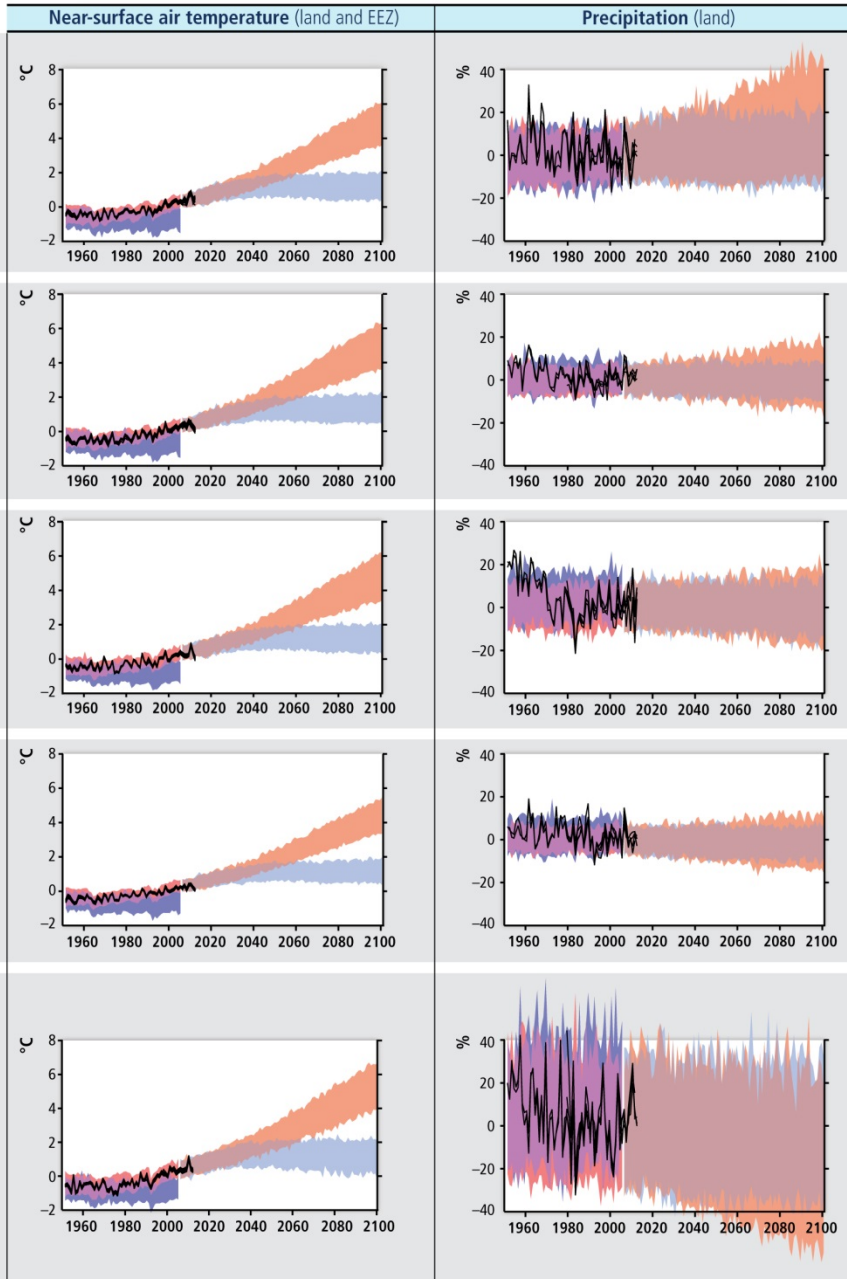
5.2 Subregional Observations & Projections of natural variability & anthropogenic Climatic Change in Africa for Temperature & Precipiation Change

5.3 Observed Climate Change & Impacts

(a) Observed climate change

(b) Observed impacts

(a)

▦⋮ AMU	▦⋮ SADC	
▦⋮ ECOWAS	▦⋮ EAC/IGAD/Egypt	
▦⋮ ECCAS	▦ Unaffiliated	

Regional-scale — **Continental-scale**

- Warming
- More frequent hot events / Less frequent cold events
- Precipitation changes
- Change in wet events

(b)

Physical systems
1. Glacier retreat
2. Great Lakes warming
3. West African river discharge
4. Sahel drought

Biological systems
5. Southern species ranges
6. Mt. Kilimanjaro wildfires
7. Western Sahel tree density
8. Coral reefs in tropical waters

Human and managed systems
9. Adapting South African farmers
10. Great Lakes fisheries
11. Kenyan highlands malaria
12. Sahel fruit trees

