THE PRESIDENT
OF THE
GENERAL ASSEMBLY

21 March 2013

Excellency,

I have the pleasure to inform you that I will convene a thematic debate entitled "**Sustainable Development and Climate Change: Practical Solutions in the Energy-Water Nexus**". This event will be held at United Nations Headquarters in New York on Thursday, 16 May 2013.

The United Nations Conference on Sustainable Development (Rio+20) strongly highlighted the need for urgent, practical and sustainable solutions to making development more effective and more sustainable. Water and energy lie at the heart of these solutions, and their "nexus" is likely to be addressed as part of the post-2015 development agenda. This thematic debate will examine and discuss the challenges and opportunities in managing the water-energy nexus to enhance sustainable development and meet the challenge of climate change. It will also provide an informal setting for Member States to exchange their views, ideas, and lessons learned, helping to accommodate differing views and providing freedom to discuss and generate new ideas on the subject in an interactive manner.

The thematic debate is organized in partnership with the United Arab Emirates—a key voice on the water-energy nexus—and is supported by the UN Sustainable Development Solutions Network, launched in September 2012 under the auspices of UN Secretary General Ban Ki-moon and directed by Professor Jeffrey Sachs. This one-day event will consist of two sessions. The morning session will comprise an opening segment and high-level keynote addresses from political leaders and world-renowned experts. Two interactive round table panel discussions and closing segment will take place in the afternoon session.

The concept note of the thematic debate is attached herewith and the draft program of the event will be sent to you in due course. To profit from the wide range of knowledge and expertise throughout the Membership, I extend an invitation to your respective Governments to be represented at the highest possible level. Updated information about the event will be available on the website of the President of the General Assembly. For any questions, please contact Mr. Mehmet Özöktem, Advisor, at +1 (917) 367 5341 or ozoktem@un.org.

Please accept, Excellency, the assurances of my highest consideration.

Vuk Jeremić

All Permanent Representatives and
Permanent Observers to the United Nations
New York

THEMATIC DEBATE
67TH SESSION OF THE UNITED NATIONS GENERAL ASSEMBLY

"Sustainable Development and Climate Change:
Practical Solutions in the Energy-Water Nexus"

New York, 16 May 2013

Concept Note
[Draft]

1. INTRODUCTION

As we approach 2015, the world faces two great opportunities to secure a more prosperous and sustainable future. First, as the existing Millennium Development Goals (MDGs) reach their target year, a new framework (adopted last June at the Rio+20 Conference on Sustainable Development) is beginning to take shape, and will result in the creation of the Sustainable Development Goals (SDGs) by the General Assembly. Second, meeting the challenge of global climate change is more urgent than ever, and 2015 is the deadline for reaching a new climate agreement with legal force.

The world has made great progress on many of the MDGs in recent years. However, future development is threatened by real concerns about the pressure put on natural resources and the threat of climate change. Rising global temperatures are leading to rising sea levels, changing precipitation patterns, more frequent and severe extreme weather events and other impacts. At the same time, growing populations and consumption put stress on water supplies, food production, energy resources and others. As highlighted at the Rio+20 Conference, the world needs urgent, practical and sustainable solutions to making development more effective and more sustainable.

Energy and water are at the heart of these solutions. They are both fundamental requirements for development and are deeply interrelated. Water supply uses large amounts of energy, whether for

pumping, treatment or desalination. Similarly, energy supplies often depend critically on water, for hydroelectricity, cooling or irrigation for biomass. Climate change and international security both impact and are impacted by energy and water management. Food production and distribution requires large inputs of both energy and water—indeed even temporary interruptions of either can have major impacts. The close relationship between these resources has led many to talk of a water-energy "nexus".

Political and public awareness of environmental threats has increased especially over the last decade, even though scaled solutions continue to lag behind. New frameworks for sustainable development are within economic and technological reach, but require more organized planning, political leadership, and public awareness.

Meeting the challenge of sustainable development in the 21st Century will mean finding comprehensive solutions at local, national and global levels through concerted action and shared responsibility. These can build on the momentum of the 2012 International Year of Sustainable Energy for All and the 2013 International Year of Water Cooperation, as well as key sustainability events such as the Rio+20 Conference on Sustainable Development and the eighteenth Conference of the Parties under the United Nations Framework Convention on Climate Change. The nexus is likely to be addressed as part of the post-2015 development agenda and the relevant work of the UN agencies as well as the UN Sustainable Development Solutions Network and the International Renewable Energy Agency (IRENA).

Accordingly, this thematic debate will examine and discuss the challenges and opportunities in management of the nexus to enhance sustainable development and meet the challenge of climate change. It will focus on practical, nationally appropriate government interventions in the market and international governance and financing options to spur both investment and resource efficiency.

The thematic debate is organized in partnership with the United Arab Emirates (UAE) —a key voice on the energy and water nexus. In the context of extreme heat and water scarcity, the UAE has introduced the first mandatory water and energy efficiency standards for buildings,

appliances, and agriculture in its region, as well as the first low-carbon energy programme, including pioneering renewable energy, carbon capture and sequestration, and nuclear projects. Its flagship Masdar project additionally offers a new template for technological development and urbanization. The UAE furthermore continues to rapidly expand its international support and examination of sustainable nexus management, including through hosting the Abu Dhabi Sustainability Week, the world's largest annual energy and water sustainability event coinciding with the Assembly of IRENA, and through multi-billion dollar overseas clean energy investment programmes by both sovereign wealth funds and development agencies.

The thematic debate will be supported by the UN Sustainable Development Solutions Network, which was designed to be a practical step to speed up the mobilization of new technologies and business models to save the planet from human-induced environmental devastation.

2. OBJECTIVE

The objective of the high-level thematic debate is to draw upon the convening power of the General Assembly so that high level representatives of Member States, relevant multilateral organizations, regional development banks, companies, academic institutions, think-tanks, and others can offer their views on frameworks and practical solutions for enhancing sustainable development through the energy-water nexus.

The high-level thematic debate will provide an informal setting to exchange views, ideas, and lessons learned, helping to accommodate differing views and providing freedom to discuss and generate new ideas on the subject in an interactive manner.

The high-level thematic debate aims to contribute to the follow-up on the Rio+20 Conference and related international sustainability work, particularly within the context of the post-2015 development agenda.

3. FORMAT

The high-level thematic debate will be a one-day event. The morning session will consist of an opening segment and high-level keynote addresses from political leaders and experts, including "views from the frontline" covering both the science and impacts of climate change and the realities of investment in energy and water infrastructure.

The afternoon session will consist of interactive round table panel discussions and closing remarks.

The afternoon panels will discuss technological advancements in sustainable energy and water supply; explore effective means to stimulate investment in these areas in view of the increasing challenges posed by climate change; and address how cutting-edge innovation and cooperation can increase resource efficiency across different sectors and reduce greenhouse gas emissions and other impacts.

4. OUTCOME

The President of the General Assembly will submit a summary of the debate which will be distributed to Member States and other stakeholders, emphasizing conclusions reached and proposals made.

UN General Assembly

Thematic Debate

Sustainable Development and Climate Change:

Practical Solutions in the Energy-Water Nexus

16 May 2013, New York

Draft programme
(15 May 2013)

TIME	PROGRAMME
10:00 – 10:45 am	**OPENING SESSION**
	H.E. Mr. Vuk Jeremic, President of the General Assembly Mr. Wu Hongbo, Under-Secretary-General for Economic and Social Affairs H.E. Dr. Sultan Ahmed Al Jaber, Minister of State and Special Envoy for Energy and Climate Change of UAE Prof. Jeffrey Sachs, SDSN and The Earth Institute, Columbia University
10:45 – 11:15am	**KEYNOTE ADDRESSES** (Confirmed as of 15 May 2013)
	Mr. Janez Potočnik, European Commissioner for Environment H.E. Ms. Izabella Teixeira, Minister of Environment of Brazil Ms. Beata Jaczewska, Deputy Minister of Environment of Poland
11:15- 11:45 am	**VIEWS FROM THE FRONTLINE**
	Dr. Rajendra Kumar Pachauri, Chairman of the Intergovernmental Panel on Climate Change (IPCC) and Director-General of The Energy and Resources Institute (TERI) The Hon.Craig Knowles, Chair, Murray-Darling Basin Authority of Australia Prof. Laurence Tubiana, Director, Institute for Sustainable Development and International Relations, Sciences Po Prof. Johan Rockström, Stockholm Resilience Centre
11.45 am -1.00 pm	**INTERACTIVE DEBATE**

3:00 – 4:30 pm	**INTERACTIVE ROUNDTABLE PANEL DISCUSSION I: ENERGY-WATER NEXUS/ GLOBAL GOALS AND FRAMEWORKS**
	Moderator: - H.E. Mr. Geir O. Pedersen, Permanent Representative of Norway to the UN Panellists: - Ms. Amina J. Mohammed, Special Advisor of the Secretary-General on Post-2015 Development Planning - Ms. Gisela Alonso Domínguez, President, Cuban Agency of Environment - Ms. Samantha Smith, Director of WWF Global Climate Change and Energy Initiative - Mr. Zhou Dadi, Director General (Emeritus)Energy Research Institute of the National Development and Reform Commission - Prof. Mark A. Cane, G. Unger Vetlesen Professor of Earth and Climate Sciences, The Earth Institute, Columbia University
4:30 – 5:45pm	**INTERACTIVE ROUNDTABLE PANEL DISCUSSION II: ENERGY-WATER NEXUS/TECHNOLOGICAL ADVANCEMENTS AND INVESTMENT**
	Moderator: - Mr. Adnan Z. Amin, Director-General, International Renewable Energy Agency (IRENA) Panellists: - H.E. Ms. Razan Khalifa Al Mubarak, Secretary General, Environment Agency- Abu Dhabi - Prof. Vijay Modi, Columbia University - Mr. Brice Lalonde, Special Advisor on Sustainable Development, Global Compact - Mr. Jeff Seabright, Vice President of Environment and Water Resources, The Coca-Cola Company
5:45 – 6:00pm	**CLOSING SESSION**
	Prof. Jeffrey Sachs, SDSN and Earth Institute, Columbia University H.E. Dr. Sultan Ahmed Al Jaber, Minister of State and Special Envoy for Energy and Climate Change of UAE H.E. Mr. Vuk Jeremic, President of the General Assembly

Indicative Guidelines on Format

These indicative guidelines are applicable to all segments of the thematic debate.