⬤ Attribution of **major role**   ◯ Attribution of **minor role**

regions used for the precipitation and temperature trends

regions used for the temperature trend only

a) Projected biome change from the period 1961–1990 to 2071–2100

(b) Vulnerability of ecosystems to biome shifts based on historical climate (1901–2002) and projected vegetation (2071–2100)
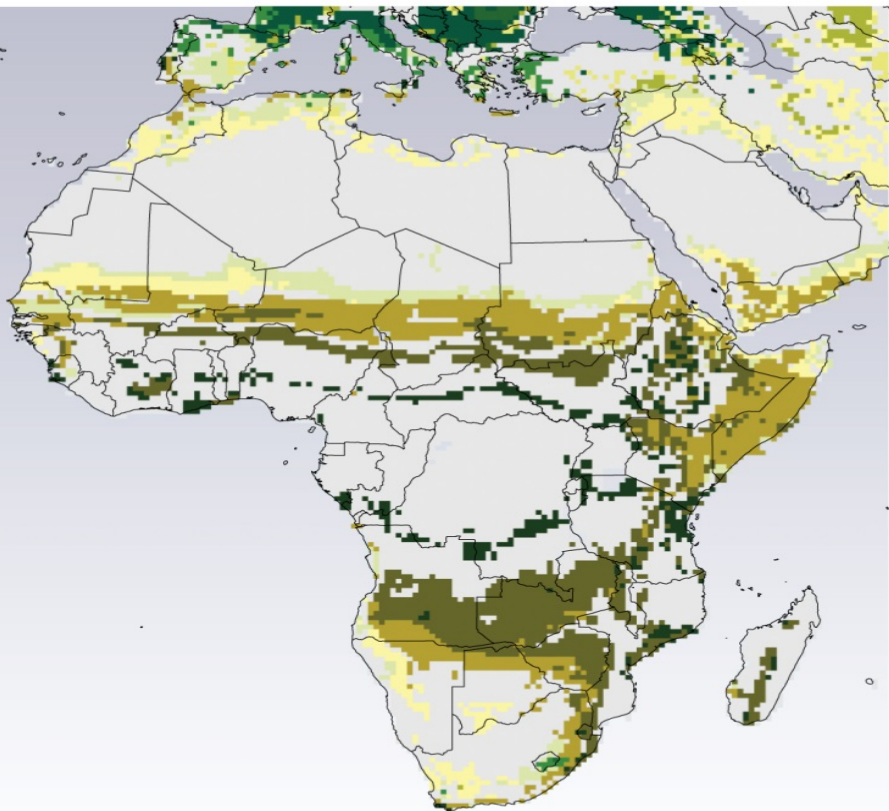
Projected worst-case biome changes

Temperate
- Conifer forest
- Broadleaf forest
- Mixed forest
- Shrubland
- Grassland

Tropical
- Grassland
- Woodland
- Deciduous broadleaf forest
- Evergreen broadleaf forest

- Desert
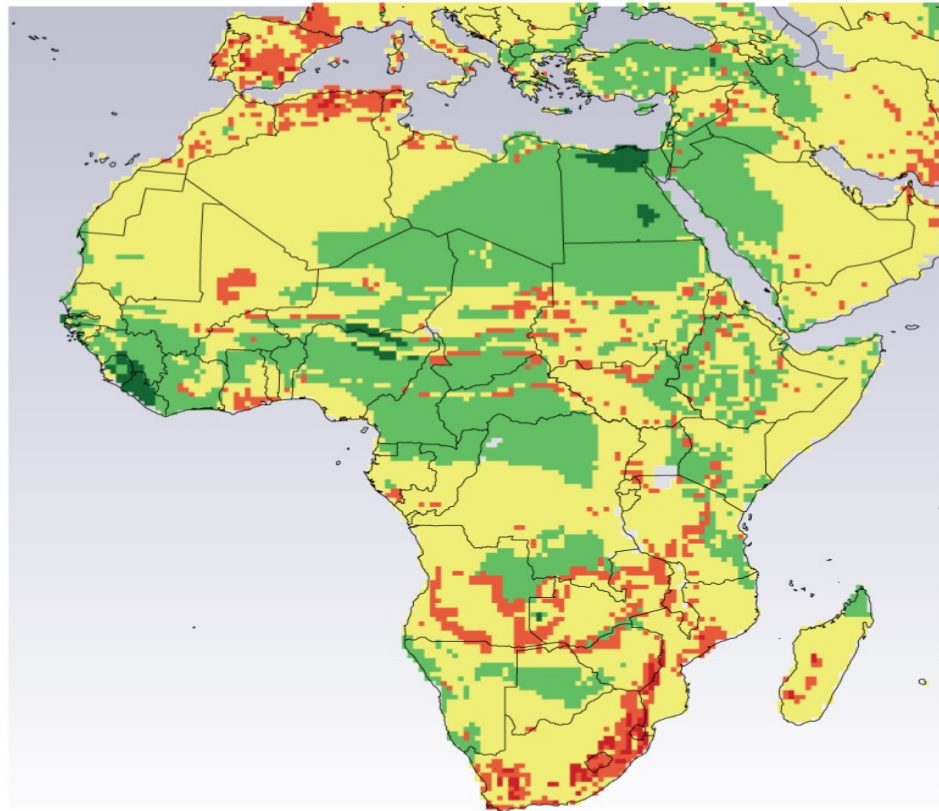
Vulnerability to biome change

	Very low	Low	Medium	High	Very high
Confidence:	≤ 0.05	0.05–0.20	0.20–0.80	0.80–0.95	≥ 0.95
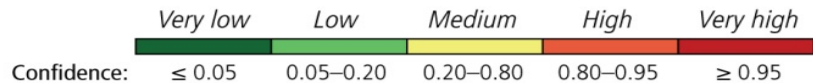
Confidence according to IPCC (2007) guidance

5.5. Hunger (1990-2012) & Food Security Projections

Table 22-2 | Undernourishment in Africa, by number and percentage of total population.

Undernourished	1990–1992	1999–2001	2004–2006	2007–2009	2010–2012
Million	175	205	210	220	239
Percentage of total population	27.3	25.3	23.1	22.6	22.9

Source: IFAD et al. (2012).
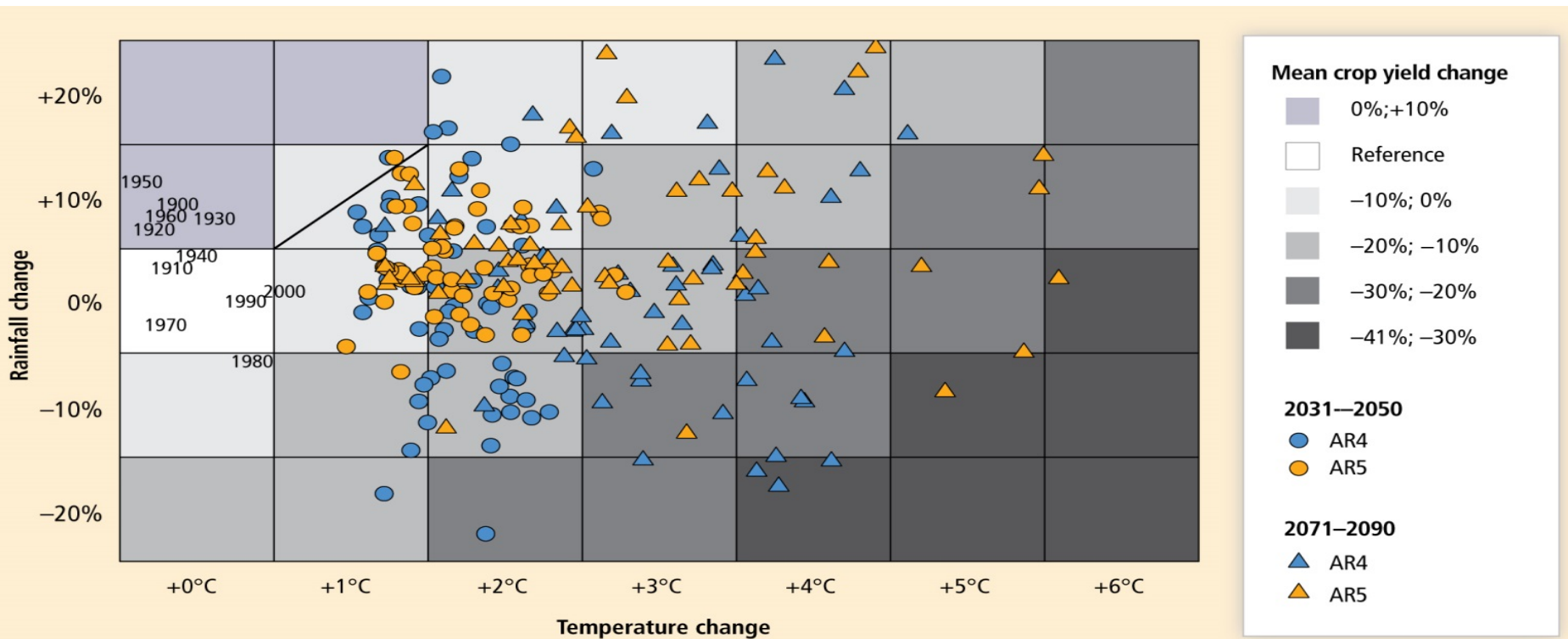
6. We are the Threats!
We are the Victims!

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

- **UNFCC (1992)**
- **Kyoto Protocol (1997)**
  - Annex I country: -
  - 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 (Peru) in 2014**
- **COP 21 (Paris) in 2015 (??)**

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

6.2. What and Who is the Cause and Who are the Victims?

What is the cause?

- **Burning of hydrocarbons:**
  - Coal. Oil and gas
- **Modern economy:**
  - Energy, transportation
  - agriculture

Who is responsible?

- **Historically: industrialized countries**
- **But increasingly: threshold countries**
  - **2007: China overtook USA**

Who is the victim?

- **South: especially Africa & Asia**
  - **China**
  - **India**
- **But also the North**
  - **USA (Katrina, Sandy)**
  - **Germany (2002, 2013) floods**
- **We are all responsible:**
  - **North and South**
- **We both have to act**
  - **North and South**
  - **Europe & Africa**

29

6.3 Two Debates: Climate Change & Security vs. Sustainability Transition
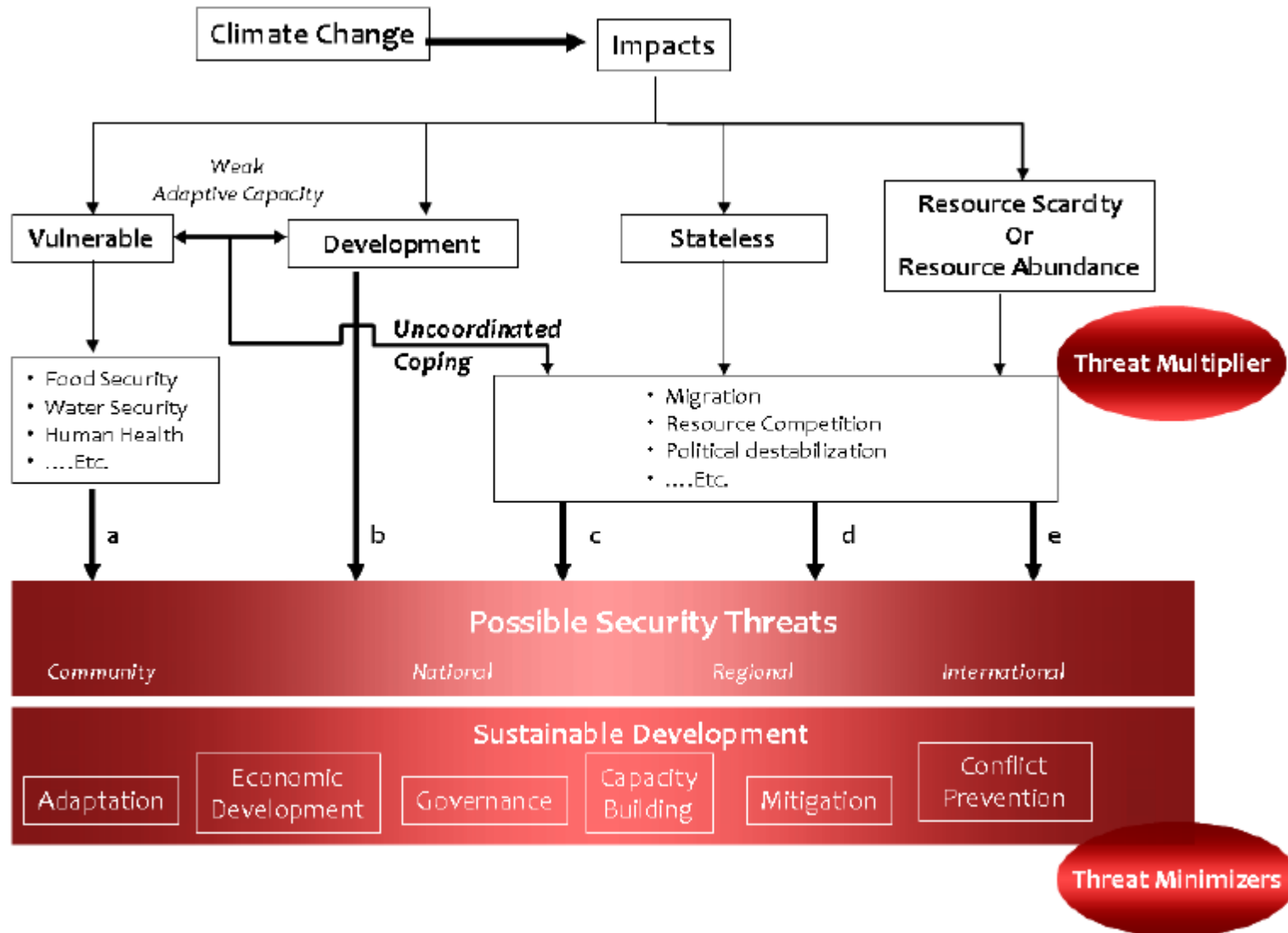
6.4. Two Policy Debates & Scientific Discourses: Climate Change & Security vs. Sustainability Transition