In order to promote the interactive nature of the thematic debate, there will not be a pre-determined speakers list. It is kindly requested that keynote speakers listed in the program limit their remarks to 7 minutes. All other speakers are kindly requested to limit their interventions to 3 minutes. In order to have the discussions in the round tables of the afternoon session as interactive as possible, it is also kindly requested to limit interventions/questions to 3 minutes as well.

Longer versions of the speeches can be shared with the Office of the President of the General Assembly to be posted on the website of the President of the General Assembly.

UN General Assembly

Thematic Debate

Sustainable Development and Climate Change:

Practical Solutions in the Energy-Water Nexus

16 May 2013, New York

Briefing Note on Panel Discussions

3:00-4:30 pm: Interactive Roundtable Panel Discussion I: Energy-Water Nexus/ Global Goals and Frameworks

The world has made great progress on many of the Millennium Development Goals (MDGs) in recent years, yet future development is threatened by real concerns about the pressure put on natural resources and the threat of climate change. Rising global temperatures are leading to rising sea levels, changing precipitation patterns, more frequent and severe extreme weather events and other impacts. At the same time, growing populations and consumption put stress on water supplies, food production, energy resources and others. Meeting the challenge of global climate change is therefore more urgent than ever, and 2015 is the deadline for reaching a new climate agreement with legal force.

A new framework for development is also being developed as agreed at the 2012 Rio+20 Conference on Sustainable Development as the existing MDGs reach their target year of 2015. The work of the Open Working Group on Sustainable Development Goals (SDGs) will result in the creation of a set of SDGs by the 68th session of the UN the General Assembly. The goals are expected to address all three dimensions of sustainable development – economic, environmental and social – in a balanced way and be coherent with and integrated into the UN development agenda beyond 2015. Some Member States and stakeholders have proposed that such goals may address energy and water, which are both fundamental requirements for development and are deeply interrelated.

The first panel will look at setting global goals and frameworks for energy and water in the above mentioned context. Panellists and Member States are invited to consider the following discussion questions:

- What are the main global development priorities in energy and water in the post-2015 development framework? How can the nexus approach be best reflected?
- How can we frame goals that are relevant to both developed and developing countries?
- How can the latest scientific findings help inform governments in their policy development and implementation?
- How are countries addressing energy and water in their strategies and goal settings at the national level and what are lessons learnt that could inform the SDG and the broader global post-2015 development agenda setting?
- What are the right priorities for international funding mechanisms – such as development banks and UNFCCC-linked funds in supporting global goals?

4:30-5:45 pm Interactive Roundtable Panel Discussion II: Energy-Water Nexus/ Technological Advancements and Investment

Water supply uses large amounts of energy, whether for pumping, treatment or desalination. Similarly, energy supplies often depend critically on water, for hydroelectricity, cooling or irrigation for biomass. Climate change and international security both impact and are impacted by energy and water management. Food production and distribution requires large inputs of both energy and water— temporary interruptions of either can have major impacts. Thus, technological innovation and development, as well as practical, nationally appropriate government interventions in the market and international governance and financing options to spur investment and resource efficiency are urgently required.

The second panel will look at the challenges and opportunities in the energy-water nexus management, namely on advancing technological development and stimulating investment in sustainable energy and water supply. Panellists and Member States are invited to consider the following discussion questions:

- What are pressing issues in countries in managing the energy-water nexus?
- What are the research development & deployment priorities in ensuring sustainable energy and water supply? Is renewable energy the answer for the energy sector? Is desalination the answer to fresh water scarcity?
- What challenges can be met with existing technologies, and where are new breakthroughs needed?
- What international cooperative mechanisms can successfully develop and deploy nexus management technologies?
- What infrastructure should governments target to reduce nexus stress? What infrastructure should they avoid?
- What interventions from government would best support new investment and market growth in sustainable supply of water and energy?
- What are the major obstacles to financing clean, efficiency infrastructure globally?

Thematic Debate

67th Session of the United Nations General Assembly

"Sustainable Development and Climate Change: Practical Solutions in the Energy-Water Nexus"

New York, 16 May 2013

EXECUTIVE SUMMARY

The objective of the thematic debate, convened by the President of the 67th Session of the General Assembly, H.E. Mr. Vuk Jeremić, in partnership with the United Arab Emirates with support from the UN Sustainable Development Solutions Network (SDSN), was to discuss the fundamental and critical linkages between energy and water (the "energy-water nexus"), as Member States tackle the challenges of climate change and sustainable development. Representatives from the Member States, multilateral organizations, private sector, civil society and academic institutions all welcomed the timeliness of holding the thematic debate, coinciding with various processes underway to define the post-2015 development agenda as the Millennium Development Goals reach the target year of 2015.

> *Professor Jeffry Sachs of the SDSN commended the President of the General Assembly for convening the thematic debate by saying, "there is no more important issue in the world than the one we are discussing today."*

The one-day event was comprised of plenary sessions, including views from the frontline featuring prominent scientists and experts, and two interactive roundtable panel discussions on "Energy-Water Nexus: Global Goals and Frameworks" and "Energy-Water Nexus: Technological Advancements and Investment." The thematic debate was organized in an informal setting for Member States and relevant experts to exchange views, ideas and lessons learned on the energy-water nexus, both as a challenge and a solution.

> *Participants agreed that energy and water are fundamentally linked. Both are, in the words of the UN Secretary-General Ban Ki-Moon, "indispensable to life" and prerequisites for sustainable development. Energy and water must be addressed together given their interlinkages, rather than in isolation.*

Prominent scientists and experts provided evidence indicating how human activities have seriously altered the state of the environment and have induced a wide range of environmental issues in the recent decades. Climate change, one of the most challenging environmental issues, is likely to worsen water scarcity in the future, affecting energy as well as food production and supply that are closely linked to water availability.

Participants highlighted some of the progress made and various initiatives undertaken on securing energy and water supplies to meet socio-economic developmental goals and at the same time, minimizing associated environmental impacts. However, not enough has been done and Member States and relevant stakeholders must take immediate actions to avoid catastrophic consequences in the future.

Participants called for investments in innovative and practical solutions. Renewable energy could particularly play an important role in currently energy-scarce regions such as Africa. Participants also called for the need for addressing water and energy as priority issues in the post-2015 development agenda, as the UN Open Working Group on Sustainable Development Goals deliberate on a set of goals to be proposed to the 68th Session of the General Assembly.

A number of key messages and actions points emerged from the thematic debate:

1) Ensure access to sustainable energy and appropriate water supplies to all;

2) Endorse integrated policy planning and resource management to address energy and water together;

3) Transition to a low-carbon, green economy to achieve sustainable development;

4) Develop a set of sustainable development goals that will address energy and water as key priority issues;

5) Invest in technology development and innovation in order to increase resource efficiency;

6) Promote sustainable consumption and production in view of planetary boundaries and limited resource availability; and

7) Strengthen international cooperation to facilitate resource mobilization and technology transfer.

The thematic debate concluded with a positive note that challenges can also be opportunities to expand economic sectors, diversify the economy and establish policies to drive investments. Participants agreed that continued international dialogues and information exchange on the energy-water nexus will lead to practical solutions and successes in meeting the challenges of climate change and sustainable development.

KEY MESSAGES AND ACTION POINTS - IN DEPTH SUMMARY

Participating scientists and experts reported that we now live in the "anthropocene," an era in which human activities are significantly altering the planet and breaching "planetary boundaries" – the Earth's ecological carrying capacity. For example, 25 per cent of rivers no longer reach the ocean due to construction of dams, affecting the water flow. Impacts of human-induced climate change are also affecting all, regardless of location. Extreme and unpredictable weather events such as increased droughts, heat waves, flood and cyclones are increasing and are expected to occur more frequently in the future. Changes in seasonal patterns are also resulting in higher energy consumption for heating or cooling in some regions, affecting the poor the most. Policy makers urgently need to develop appropriate policies based on scientific evidence so that measures can be taken to ensure sustainable development for all.

1) **Ensure access to sustainable energy and appropriate water supplies to all**.

According to the UN Secretary-General Ban Ki-moon, "[a]ccess to sustainable energy and appropriate water supplies is essential for alleviating poverty, promoting health, raising living standards and achieving sustainable development." At the same time, around 780 million people lack access to clean water and 1.3 billion people lack access to electricity. About 3.5 billion people suffer from water scarcity and it is expected that water will become even scarcer as the world's population continue to increase to 9-10 billion by 2050, in combination with the impacts of climate change. Collective global efforts must be made by all relevant stakeholders to ensure access to sustainable energy and appropriate water supplies to all, while keeping in mind of finite resources

2) **Endorse integrated policy planning and natural resource management to address energy and water together.**

Water and energy are important issues in their own right, but cannot be addressed in isolation because they are fundamentally linked and heavily interdependent. A large amount of energy is required for pumping, treating (including desalination and recycling) and transporting water. Similarly, a large quantity of water is needed for extracting energy, generating power (e.g., hydroelectricity), cooling or irrigation for biomass. Furthermore, food production and distribution requires large inputs of both energy and water. Energy and water are also economically linked: saving one will save the other, leading to significant cost savings.

Therefore, "integrated" or "holistic" and "balanced" approaches to policy planning and resource management are critical to ensuring access to energy and water in an increasing resource scarce environment. In addition, an adaptive approach should be taken as the applicability of certain policies or management systems may change over time, given the changing circumstances. It is essential to avoid working in "silos", but to work cooperatively across governments and with all sectors, particularly with the private sector. Appropriate research and data collection also plays an important role in supporting policy planning and resource management. Good resource management is equally important to the

private sector as it helps to avoid business risks associated with climate change and water scarcity. Improving resource efficiency also results in reducing operational costs by millions of dollars.