Hexagon Series on Human and Environmental Security and Peace VOL 8

Jürgen Scheffran · Michael Brzoska
Hans Günter Brauch · Peter Michael Link
Janpeter Schilling *Editors*

Climate Change, Human Security and Violent Conflict

Challenges for Societal Stability

Springer
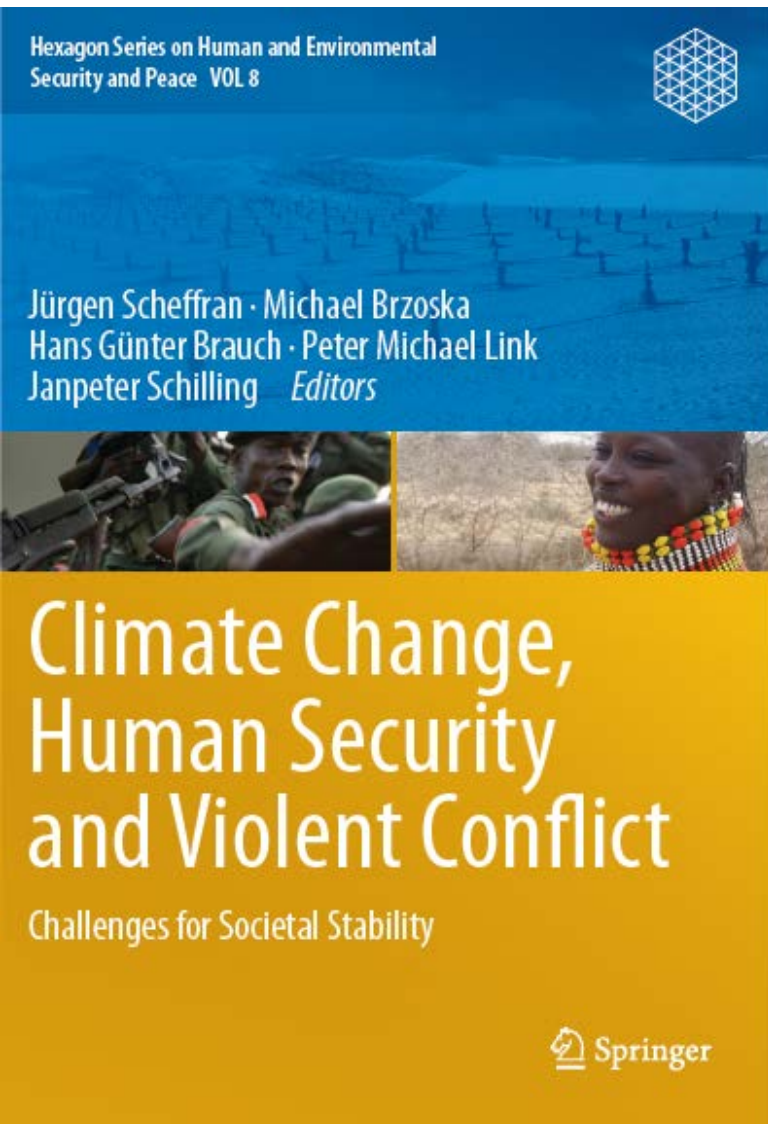
First debate is primarily policy driven and evolved in framework of internat., national and human security.

Scientific discourse:

- Hamburg workshop 11/2009 ([Scheffran/Brzoska/ Brauch/Link/Schilling, 2012](#)) has been pursued from different policy and scientific perspectives and with different scientific methods.
- Trondheim workshop, 6/2010 (Gleditsch, 2012, special issue of Journal of Peace Research

S***econd debate*** is partly policy driven, (green gowth, economy by UNEP, OECD & DGs of the European Commission.

- S*cientific discourse* on sustainability transition evolved in Europe since confer. in Amsterdam (2009); Lund (2011), Copenhagen (2012) within
- *Sustainability Transitions Research Network* (STRN) & is documented in a journal on *Environmental Innovation and Sustainability Transition* (EIST) & *Routledge Book Series in Sustainability Transitions.´*

31

6.5 HESP 12: Charlène Cabot: Climate Change, Security Risks and Conflict Reduction in Africa: A Case Study of Farmer-Herder Conflicts over Natural Resources in Côte d'Ivoire, Ghana and Burkina Faso

- This study relies on the rich scholarly literature on the linkages between environment and conflict, human and environmental security, conflict reduction, and common-pool resources management. Drawing from these theories, it is shown that, under certain circumstances, climate change can destabilize human security and that agro-pastoral communities of Western Africa are likely to experience such security threats. However, fundamental importance is given to the social, economic and political factors mediating environmental changes. It is argued that these factors underpin the occurrence and level of conflict. Their influence on conflict escalation is broadly recognized, but this research shows that political factors also contribute to reducing conflict. It is thus proposed that political factors (policies and institutions) can reduce climate change-induced or -aggravated conflicts between farmers and herders. The explanatory potential of this thesis is tested against three hypotheses: 1) the implementation of integration policies by the central state reduces conflict; 2) equitable access to land tenure reduces conflict; and 3) a decentralized and participative political system reduces conflict.

- In order to determine if political factors can reduce agro-pastoral conflicts, a qualitative case study of conflicts between FulBe pastoralists and various groups of sedentary farmers is conducted for three neighbouring countries of Western Africa: Burkina Faso, Côte d'Ivoire, and Ghana. The analysis confirms that political factors have potential to reduce these conflicts. The evidence strongly supports two of the three hypotheses: lower levels of conflicts are noted when integration policies are implemented and land rights are distributed equitably between users. Evidence is less conclusive for the last hypothesis: both centralized and decentralized authorities can either fuel or mitigate conflicts. However, participative processes seem to reduce conflicts when implemented in a truly inclusive manner. These conclusions support an optimistic assessment, according to which, climate change is a significant challenge for vulnerable societies but will not necessarily lead to a more violent world if an appropriate political and institutional framework is established.

6.6. Second Debate: Sustainable Development (goal) Sustainability Transition (process)

US National Academy of Science (NAS) Report of 1999: Sustainability transition' research has evolved since 2004:

- Clark, Crutzen, Schellnhuber: 'Science for Global Sustainability' (2004).
- **Dutch *Knowledge Network on Systems Innovation &Transition***
  – complex systems analysis,
  – socio-technological and a governance perspective".
- **Parallel discourse on 'sustainability transition'** addresses both the causes and impacts of GEC and GCC by coping with both and avoiding the projected societal consequences of dangerous or catastrophic climate change and of possible tipping points in the climate system.
- The goal of 'sustainable development' and process of **'sustainability transition' refer to a wider research agenda than the relatively narrow focus on environmental and technological innovations of the Sustainability Transition Research Network (STRN).**
- The process of '**transition' refers to multiple long-term evolutionary and revolutionary transformative changes** that point to five different historical times, with different transformative results

6.7. IPCC SRREN Report (2011)
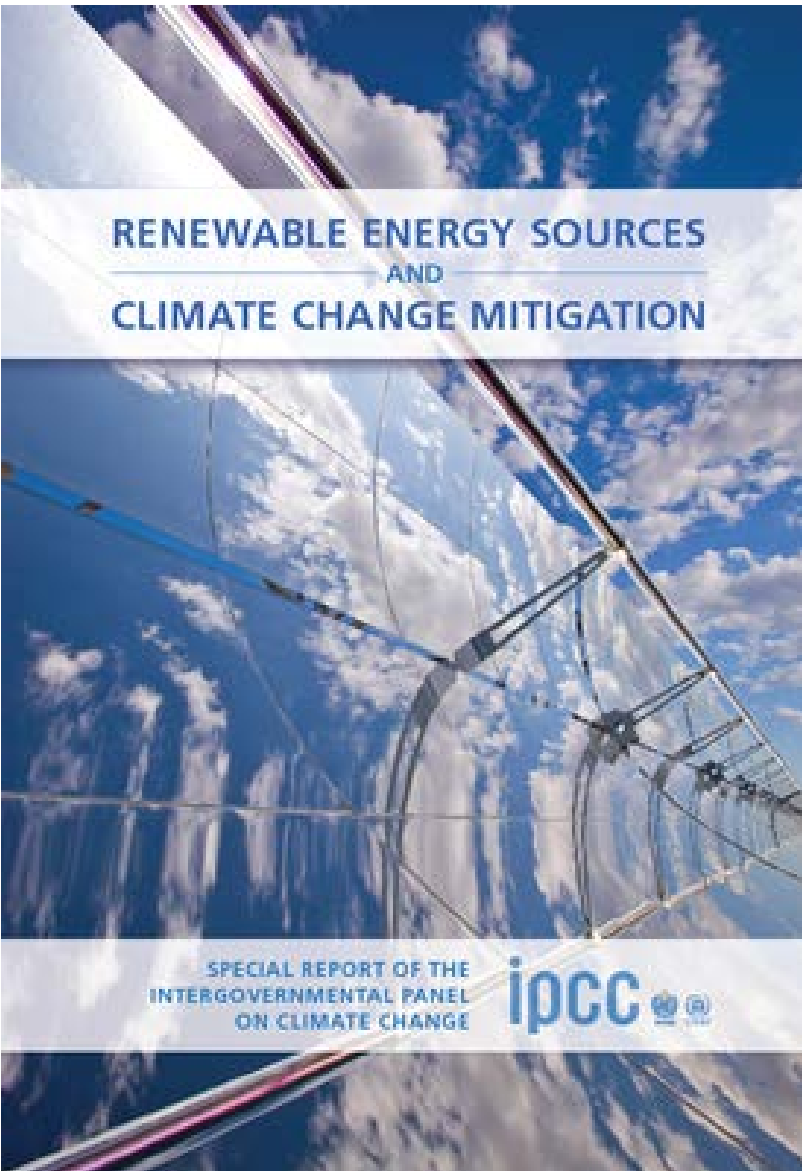
- **IPCC's (2011) Special Report on Renewable Energy Sources and Climate Change Mitigation**
  - "There are multiple pathways for increasing the shares of RE across all end-use sectors."
  - This applies specifically to the transport, building, and agricultural sectors and requires long-term integration efforts including investment in enabling infrastructure; modification of institutional and governance frameworks; attention to social aspects, markets and planning; and capacity building in anticipation of RE growth.

- **WBGU's (2011: 119) assessment,**
  - "the sustainable potential of renewable energies is fundamentally sufficient to provide the world with energy".