3) **Transition to a low-carbon, green economy to achieve sustainable development.**

The current economy is heavily dependent on carbon-based systems that emit a large amount of carbon dioxide which is the leading cause of climate change. A week before the thematic debate, it was reported that the atmospheric concentration of carbon dioxide reached a record high in millions of years, which further raised the urgency for taking appropriate measures to mitigate the impacts of climate change. Furthermore, the poor are most affected by environmental pressures and yet have the least means to respond. Therefore, there is a need to decouple economic growth from carbon-based systems and move away from business as usual and transition to a low-carbon, green economy which makes use of new technologies to maximize resource efficiency while reducing emissions. Some Member States reported that they are in the process of developing national strategies for green economy.

Participants called onto governments to create enabling conditions to facilitate green, low-carbon technology development and infrastructure development, for example, through market reform and restructuring of tariff structures.

4) **Develop a set of sustainable development goals that will address the energy and water as key priority issues.**

At the 2012 Rio+20 UN Conference on Sustainable Development, Member States renewed their political commitments to sustainable development and agreed to establish a process to develop a set of sustainable development goals as the Millennium Development Goals reach the target year of 2015. The UN Open Working Group on Sustainable Development Goals is in the process of developing the goals that will drive the global development agenda in the coming years. A clearly set goals and targets, keeping in mind of common but differentiated responsibilities, will help directing collective efforts to concrete results, for example, eradicating poverty and advancing the sustainable energy, water and food agenda.

Participants agreed the importance of addressing both energy and water in the set of goals. Questions were raised as to how the nexus or the linkages may be best addressed, and more broadly, how the post-2015 development process can best ensure that the benefits of sustainable energy and clean water can be secured for future generations. Participants also stressed that unfinished work under the Millennium Development Goals must continue and be completed under the sustainable development goals.

5) **Invest in technology development and innovation in order to increase resource efficiency.**

Technology development and innovation are critical for sustainable development. Participants called for investments at scale to stimulate research and development in innovative sciences, technologies and

business models for the energy-water nexus management in order to increase productivity while reducing resource use and emissions. At the same time, solutions must be economically and socially viable.

Renewable energy, namely hydro, solar, wind and geothermal power generation as well as biomass, has a great potential as a low-carbon technology, but participants expressed a need for restructuring the energy market in order to fully exploit its potential. For example, the deployment of solar power generation should be encouraged, especially in regions such as Africa where there is huge potential, but currently lacking access to adequate energy supplies. Solar power is also an economically viable option, since the cost has significantly declined over the years. Hydropower generation – especially small-scale hydro dams – could be of interest to water scarce regions as it can both store water and generate electricity, thus can balance demand and supply according to needs. However, its efficiency and reliability may be affected by climate change, with increasingly fluctuating weather patterns. Thus, it is also important to diversify the energy mix to increase resilience of energy and water supplies.

Participants also highlighted other forms of practical solutions that could bring both environmental and economical benefits, including: carbon capture and storage; reuse of water; improve energy efficiency (e.g., enhance efficiency in power generation or cooling of buildings) and water efficiency (e.g., eliminate leakage or adopt drip irrigation); new desalination technologies to decouple water and energy production (e.g., use renewable energy or membrane technology); utilization of sensors and automatic processes in resource management as well as appropriate metering and measurements.

In addition, participants discussed the importance of better stimulating private sector innovation by creating incentives for efficient use of energy and water. The importance of improved service provision was also raised, in order to secure adequate investments for infrastructure development and maintenance.

6) **Promote sustainable consumption and production in view of planetary boundaries and limited resource availability.**

Participants stressed that technological advancements and innovation would not be enough to overcome the energy-water challenges. For example, increasing water supply through desalination and other technologies alone is not a solution given the overall limited availability of fresh water. The issue of consumption must be looked as well, keeping in mind of the availability of finite resources. Thus, participants called for promoting sustainable consumption and production, with focus on demand side management (e.g., metering) in combination with technological development and innovation, at both large and small scales.

7) **Strengthen international cooperation to facilitate resource mobilization and technology transfer.**

Governments have an important role to play to catalyze change. It cannot facilitate changes alone, but it can provide incentives and create enabling conditions to engage different actors. The involvement of

new partnerships and resources were called for, particularly, the role of the private sector was stressed, both in terms of taking a lead on technology development and providing financing.

Participants discussed the importance of international cooperation: developed countries are expected to support developing countries through technology transfer (e.g., by sharing relevant low carbon technologies) and to deliver financing commitments (e.g., by providing funds for climate change mitigation and adaptation under the UN Framework Convention on Climate Change).

Participants also stressed the importance of capacity building through facilitation of dialogues and information exchange on the energy-water nexus among different stakeholders so that practical solutions could be explored to meet the challenges of climate change and sustainable development.

ABOUT THE THEMATIC DEBATE

High-level thematic debates are convened by the Presidents of the UN General Assembly to provide an informal setting for the UN Member States and relevant experts to exchange views, ideas and lessons learned on selected topics.

Participants in the plenary sessions included H.E. Mr. Vuk Jeremić, President of the General Assembly; Mr. Wu Hongbo, United Nations Under-Secretary-General for Economic and Social Affairs; H.E. Dr. Sultan Ahmed Al Jaber, Minister of State and Special Envoy for Energy and Climate Change of the United Arab Emirates Mr. Janez Potočnik, European Commissioner for Environment; H.E. Ms. Izabella Teixeira, Minister of Environment of Brazil; Ms. Beata Jaczewska, Deputy Minister of Environment of Poland; Professor Jeffrey Sachs, Director of the UN Sustainable Development Solutions Network and the Earth Institute, Columbia University; Dr. Rajendra Kumar Pachauri, Chairman of the International Panel on Climate Change (IPCC) and Director-General of the Energy and Resources Institute (TERI); The Hon. Craig Knowles, Chair, Murray-Darling Basin Authority of Australia; Professor Laurence Tubiana, Director, Institute for Sustainable Development and International Relations, Sciences Po; Professor Johan Rockström, Executive Director of the Stockholm Resilience Centre.

The first panel on "Energy-Water Nexus: Global Goals and Frameworks" was moderated by H.E. Mr. Geir O. Pedersen, Permanent Representative of Norway to the UN, and featured presentations by Ms. Amina J. Mohammed, Special Adviser of the Secretary-General on Post-2015 Development Planning; Ms. Gisela Alonso Domínguez, President, Cuban Agency of Environment; Ms. Samantha Smith, Director of the World Wildlife Fund (WWF) Global Climate Change and Energy Initiative; Mr. Zhou Dadi, Director General (Emeritus), Energy Research Institute of the National Development and Reform Commission; and Professor Mark A. Cane, G. Unger Vetlesen Professor of Earth and Climate Sciences, the Earth Institute, Columbia University.

The second panel on "Energy-Water Nexus: Technological Advancements and Investment" was moderated by Mr. Adnan Z. Amin, Director-General, International Renewable Energy Agency (IRENA), and featured Mr. Jeff Seabright, Vice President of Environment and Water Resources, the Coca-Cola Company; H.E. Ms. Razan Khalifa Al Mubarak, Secretary-General, Environment Agency, Abu Dhabi; Professor Vijay Modi, Columbia University; and Mr. Brice Lalonde, Special Advisor on Sustainable Development, United Nations Global Compact.

Statements, presentations and webcast of the thematic debate are available:

http://www.un.org/en/ga/president/67/issues/climatechange/climatechange_index.shtml.

United Nations Nations Unies

THE PRESIDENT OF THE GENERAL ASSEMBLY

LE PRESIDENT DE L'ASSEMBLEE GENERALE

16 May 2013

Statement of H.E. Mr. Vuk Jeremić,
President of the 67th Session of the General Assembly,
at the Opening of the Thematic Debate "Sustainable Development and Climate Change: Practical Solutions in the Energy-Water Nexus"

Mr. Under-Secretary-General,
Minister of State Al Jaber,
Excellencies,
Distinguished Representatives,
Ladies and Gentlemen,

I am honored to welcome you to the General Assembly's thematic debate on Sustainable Development and Climate Change: Practical Solutions in the Energy-Water Nexus."

This has been pulled together with the great help of His Excellency Dr. Sultan Ahmed Al Jaber Minister of State and Special Envoy for Energy and Climate Change of the United Arab Emirates. I am profoundly grateful for his engagement and dedication.

I would like to extend special recognition to Professor Jeffrey Sachs of Columbia University the Secretary-General's Special Adviser on the MDGs, and Director of the UN Sustainable Development Solutions Network, and acknowledge his incessant efforts to help the world overcome the threats posed by climate change.

Allow me also to express my deep appreciation to Ambassador Wu Hongbo, the UN's Under-Secretary-General for Economic and Social Affairs, for his hard work and strong commitment to promoting the UN's post-2015 agenda.

Finally, let me thank the renowned experts, practitioners, and businessmen who will anchor the mid-morning 'views from the frontline' part of the debate, as well as those who will participate in the afternoon panel discussions.

Excellencies,

Last June in Rio, world leaders endorsed the historic "Future We Want" document, which established the framing principles of the post-2015 agenda. For the first time, Member States agreed on measures to comprehensively integrate the three dimensions of sustainable development namely economic, social, and environmental into a single, fully coherent whole.

They mandated the General Assembly to conceive and adopt the SDGs, design options for financing them, and create a workable intergovernmental arrangement for monitoring their implementation in

essence, assigning this body with the strategic aim of crafting a new, ambitious global framework that will define much of the UN's work for decades to come.

The Rio+20 document also tasked the General Assembly to "further integrate sustainable development as a key element of the overarching framework for United Nations activities, and adequately address sustainable development in its agenda-setting, including through periodic high-level [events]," such as thematic debates.