6.8. ST of other Economic Sectors

Flagship Report

World in Transition
A Social Contract for
Sustainability
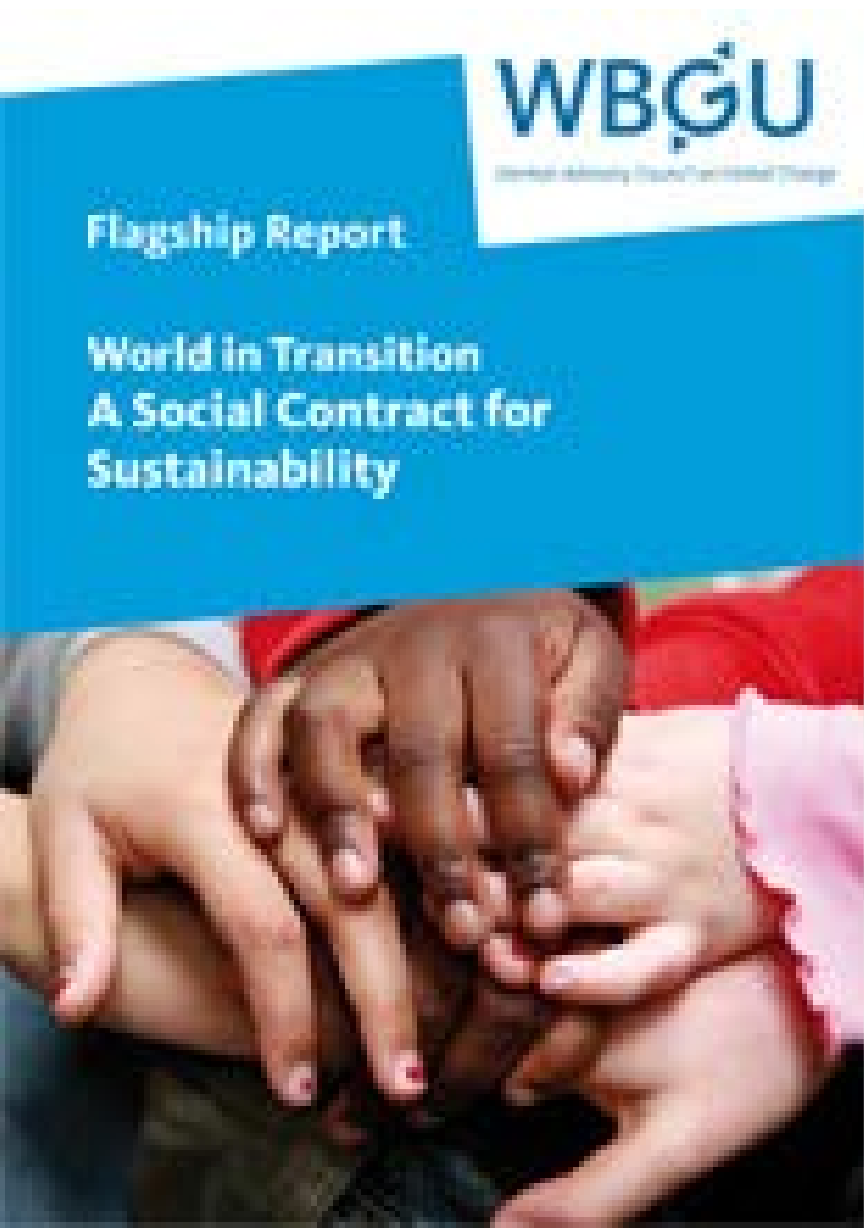
- Besides the fundamental transformation of the energy sector, WBGU Report (2011) proposed **an intensification of policies of sustainable production and consumption and major initiatives in buildings, living, and land use planning, in mobility and communication, and in food;**

- these will require both **climate-compatible agricultural management (supply site) and a change in dietary habits (demand site).**

35

6.9 Sustainability Transition & Sustainable Peace

Hans Günter Brauch, Úrsula Oswald Spring, John Grin, Jürgen Scheffran (Eds.): *Sustainability Transition and Sustainable Peace Handbook*. Hexagon Series on Human and Environmental Security and Peace 10 (Heidelberg – New York – Dordrecht – London: Springer-Verlag, 2016), in production

Aabout 45 chapters: peer review process is neearly completed

I: **Introduction: Moving towards Sustainability Transition**

II: **Aiming at Sustainable Peace based on Sustainable Development**

III: **Challenges of the 21st Century: The Negative Nexus of Environmental Destruction, Development and Violent Conflict**

IV: **Towards a Positive Nexus of Sustainable Development and Peace**

V: **Theoretical Approaches on Sustainability Transition**

VI: **National Debates on Sustainability in North America**

VII: **Transition towards a Sustainable Economy, Society and Urbanization**

VIII: **Sustainability Transition in the Water, Food and Health Sectors**

IX: **Sustainability Transition in the Energy Sector**

X: **National, International and Transnational Governance and Strategies, Policies and Measures towards Sustainability Transition**

Conclusions and Mapping Future Research Needs

7. Peace Ecology: Linking Environmental and Peace Studies

- **Kenneth Boulding**: Pioneer in linking economic, environmental and peace studies
- **Environmental Security:** Discourse since 1989
- **Ken Conca** (2002): **Environmental Peacemaking**
- **Peace Ecology** (Kyrou (2007) introduced 'peace ecology' as an "integrative, multi-contextual, and case sensitive approach in identifying resources for conflict and violence transformation" with the goal "to include issues of conflict analysis and peacebuilding" into environmental studies".
- **Randall Amster: Peace Ecology** (2014)

7.1 Expanding Peace Ecology

- Brauch, Dalby and Oswald Spring (2011) proposed to reconceptualize peace ecology by linking it to the **political geoeology approach**.