Excellencies,

The fundamental challenge of our time is to end extreme poverty in this generation and significantly narrow the global gap between rich and poor, without ruining the environmental basis for our survival.

The latest scientific announcements have confirmed some of the worst fears. It has been determined that the level of carbon dioxide in the atmosphere has risen above 400 parts per million for the first time in more than three million years.

To safeguard the world from runaway climate change, we will need to de-couple economic growth from our dependence on carbon-based energy systems, which currently provide 80 percent of our primary power needs. Last year, burning these types of fuels led to another 34 billion tons of CO2 being emitted in the air. As the concentration of CO2 keeps increasing, the Earth's ecosystems will continue to change with perilous rapidity.

The evidence is overwhelming: global temperatures are rising and extreme weather events are becoming commonplace. Some parts of the globe are experiencing more drought; others more floods. The amount of freshwater is decreasing, as rivers and aquifers dry up.

Our water problems are closely linked to our energy problems. Water supply requires large amounts of power, whether for pumping, treatment, or desalination. Similarly, energy supplies often critically depend on water for hydroelectricity, cooling, or irrigation for biomass.

Food production and distribution also necessitate large inputs of both energy and water indeed, even temporary interruptions of either have caused major food crises in many parts of the world.

Excellencies,

The challenge to secure every Member State's right to sustainable development has four inter-related dimensions: technological, organizational, economic, and moral.

Each of them is applicable to energy-water nexus.

We need more energy, not less, to end poverty and raise global living standards. But that power must be low carbon, if we are to remain within planetary boundaries. New technologies are required in order

to remake the energy delivery system so that by mid-century, they produce perhaps three times today's output, but with less than half of the emissions.

Recent advancements are encouraging. The price of solar power has fallen by a factor of 100 in just 40 years; today's poor desert regions can become tomorrow's energy powerhouses. The cost of wind power is now at "grid parity" in many parts of the world, meaning that it can already compete with fossil fuels. There are other potential alternatives as well, such as fourth-generation nuclear power, carbon capture and sequestration, and advanced biofuels just to name a few.

Smarter technologies are also making water usage more efficient, allowing us to get more benefit per liter "more crop per drop," as Professor Sachs recently put it. New farm techniques will allow for much more precision in irrigation; new seed varieties will be better suited to drier conditions; new ways to recycle urban water use will ensure municipal needs; and new technologies can be deployed to ensure safe drinking water and sanitation for the poor.

Excellencies,

The challenges go beyond technology they are also organizational. How can humanity establish and then manage a sustained de-carbonization effort that will necessitate two generations to complete, and require the consent and participation of all nations? Responsibility for this unprecedented task has been put in the hands of the General Assembly, charged with defining the major workstreams of the post-2015 agenda. These include, most notably, the Open Working Group on SDGs, and the Intergovernmental Process to Propose Options for an Effective Sustainable Development Financing Strategy.

The third dimension of the challenge is economic. We must have better functioning energy markets, if we'd like to benefit from the dynamism and innovation of the private sector. Similarly, we must give proper incentives to rationalize water use, while protecting the poor. At present, our markets do not function well enough in this regard. The competition of high-carbon and low-carbon energy is not yet balanced, because fossil fuel prices do not include the social costs of climate change. With the right market incentives, however, the shift to low-carbon energy systems may become both faster and deeper.

The final challenge is a moral one. Stewardship of the environment is our shared obligation. We hold in our hands the power to ruin the Earth, or to sustain it for posterity. This is an unprecedented responsibility. Our generation is the first to bear it, as only it became capacious enough both economically and demographically to threaten the entire planet.

Excellencies,

We cannot afford business as usual for growth along the current path will lead us to catastrophe, not riches.

We need to embrace the path to sustainability, crafting a new global partnership in which no nation is left behind, and no country opts out.

This calls for a new direction and new strategies. I believe this debate can be an important step in moving us closer to the post-2015 starting line, by directing our attention to the innovative science, cutting-edge technologies, and new business models related to the energy-water nexus.

Today, the General Assembly will have the opportunity to benefit from the wisdom of some of the world's leading experts in the field. We hope that their insights will help us to make more informed choices in the critical years ahead for the extent of the damage we are causing is fast approaching the point of no return.

We have the tools to save the planet from human-induced environmental devastation. What we lack, however, is a fundamental commitment to use them in coherent ways, as well as a full appreciation of how little time we have left before it gets too late.

The stark truth is that we face an existential challenge like never before and we're simply not doing enough to address it.

Thank you for your attention.

PERMANENT MISSION OF THE
UNITED ARAB EMIRATES
TO THE UNITED NATIONS
NEW YORK

البعثة الدائمة
للإمارات العربية المتحدة
لدى الأمم المتحدة
نيويورك

Statement of

H.E. Dr. Sultan Ahmad Al-Jaber

Minister of State of the United Arab Emirates
And Special Envoy for Energy and Climate Change
at the Thematic Debate on "Sustainable Development and Climate Change; Practical Solutions in the Energy-water Nexus.

New York-16 May 2013

Mr. President of, Your Excellences, Ladies and Gentlemen.

We are gathered here today because we are confronted with a shared responsibility. A shared responsibility to address the intricate balance... between our rising economies...our growing societies... and our limited resources

A balance that is crucial to achieving a sustainable future.

And a balance...that rests on three critical and deeply linked elements...energy, water and food.

Water is needed to extract energy and generate power; energy is needed to treat and transport water; and both water and energy are needed to grow food.

Without sustainable access to all three, economic growth and human development cannot thrive... and poverty and conflict... cannot be prevented ...

Today, some 783 million people are without access to clean water, and 1.3 billion lack electricity.

Over the coming decades... these vital resources will come under greater pressure.

Tel : +1 212 371 0480 | Fax : +1 212 371 4923 | 3 Dag Hammarskjöld Plaza, 305 East 47th Street, 7th Floor, New York, NY 10017 | USA

In the UAE, despite our abundant energy resources, we face crucial water and food challenges.

We rely heavily on food imports and our share of desalinated water is growing exponentially—a challenge faced by all our neighboring countries in the Gulf...were we account for nearly 50% of the world's desalination capacity...

Water is our gravest challenge. A challenge to our energy security, our economic growth and our social welfare.

But a challenge that the UAE views as a unique opportunity...

An opportunity...to expand economic sectors, diversify the economy and establish policies to drive investment...

To do so, we are leveraging our existing deep energy expertise and leadership...to identify, advance and implement solutions to overcome these challenges.

To save water is to save energy... these priorities must be considered together...and as one.

In the UAE, we are piloting highly efficient desalination technology coupled with renewable energy.

And we are transitioning to make our energy mix more diverse and sustainable.... to meet rising demand from desalination and cooling.

For instance, in Abu Dhabi, through Masdar, we recently inaugurated Shams 1— a 100 megawatt concentrating solar plant that supplies 20,000 homes in the UAE with clean energy.

Abu Dhabi is also constructing 5.6 gigawatts of safe, secure nuclear power to further broaden our portfolio of energy sources and improve our long term energy security.

But we are not just acting at home.

We believe that international cooperation is critical.

For this reason...we have made sustainable technologies a focus for our international engagement...

We are funding sustainable projects in developing countries and small islands...where our Pacific Fund directs $50 million in grants to renewable energy projects in Pacific Islands.

We also invest at scale...

Masdar's London Array wind farm– the largest offshore wind farm in the world will power half a million homes in the United Kingdom.

The UAE is also active in helping shape the sustainable development goals that will support development post 2015, including through our participation in the Open Working Group.

We see the need for mutually reinforcing goals on energy and water, as well as for food security.

All this, I hope, demonstrates clearly our commitment to international cooperation.

And that is why we see today's event... as an important stepping stone... to more tangible cooperation.

The challenges we face are global.

And discussions such as these...will allow us all to learn from each other... and find new ways to advance sustainable development.

I hope today's debate will bring new lessons and new opportunities for collaboration.

We must take these messages and bring them to a wider audience, including industry leaders, researchers, governments and civil society.

One ideal platform for this will be Abu Dhabi Sustainability Week in January, which brings together the World Future Energy Summit, the International Water Summit… as well as a host of related meetings.

A platform where leaders from the public and private sector… as well as academics…come together to make a difference through collaboration and investment….

There are no bigger challenges today… than those we face in making our energy and water use sustainable.

But there is also no bigger opportunity to harness investment, growth and human ingenuity.

Today's discussions will, I hope, make a major contribution to realizing that opportunity.

Thank you.

Thematic Debate "Sustainable development and climate change: Practical solutions in the Energy-Water Nexus"
United Nations - New York – 16 May
Speaking Points for the interactive session

Mr. Chair
On behalf of the EU and its Member States, I would like to underline the following points:

- We are currently elaborating our position on the post-2015 agenda and are committed to listen, consider, interact and assess proposals by other countries, the UN system, the scientific community and other stakeholders. **In this regard, we very much value today's thematic debate to inform our position.**

- We have shared some preliminary views, notably in the context of the discussion on Sustainable Development Goals (SDGS). We consider key to incorporate the social, economic and environmental dimensions of sustainable development in a balanced, holistic and coherent way, **while capturing inter-linkages and cross-cutting issues**. What we have heard today on the Energy-Water nexus is particularly relevant and helpful in this regard. Clearly, we need collectively to avoid thinking in silos and strive towards addressing these challenges together. One answer is to aim for Policy Coherence for Development which the EU is very much committed to.