- Peace ecology calls for "peace with nature" that is increasingly being challenged by the manifold anthropogenic interventions into the earth system during the Anthropo-cene (**Crutzen 2000**): To achieve 'peace with nature' is a domestic and international task where human behaviour has to be brought in line with the holeness of nature.

- How human beings respond to these new dangers to the survival of the species but also of plants & animals through a declining biodiversity depends but on worldview of scientists but also on mindset of e elites and on whether carbon lobbies succeed.

- Business-as-usual prevails when the political, economic and military elites are unwilling or unable to act to address the root causes of global environ-mental and climate change.

- Many religious leaders, scientists, policymakers have called for an alternative vision aiming for a new scientific revolution, for a fundamentally different worldview shifting to an alternative paradigm of sustainable development and sustainable peace where the ethical goal of '**peace with nature**' can be achieved.

7.2 Conceptual Pillars of Peace Ecology

- Peace ecology in the Anthropocene may be conceptuallized with 5 conceptual pillars of peace, security, equity, sustainability & gender.
- To conceptualize the linkages between peace and security we refer to '**negative peace**' and for the relationship between peace and equity to '**positive peace**' concept, for interactions between peace, gender and environment '**cultural peace**' and for the relations between peace, equity and gender we propose the concept of an '**engendered peace**'.
- *Sustainable peace* refers to links among peace, security & environment, where humankind and the environment as 2 key parts of global Earth face the consequences of destruction, extraction and pollution.
- **Sustainable peace** includes also processes of recovering from environmental destruction, reducing the human footprint in nature through a **less carbon-intensive** - and in the **long-term possibly carbon-free and increasingly dematerialized production processes** that future generations may still be able to decide on their own resources and development strategies.

7.2 Five Pillars of Peace Ecology
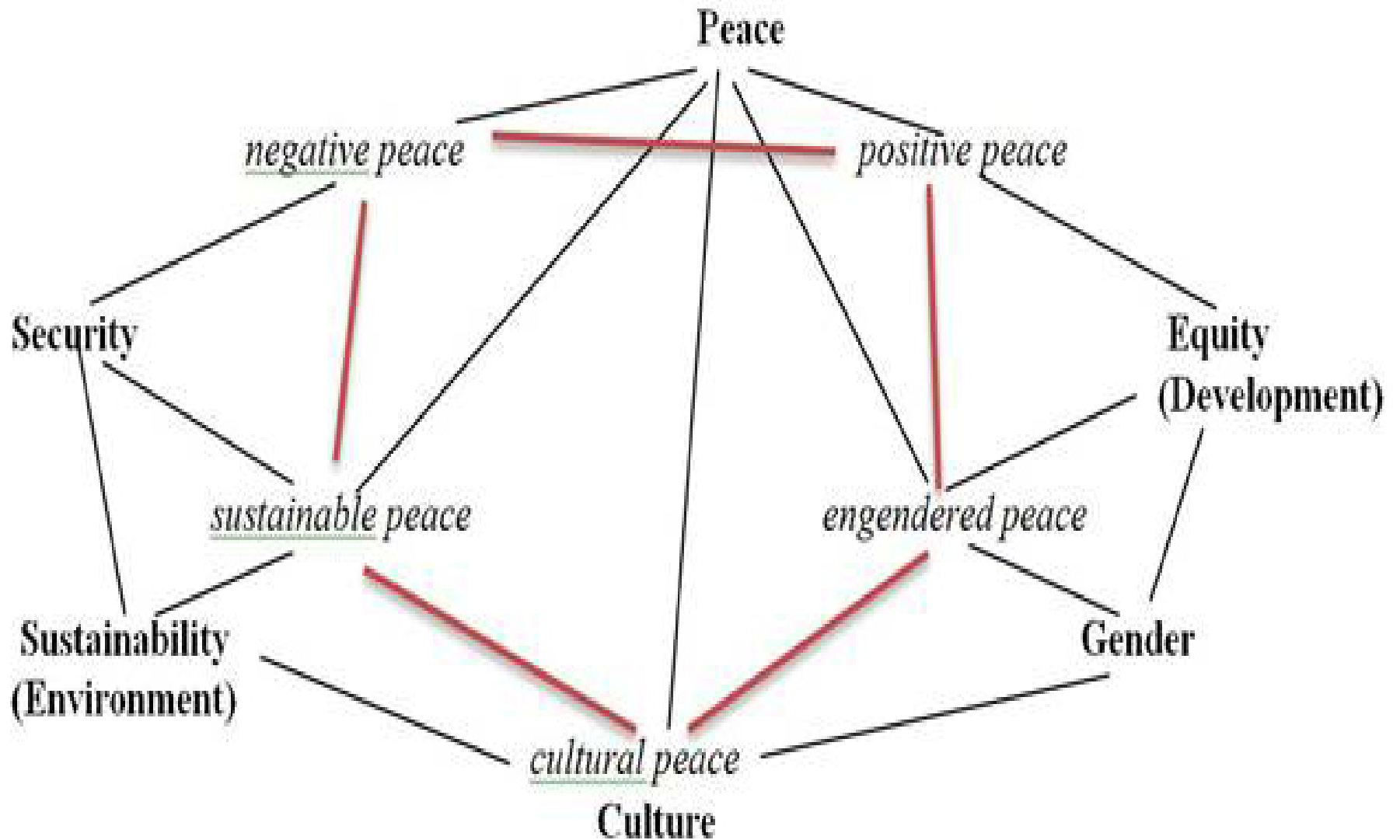
8. Sustainable Development, Human Security and Sustainable Peace

Sustainable Peace in the Anthropocene: Towards a Political Geoecology and a Peace Ecology"

- This chapter **conceptualizes possible and plausible linkages between the emerging 'sustainability transition' research paradigm** and the **debate on a rethinking of peace, security, development and the environment or ecology** since the end of the Cold War.