- This is a complex endeavour. Indeed, some would argue for an even more comprehensive nexus, adding land and food security to the 2 above issues of energy and water in order to apprehend the challenge in the most comprehensive way. This was for example the approach taken by the independent European Report on Development last year advocating an ambitious integrated Water-Energy-Land nexus[1]. Looking ahead, **our collective challenge will be to ensure that we embrace this approach while ensuring that it remains sufficiently action-oriented and easy to communicate, so as to make a concrete difference on the ground.**

- We have also heard today that poor management of energy and water often affects the poorest and can also be a potential source of conflict or multiplying threats. We have also heard that the insecurities of water, energy, and food can be exacerbated by the impacts of climate change Again, this underlines a point we have repeatedly made: **There is a fundamental link between ending poverty and giving the world a sustainable future and we need collectively to reinforce this common agenda in years ahead.** Eradicating poverty and achieving sustainable development will not be possible without fighting climate change, as recently evidenced by the World Bank report[2]. Our efforts ahead should thus be supportive of low carbon development, consistent with the objective of limiting global temperature increase below 2°C and of ensuring climate resilient societies and economies.

- We have also heard about the responsibilities and contributions from all partners to tackle these issues. There again, the nexus should not only relate to the issues per se but to the way we work together to tackle them. In other words, we also need a change of paradigm, **a new "nexus of actors",** bringing together in partnership all contributions and putting them to good and efficient use, whether from public or private, domestic or international sources.

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[1] *European Report on Development (ERD) 2011/2012* "Confronting scarcity: Managing water, energy and land for inclusive and sustainable growth"

[2] *"Turn Down the Heat: Why a 4°C Warmer World Must Be Avoided"*

REPUBLIQUE GABONAISE

UNION TRAVAIL JUSTICE

ALLOCUTION
DE
MONSIEUR ESSONO STEEVE DAVY
Chargé d'Etudes du Ministre du Pétrole, de l'Energie et des Ressources hydrauliques

AU DÉBAT DE L'ASSEMBLÉE GÉNÉRALE

SUR LE THEME:

"LE DÉVELOPPEMENT DURABLE ET LES CHANGEMENTS CLIMATIQUES : SOLUTIONS PRATIQUES DANS LE CONTEXTE DE L'INTERACTION ÉNERGIE-EAU"

--*-*-*-*-*-*-*-*

New York, le 16 Mai 2013

Vérifier à l'audition

MISSION PERMANENTE DU GABON AUPRES DES NATIONS UNIES
18 EAST 41ST STREET • NEW YORK, NEW YORK 10017 • TEL. (212) 686-9720

GABON STATEMENT

ON ENERGY – WATER NEXUS

Nous remercions le Président de l'Assemblée générale d'avoir organisé le débat sur l'interaction entre l'eau et l'énergie et saluons la qualité des exposés des panelistes.

En ce qui concerne le Gabon, nous sommes conscients du lien étroit qui existe entre le développement et l'accès aux services de base de l'eau potable et de l'électricité.

Les plus hautes autorités gabonaises ont donc pris l'engagement de rendre accessible l'eau et l'électricité pour tous à moindre coût. Ceci se matérialise par des investissements structurants qui amélioreront le quotidien des gabonais.

En matière d'environnement, le Gabon investit dans l'énergie propre par la construction des barrages hydroélectriques pour la production d'électricité en vue de mettre fin aux centrales thermiques à forte émission de dioxyde de carbone. Par ailleurs, nous sommes au stade expérimental pour les nouvelles formes d'énergie, notamment l'énergie solaire dans les zones lagunaires et lacustres. A ce niveau, nous sollicitons un partenariat dans le domaine du renforcement des capacités et d'expertise.

Nous sommes également favorables à toute contribution dans le cadre de la coopération pour mettre en œuvre nos projets relatifs à la maintenance des infrastructures d'hydraulique villageoise.

Enfin, nous sommes d'avis avec le Groupe 77 + la Chine que partager les expériences et les bonnes pratiques nous aiderait à rassembler les connaissances et les expériences sur l'eau et l'énergie pour l'éradication de la pauvreté.

Je vous remercie./-

UNITED NATIONS NATIONS UNIES

THE SECRETARY-GENERAL
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MESSAGE TO UN GENERAL ASSEMBLY THEMATIC DEBATE ON SUSTAINABLE DEVELOPMENT AND CLIMATE CHANGE: PRACTICAL SOLUTIONS IN THE ENERGY-WATER NEXUS
16 May 2013

To be delivered by Mr. Wu Hongbo,
Under-Secretary-General for the Department of Economic and Social Affairs

President of the General Assembly,
Excellencies,
Ladies and Gentlemen,

It is my pleasure to deliver the following message of the Secretary General, and I quote:

I thank the President of the General Assembly for taking the initiative to convene this important meeting.

Energy and water are indispensible to life.

Access to sustainable energy and appropriate water supplies is essential for alleviating poverty, promoting health, raising living standards and achieving sustainable development.

There are strong linkages between energy and water: how they are sourced, produced and consumed.

We need to develop coherent, integrated policies to utilize these resources more efficiently and to ensure access for all.

As we look to the future, we must take into account the growing impacts of climate change on both water and energy.

The Intergovernmental Panel on Climate Change has warned that water resources could become severely strained in many regions of the globe, affecting hundreds of millions of people.

Sea-level rise and coastal erosion could affect the availability of fresh water supplies as well as energy infrastructure.

Meanwhile, the global thermostat continues to rise. Just last week, scientists reported that the level of carbon dioxide in the atmosphere has now reached the

highest concentration in millions of years – yet another milestone and yet another alarm bell.

Humanity is pressing hard against the planet's ecological boundaries

We must go beyond narrow thinking and keep the bigger picture in mind as we consider how best to manage resources – and risks – in the years ahead. We need practical solutions that deliver a more sustainable world of dynamic growth, shared prosperity and environmental protection.

At the Rio+20 Conference, Governments renewed their political commitment to advance sustainable development.

Our ongoing efforts within the Open Working Group on Sustainable Development Goals, as well as on the post-2015 UN Development Agenda present a unique opportunity to revisit the current development models and their associated environmental impacts.

The year 2015 presents another opportunity for transformative change when the world comes together to forge a new global climate change agreement.

It must be universal, ambitious and binding. Taking action on climate change will catalyze new opportunity, growth and well being for all people.

Our children deserve nothing less.

I thank you and wish you a lively and rich discussion.

This concludes the message of the Secretary-General.

Thank you.

Sustainable Development and Climate Change:

Practical Solutions in the Energy –Water Nexus

UN Headquarters, New York, 16 May 2013

Speaking points

Climate, energy, water and biodiversity - the major challenges of today world. The needs are growing, the resources are scarce, the impacts of climate change are devastating, especially in the most vulnerable countries of Africa and small islands.

There is no efficient climate action without efficient energy use. There is no power generation without use of water. Food security cannot be guaranteed if biodiversity is not protected. Security of energy supply is a precondition to economic and human development. Water becomes the most precious resource for the entire population of 7 billion people on our planet.

Energy, water and food security – three elements in the nexus - are three major, indispensable basic needs and rights of every human being. Having access to those is **not a luxury,** it is **a matter of survival**. There is, however, another basic right of every society and every nation - **the right to develop** - grow and improve economy as well as life standards.

Global population is growing rapidly. We are 7 billion now, will be around **9 billion by 2050**. **The scarcity** of available **natural resources** will remain a major challenge, so we need to use them wisely in an efficient and sustainable manner. **Sustainability does not mean self-limiting**. It means wisdom, innovation, efficiency, good governance, inclusion of social aspects in the equation. Indigenous knowledge, traditional wisdom also needs to be preserved. **Innovation** does not mean replacement and forgetting of local wisdom, the wisdom of harmonious coexistence of humans and environment. Innovation must compliment this wisdom, and not be contradictory to it.

Environment in its entirety is the resource. We use all its components. There is **no life without clean water**. Industry and households need it. No food could be

produced, no energy generated. Generation of power even solar without water is not possible – as we need energy and water to manufacture, to plant crops, to manage forests. And yet, we are more than ever confronted with water scarcity, with 40% water supply gap expected for 2030.

Population growth, growing demand for water, increasing energy consumption and climate change with its water-energy interconnections **are the key factors** we should take into account while trying to shape both our national policy actions and a new global framework for development.

My country - Poland is not water rich. Our resources are limited. Our energy mix results from availability of locally retrieved fuels, renewable energy potential and transmission infrastructure. Even having those limits, we concentrate on finding the solutions that would speed up economic development while protecting the environment and contributing to both adaptation to climate change and mitigation.

Almost one year after the **Rio+20 Conference**, where we agreed to formulate Sustainable Development Goals time has come to focus on merits. **Energy and water** were given a rightful place in the Rio+20 final document – The Future We Want - and are two thematic areas that must be included in the SDGs. **Continuous global actions, undertaken domestically by all is urgently needed**. Global results may only be achieved if these are ambitious, universal and serving the societies.

The task ahead is challenging: energy and water are **intrinsically interlinked**, sector policies regarding energy and water are intertwined, also in their trade-offs, and we should ensure that **all three dimensions of sustainable development** are duly reflected in the future goals.

Poland, as a member of OWG on SDGs, **considers energy** and good governance **as its priority area**. To encompass social, economic and environmental aspects while formulating targets for SDGs we should take into account universal access to energy, energy efficiency, development of sustainable energy, alleviating energy impact on environment, including responding to climate change.

2015 is going to be a year of crucial importance for sustainable development and climate change agreement. However, no result will be achieved if the foundation is not laid down now, in 2013. This year is equally important for Rio+20 and UNFCCC processes. **Any goal in SDGs** should

be **consistent and supportive of climate change adaptation and mitigation action. Any climate change related policy and measure will help achieving the SDGs.**

With all the progress we already made, and with all the evidence that further actions are required, the global community finds itself at the point of no return; no return from **common effort** to fulfill the commitments to develop new frameworks and instruments helping us to achieve sustainable world. We need all nations to join in. **Global challenges demand global solutions**. Solutions that are affordable and that promote prosperity. By being creative, the World can reduce greenhouse gas emissions while promoting economic growth and ensuring better life standards. We need to be prepared for 9 billion people on this planet. People, who deserve decent and secure life.

The time has come to usher in a new age of green economies and truly sustainable development. Countries must grow and reduce carbon footprint as they create new jobs and alleviate poverty. All economies, those developed and emerging, must continue to sustain and tend to their populations' needs while decoupling growth from the use of natural resources.

Excellencies, ladies and gentlemen, in November my city - Warsaw will be welcoming the participants of the 19th Conference of Parties of UNFCCC.

The team supporting my minister - President Designate of COP19/CMP9 and the minister himself are doing their best to collect views and expectations on what Warsaw should deliver.

- Laying the foundation able to support the functions and the structure of the future 2015 agreement
- developing and adopting a strategy for expeditious implementation of the already taken decisions on adaptation, capacity building, technology cooperation and financial mechanism;
- building up confidence in the process - transparent, inclusive, open to everybody, instilling in Parties and in other stakeholders a sense of ownership,

are those mostly heard.

A week ago, my Minister reminded a Polish saying "Dla chcącego nic trudnego". Some of you know it as: ***If there is a will, there is a way.***

We have all committed in Rio and in Durban as well as Doha to making 2015 a historical year.
That is our will. We now need to find the way.
Thank you.
Tomorrow, here in the UN Headquarters in New York, Poland as incoming presidency will organize briefing for the Ambassadors on the preparations for COP19.

Speech
The Hon. Craig Knowles

UN General Assembly-Thematic Debate

Sustainable Development and Climate Change:
Practical Solutions in the Energy-Water Nexus

16 May 2013, New York

A simple plan

- My starting point is to recognise that for the past 40,000 years, Australia's traditional owners, the Australian Aborigines, have maintained a deep cultural and spiritual connection to their land and waters.

- In our work to develop a Plan for the Murray–Darling Basin, we took inspiration from an elder from our Njarrindjeri people, Tom Trevorrow, who once spoke of this connection and the Indigenous approach to caring for the natural landscape.

- Tom reminded us all of our connection with our planet when he said:

  "Our traditional management plan was don't be greedy.

  "Don't take any more than you need and respect everything around you.

  "That's the management plan—it's such as simple management plan, but so hard for people to carry out."

- Tom's words should echo and resonate here.

- It should be simple, but finding a balanced and sustainable approach to managing our water resources in Australia has been a difficult challenge.

- The simple fact is that you might have all the science and evidence in the world to support the need to make change, but if you don't have people willing to be a part of that change, you will not succeed.

- Last year, the Australian Federal Parliament adopted as law a Plan for the Murray–Darling Basin and received bi-partisan support.

- The plan paves the way for us to rebalance water use and rebuild the health in one of Australia's most significant environmental and economic regions.

The Murray–Darling Basin – some context

- The Murray–Darling Basin covers an area of more than 1 million square kilometres.

- It is larger than France and Germany combined.

- Its 23 river catchments range from pristine to severely compromised.

- It's home to more than 2 million people and provides drinking water for more than 3 million across hundreds of rural and urban centres.

- It contains more than 200 important wetlands, 16 that are listed under the Ramsar Convention, and a world heritage site at Lake Mungo.

- It's also one of our most productive food and fibre regions—often referred to as Australia's food bowl.

- Economically, it provides an annual average of about $15 billion worth of produce to the economy and 40% of our total national agricultural output - there are many competing interests.

- Climate is also highly variable - from subtropical to alpine to arid. It is truly a land of droughts and flooding rains.

- And it's one of the most variable river systems in the world, with huge variation in flows from year to year.

Our key issues and challenges

- In fact, this extreme variability between flood and drought has driven the management of water in the Basin, and indeed across Australia, since European settlement 200 years ago.

- The dams, weirs, locks and barrages built to:

  - supply drinking water to towns and cities
  - mitigate floods and droughts, and
  - allow navigation and irrigation

  …have taken their toll on the environment and ecosystems.

  - flow patterns have reversed
  - salinity has become a problem, along with acid-sulfate soils
  - species have been affected, and
  - water quality has diminished.

- We've made the problems more difficult to solve by adding:

  - multiple layers of overlapping jurisdictions
  - competing regulatory frameworks
  - opposing political imperatives, and
  - ever-increasing community expectations.

- On this last point, it has been a matter of fact that all Australian governments, especially since the end of the 2nd World War, encouraged extractive water use in a deliberate nation-building enterprise:

- extraction licences were given without cost or knowledge of impact,
- in some of our river valleys, we were just too greedy.

Early warning signs

- We knew we'd reached a tipping point as a result of the rise of salt in the water table and acid sulfate soils turning some of our river environments into battery acid.

- Along with toxic blue-green algae outbreaks, the late 1980s and into the 1990s saw Australian governments and river communities begin to take notice.

- Early steps saw salt interception schemes, a cap (or limit) on water extraction, the prioritisation and hierarchy of water uses for critical human needs and productive purposes.

- But, it wasn't until the extended drought of 2000, when the river had stopped flowing to the sea, for nearly 10 years, that the environmental problems and the over-allocation of water became a mainstream political and community issue.

- The National government acted:

    - New legislation to create a new whole-of-Basin management regime for the Murray–Darling, and
    - substantial funding to modernise irrigation and buy back water for the environment.

The Basin Plan

- Since then, the Basin Plan has been produced as the next logical step in restoring the balance between productive water use and environmental health.

What are the key features?

- The plan has a number of key features:

- **It's realistic**…our objective is a healthy working Basin which optimises the balance between the environment, the economies and communities….it's not about returning the rivers to their natural pristine state.

- **It sets a sustainable limit on water use based on internationally peer-reviewed science...**to return stressed rivers to environmental health and greater resilience to future climate change.

- **But, it's not just a "science experiment"…**the plan recognises the need to make judgements and decisions based on social and economic impacts…the people who live and work in the Basin are as much a part of the Basin environment as the vital ecosystems that underpin their economic sustainability.

- **Not everything happens in one day…**communities need time to adjust to change and, for scientifically valid reasons, introducing a plan over time allows us to monitor, evaluate and adjust based on the new knowledge and evidence that confronts us as

we move into the future.

- **So, the plan and its implementation over the next 7 to 10 years is based on adaptive management**

  - It's meant to be a flexible plan because in nature, things change.
  - As we discover better ways to do things, we need to respond.
  - Equally, we need to be ready to adjust to things like seasonal and climate changes.

- **Importantly, our plan recognises that how we recover water to reset the balance will have differing social and economic impacts.**

  - The tools to recover water for the environment include purchasing water entitlements from farmers who want to sell, through to investing in systems improvements and on-farm programs to make the most efficient use of every litre of water.

  - In total, the government is investing more than $12 billion to achieve the rebalance over the next 7 to 10 years.
  - Of course, the price you pay for dealing with water scarcity by increasing water efficiency through engineered solutions is inevitably a higher cost in water delivery and hence energy demand.
  - In a dry continent, where water is the more limiting factor, this is seen as a small price to pay.

Implementation

- Since the plan was adopted by our national parliament, we have started the implementation phase.

- We continue to work with Basin communities and governments to:

  - simplify the multiple layers and myriad rules
  - to identify physical constraints in the system that might be altered to improve river flows and environmental watering opportunities, and
  - apply knowledge to the on-going and never-ending task of river management

- This is an important point.

- There is always more to learn and there is wisdom in communities that needs to be tapped and incorporated so that sustainable solutions can be found.

- **Local knowledge is essential** – we have found that it not only improves the quality of our work, but it gives the best chance for others to take ownership and implement the plan as part of their normal practices rather than as a mandated, "top down" government edict.

Leadership

- And finally, while it's not specified in the Basin Plan, an essential component of our success thus far, has been leadership.

- It took strong leadership from:

- our past and current governments, often in deliberate bipartisanship
- from our community leaders, and
- from people like Tom Trevorrow

…who all recognise that it was time to change from the old way of managing our water resources to a new and better way.

- So the lessons from the Front Line…..

  Lesson #1
  Science and evidence are critical, but without community support, they're not enough.

  Lesson #2
  Never waste a crisis! From the devastating millennium drought, our national government took the opportunity to take action.

  Lesson #3
  Policy makers must look at the totality, not the sectional. Striking a balance is important.

  Lesson #4
  Time, and a chance to adapt to change, allows people to join in on the journey.

  Lesson #5
  People count. It is critical to demonstrate a willingness to trust and incorporate the views of people whose lives are affected by change.

  And finally…

  Lesson #6

  The toughest negotiator is the environment. If we get it wrong, the environment will walk away and leave nothing behind. With that in mind, we should listen to the words of our Indigenous elders, and not be greedy, don't take more than we need, and respect everything around us.

Sustainable Development and Climate Change: Practical solutions in the Energy-Water Nexus

R. K. Pachauri

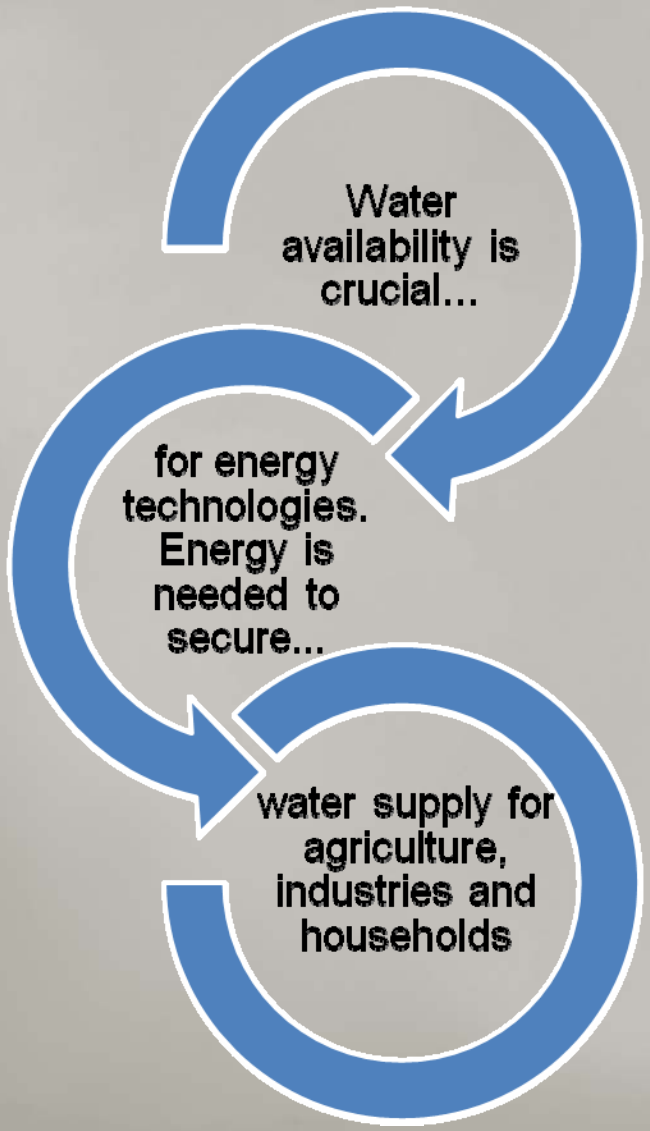
Director-General, The Energy and Resources Institute

Chairman, Intergovernmental Panel on Climate Change

16 May 2013, New York

UN General Assembly Thematic Debate

The energy, water and climate change nexus



Because of this mutual dependence the water-energy nexus must be addressed holistically, especially regarding climate change and sustainable development.