- In the framework of a shift in earth history from the **Holocene to the Anthropocene** the threat to the survival of humankind as a species has fundamentally changed. **No longer the 'others' are the threat but 'we'** due to our exponential increase in the burning of hydrocarbons and the resulting accumulation of greenhouse gases in the atmosphere.

- This **new anthropogenic threat cannot be countered with traditional military strategies and means** any longer but requires a long-term **transformative change of our economy** (production & consumption) and of **the energy, transportation, agricultural and housing sectors** towards a **long-carbon economy** to avoid chaotic tipping points in the climate system.

- Such a **low carbon economy** should be the result of a process of a transition to sustainability what necessitates **not only socio-technical changes but also in perception, values, behaviour and lifestyles of a consumer economy**.

- Such a long-term transformative change to sustainability may help **avoid two types of conflicts: climate-induced and resource-scarcity driven violent conflicts**.

- This chapter calls in the Anthropocene for a further development of three key interlinked concepts **of sustainable development, human security and sustainable peace** in the context of two emerging approaches of a **political geoecology**—between the natural and social sciences—and a **peace ecology** between peace, security, development and environmental studies.

9. Towards Proactive Initiatives for Peace and Sustainability Transition

Whether climate change resulted in international, national and human security impacts and triggered migration and conflicts is **disputed**.

The **IPCC concluded** on **climate change impacts on human security**:

- *Climate change will have significant impacts on forms of migration that compromise human security (high agreement, medium evidence)*.

- *Mobility is a widely used strategy to maintain livelihoods in response to social and environmental changes (high agreement, medium evidence***)**.

- There is insufficient evidence to judge the effectiveness of resettlement as an adaptation to climate change. *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 (medium agreement, medium evidence)*.

10. Suggestions for Peace Ecology in Africa: A Task for AFPREA in the 21st Century

- Africa faces a significant population increase.

- Climate change has contributed to food insecurity.

- Research on the complex linkage between climate change and ist impact on water, food, health and also energy security is needed by African scholars.

- Cooperative international university networks and research projects are needed with African scholars [e.g. Oscar Edorar Ubhenin: „Climate Change and Violent Conflicts in Nigeria: Human Needs and Relative Deprivation Theories"]

- We need more **peer-reviewed and open access literature** by African scholars and peace researchers.

- We need **an active participation of African social scientists** and **peace researchers in the AR6 (IPCCC) by 2020.**

Thank you
for your attention
and patience.
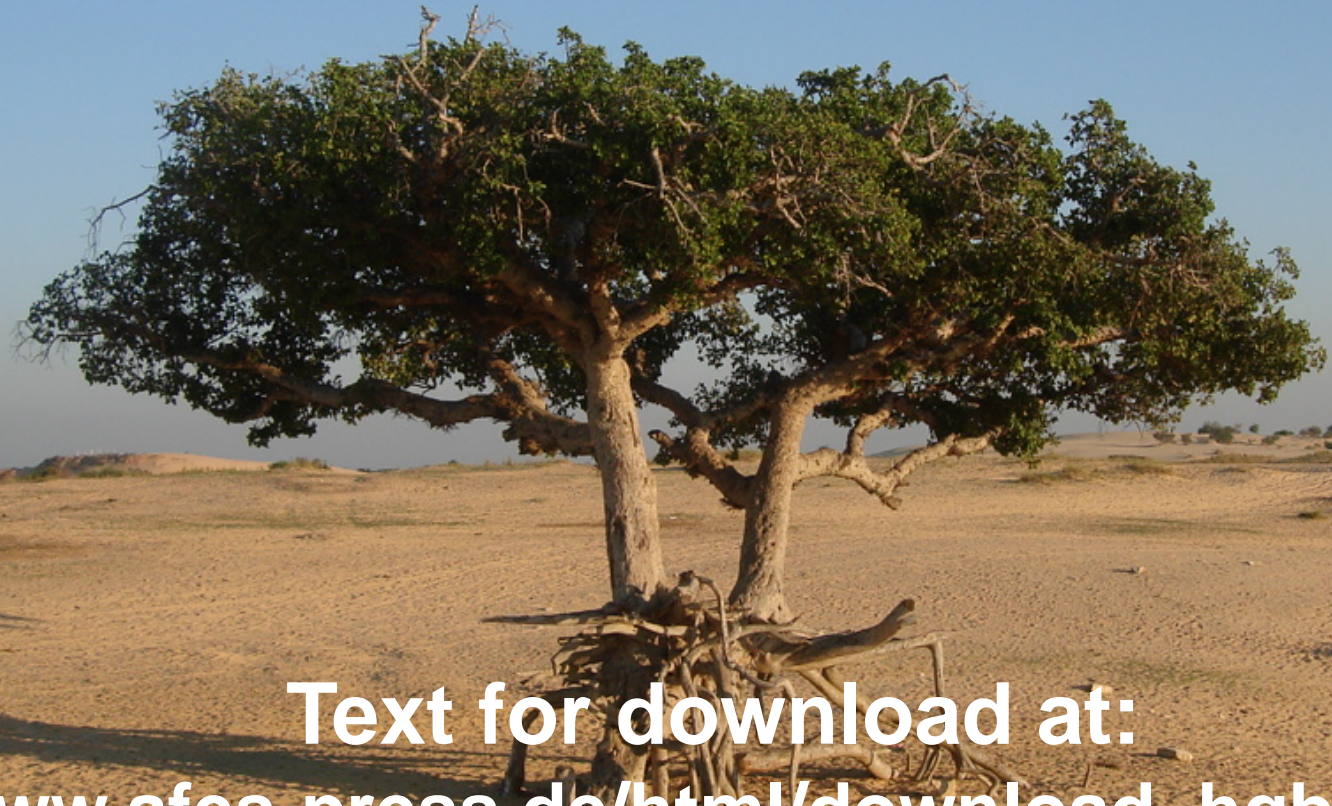
Text for download at:
http://www.afes-press.de/html/download_hgb.html
Contact: <brauch@onlinehome.de>