Source : IPCC SRREN

The problem

- In 2006, the energy and industrial sectors accounted for 45% of freshwater withdrawal in Annex I countries and 10% in non-Annex I.
- Water demand is increasing as developing countries industrialize and improve energy access.
- Thermal power plants are especially vulnerable to water scarcity and climate change due to their continuous water requirements.
- Hydropower and bioenergy are highly dependent on water availability, and could increase both competition for and mitigation of water scarcity.

Many developing countries already experience water scarcity problems, and climate change may exacerbate water stress.

Source : IPCC SRREN

The need for climate-driven water management

- Climate change could increase variability and more frequent hydrological extremes in many countries (floods and droughts).
- This will introduce uncertainty into water resource management.

- For poor countries ,climate change will make water security difficult and costly.
- Climate change may reintroduce water security challenges in countries that for 100 years have enjoyed water security.

- Today, about 700 million people experience water stress or scarcity.
- By 2035, it is projected that 3 billion people will be living in conditions of severe water stress.

Source : IPCC SRREN

The need for climate-driven water management

- Climate change affects the operation of existing water infrastructure as well as water management practices.

- Adverse climate effects on freshwater systems aggravate the impacts of other stresses, such as population growth, changing economic activity, land use change and urbanization.

- Globally, water demand will grow in the coming decades, due to population growth; regionally, climate change may lead to large changes in irrigation water demand.

Current water management practices may be inadequate to reduce the negative impacts of climate change on water supply reliability, flood risk, health, energy and aquatic ecosystems.

Source : IPCC SRREN

Impacts of climate change and implications for water and energy

In the 21st century and over many areas of the globe, the length, frequency, and/or intensity of heat waves will *very likely* increase, and the frequency of heavy precipitation will *likely* increase.

Sea level rise	▪ Salinization of irrigation water, estuaries and freshwater systems.
Heat waves	▪ Increased energy demand; increased water demand; water quality problems e.g. algal blooms.
Heavy precipitation events	▪ Adverse effects on quality of surface and groundwater; contamination of water supply; water scarcity may be relieved.

Source : IPCC SREX and AR4

Hydropower

Hydropower:

✓offers significant potential for carbon emissions reductions
✓is the largest source of RE in the electricity sector
✓is often economically competitive with current market energy prices

The total worldwide technical potential for hydropower generation is 14,576 TWh/yr with a corresponding installed capacity of 3,721 GW.

The largest growth potential is in Africa, Asia and Latin America.

Environmental and social concerns are the largest challenges to deployment if not carefully managed.

RE can help decouple the historical correlation of economic development with increasing energy use and GHG emissions, contributing to sustainable development.

Source : IPCC SRREN

Hydropower as a tool to mitigate both climate change and water scarcity

Hydropower is often associated with water (and energy) storage and can therefore:

- play an important role in enhancing both energy and water security;
- make it possible to produce energy according to the demand profile;
- mitigate freshwater scarcity by providing security during drought for drinking water supply, irrigation, flood control and navigation services.

Hydropower is part of water as much as energy management systems, which are both increasingly becoming climate driven.

In the past, hydropower has acted as a catalyst for economic and social development by providing both energy and water management services, and it can continue to do so in the future.

Source : IPCC SRREN

Bioenergy

- ❑ Feedstock cultivation leads to pesticide emissions to water bodies which may negatively impact aquatic life.
- ❑ Several types of energy crops may drive land use towards systems with substantially higher water productivity.

- ✓ Alternative bioenergy can decrease water competition.
- ✓ Water impacts can be mitigated through vegetation filters to capture nutrients in passing water.
- ✓ Some crops can conserve soil by diminishing the erosion from precipitation and runoff.
- ✓ Environmental impacts can be reduced if suitable equipment is installed.
- ✓ Water demand for bioenergy can be reduced substantially through process changes and recycling.

The water impacts of bioenergy production are highly dependent on location, the specific feedstock, production methods and the supply chain element.

International cooperation

There are 263 trans-boundary river basins

Worldwide, 13 river basins are shared between five to eight countries

Five river basins are shared between 9 to 11 countries

- The availability of water may cross political or administrative boundaries.
- Transboundary water management is a basis for international cooperation that may contribute to promoting sustainable economic growth and water security.

33 nations have over 95% of their territory within international river basins

The Danube River flows through the territory of 18 countries

Management of transboundary waters poses a difficult and delicate problem, but the vital nature of freshwater also provides a powerful natural incentive for cooperation.

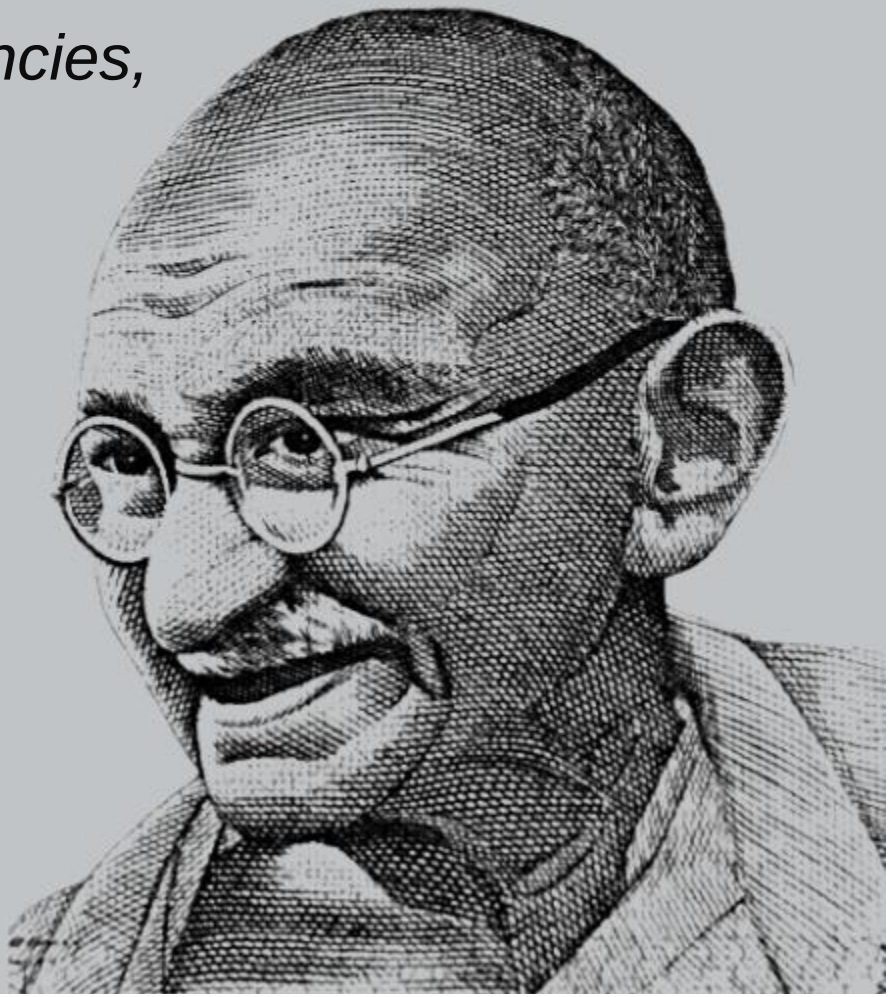
Source : IPCC SRREN

“A technological society has two choices.

First it can wait until catastrophic failures expose systemic deficiencies, distortion and self deceptions…

Secondly, a culture can provide social checks and balances to correct for systemic distortion prior to catastrophic failures”

- Mahatma Gandhi

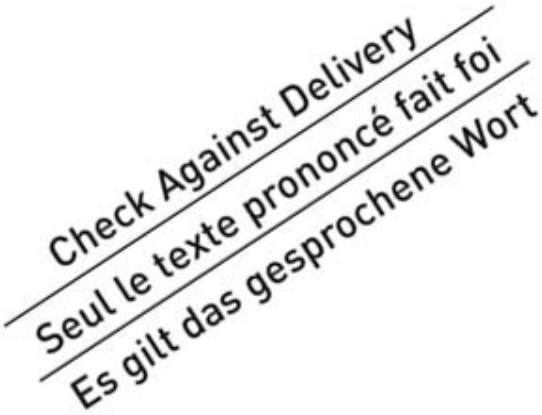


EUROPEAN COMMISSION

Janez Potočnik

European Commissioner for Environment

The importance of a holistic approach to key resources



President of the General Assembly - Thematic Debate 'Sustainable development and climate change: practical solutions in the Energy-Water nexus'

UN, New-York, 16 May 2013

Spokespersons' Service
Service des Porte-parole

SPEECH/13/428

Mr President of the General Assembly, Mr Under-Secretary-General, Excellency Dr Sultan Ahmed al-Jaber, Excellencies, Distinguished guests, Ladies and Gentlemen,

I would like to thank you for this initiative and for the opportunity given to me to share my views on these important questions.

We all acknowledge the importance of managing well our natural resources. Today we will be discussing two that are key to our economic activities, well being and quite frankly our survival – water and energy. We are increasingly aware of the importance of understanding how they interact, and we hope to hear more about practical examples and the importance of holistic approach to turning challenges they pose into opportunities in the course of this thematic debate. But I would like to bring in also the importance of holistically looking at other key resources, such as land, forests and oceans that equally constitute the foundations of any economy and the well-being of any society. This is because the livelihoods of all people across the world depend on them, especially in developing countries, where the lack of access to quality resources is an important underlying cause of poverty and very often a question of survival.

The Rio+20 Summit confirmed the strong link between sustainable development and eradication of poverty for this very same reason. Because addressing poverty **is also** about access to fresh drinking water, to healthy food, to a healthy environment, and to sustainable energy.

The past decades have witnessed important positive global trends. A number of developing countries have become major economic and political players and are assuming new responsibilities. We should all welcome that.

If well managed, these trends clearly show the promise of prosperity for many people. But, to fulfill this promise the way the economy grows will need to change. Reproducing the same economic growth model that was possible in a world with a population of one billion will accelerate environmental degradation and aggravate climate change. The consequences will be severe for all of us, and risk being even more severe for the poorest countries which rely most heavily on these resources for their day-to-day survival.

It goes without saying that we in the developed world will be the first to change the unsustainable patterns of consumption and production. And we in Europe are doing that and are determined to continue. It is a matter of necessity and credibility.

The answer is of course not to stop growth but to ensure the right kind of growth. One that will allow us to meet the demands for decent lives for a global population set to grow by over a third by 2050, while at the same time addressing environmental pressures. Ignoring the planet's physical limits will undermine the world's ability to meet these demands.

Let me come back to water and energy.

Water and energy are without any doubt important issues in their own right, **but** we cannot treat them in isolation. They are strongly linked and inter-dependent in nature but also in most of the world's economies.

I expect we will hear many good examples of their interdependence and ways of dealing with them during today's debate.

Let me give just two.

Energy supply chain depends on water: in fuel production, in electricity generation, in energy end use. But energy production **also impacts** on the state of water resources. The energy sector represents more than 40% of the total water abstraction in the EU.

At the same time water is becoming a more and more limited resource. Already today freshwater scarcity is a serious issue. More than a billion people don't have access to clean water, some 6,000 children die every day from water borne diseases. Water use is projected to increase by 50% by 2025, by which time roughly 5.5 billion people – two thirds of the projected global population – will live in areas facing moderate to severe water stress. And it is estimated that global energy demand will grow by more than 30% over the period to 2035.

If we further add to this the impacts of climate change and increasing temperatures, the interaction of the demands placed by global population growth, and the effects of unsustainable patterns of consumption and production, we can see that in reality the water-energy nexus actually points to a broader complex set of inter-relations, that cannot be ignored.

This goes to show that we need to have an integrated approach to managing resources effectively and efficiently. We must and can have policies that address water, energy, air, land, food production, climate change and consumption patterns. Water scarcity is already a serious issue in some European countries, and even more so in many other parts of the world. People that do not have access to clean water and sanitation, will be the ones that will pay the highest price, if we decide to do nothing. The poor are most often the first to experience pressure on their livelihoods, and they are also those that have the least capacity to respond.

This shows why the debate today is also very important to the broader discussion taking place today in New York and in our capitals: How to develop the post 2015 framework.

Eradicating poverty and ensuring that prosperity and well-being are sustainable are two of the most pressing challenges the world faces today.

We need an inclusive framework to set out a path from poverty towards prosperity and well-being, for decent life for **all people** and all countries, one that will respect the limits of our planet.

Already some years ago, Johan Rockstrom who will speak later today underlined in his landmark article in Nature: "Although the planetary boundaries are described in terms of individual quantities"…(Climate change, Oceans, biodiversity loss, etc) …" these boundaries are tightly coupled. We do not have the luxury of concentrating our efforts on one of them in isolation from others". Similar messages are echoed in Grigg's paper in Nature earlier this year.

In a future framework we will need to set goals and targets in specific areas, there is little doubt about it. If we want to see concrete results **this** needs to be clear. **But** at the same time we will also need to ensure that we do not create a “set of silos” of completely separate goals. One of the criticisms to MDGs, despite their many strengths, is exactly that they did not take into account the impact one had on the other. This is particularly true of the numerous interactions of natural resources with many aspects of human life: water and air with health, health of land and oceans with food, management of resources with jobs and livelihoods...

Today's discussion on water and energy is an excellent example of why and how this is important. Just as we have seen the importance of the interactions of energy and water, I believe sustainable development goals need to be able to deal with a broad range of interactions that address complementary and competing needs.

We, the world community will need to think carefully - not only on how goals and targets, for example on health and jobs and livelihoods and on land, water, energy, and the oceans, could drive progress in themselves, but also on how to address their interdependencies. Likewise we can see that we need coherence with already defined international objectives such as the Aichi targets on biodiversity and those on climate change – in particular the agreed objective to keep global temperature increase below 2°C.

* * *

Ladies and gentlemen,

Even if a number of our ambitions have not been fully achieved in Rio, we have reached a common agreement on which we can and must work on in our progress towards post 2015 framework. Most importantly, we have succeeded in developing a strong basis for a human centered agenda, based on the need to drive out poverty and ensure decent life for all, on human rights, greater equality and greater respect for the limits of the planet we all rely on. It is now up to us to define and take this agenda forward. And we can only do it together.

Thank you for your attention.

Human Development Within Planetary Boundaries

UN General Assembly
16 May 2013

Johan Rockström
Professor
Stockholm Resilience Centre

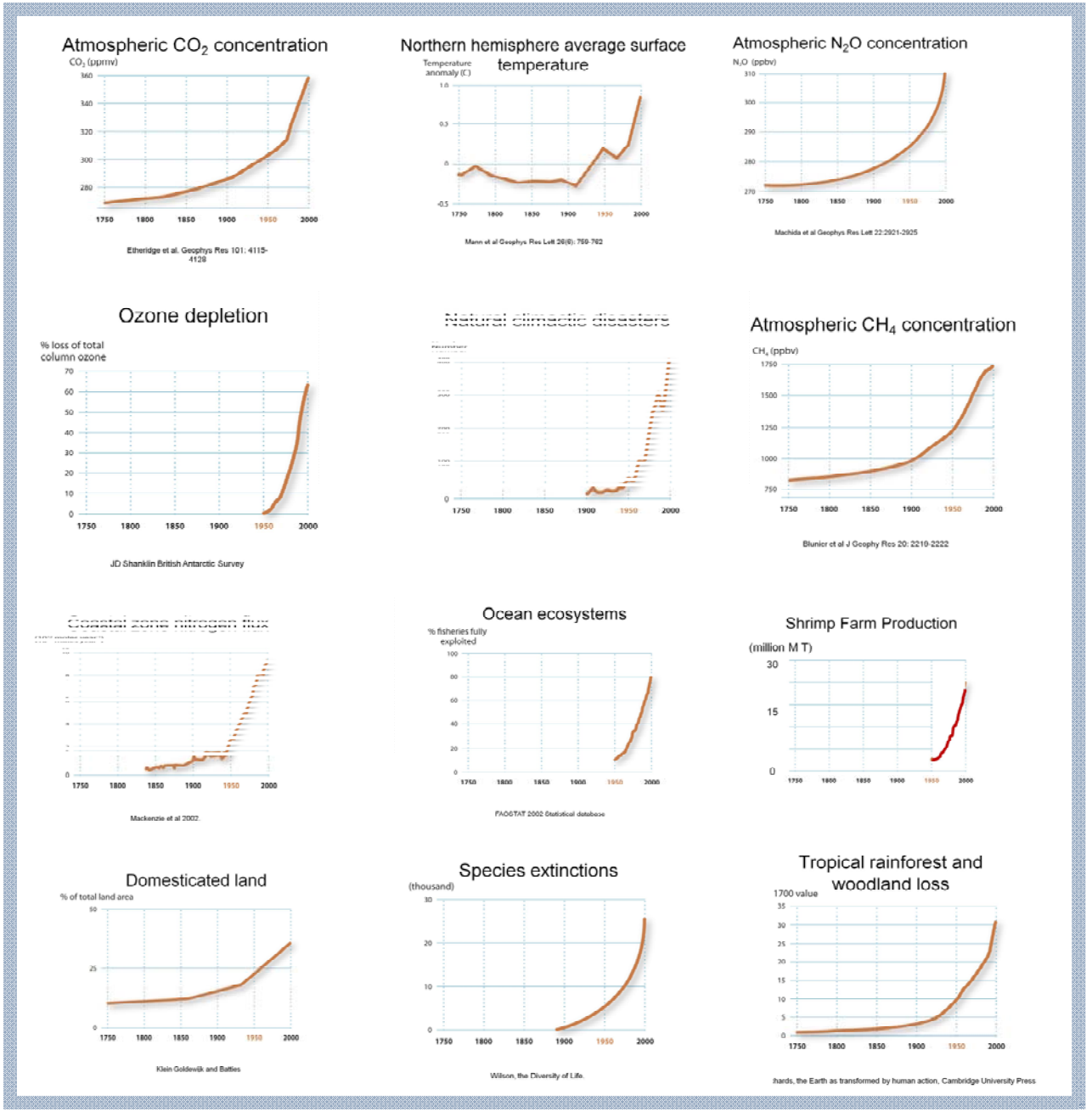
Stockholm Resilience Centre
Research for Governance of Social-Ecological Systems
Stockholm University
A centre with: SEI Stockholm Environment Institute, The Beijer Institute of Ecological Economics
MISTRA

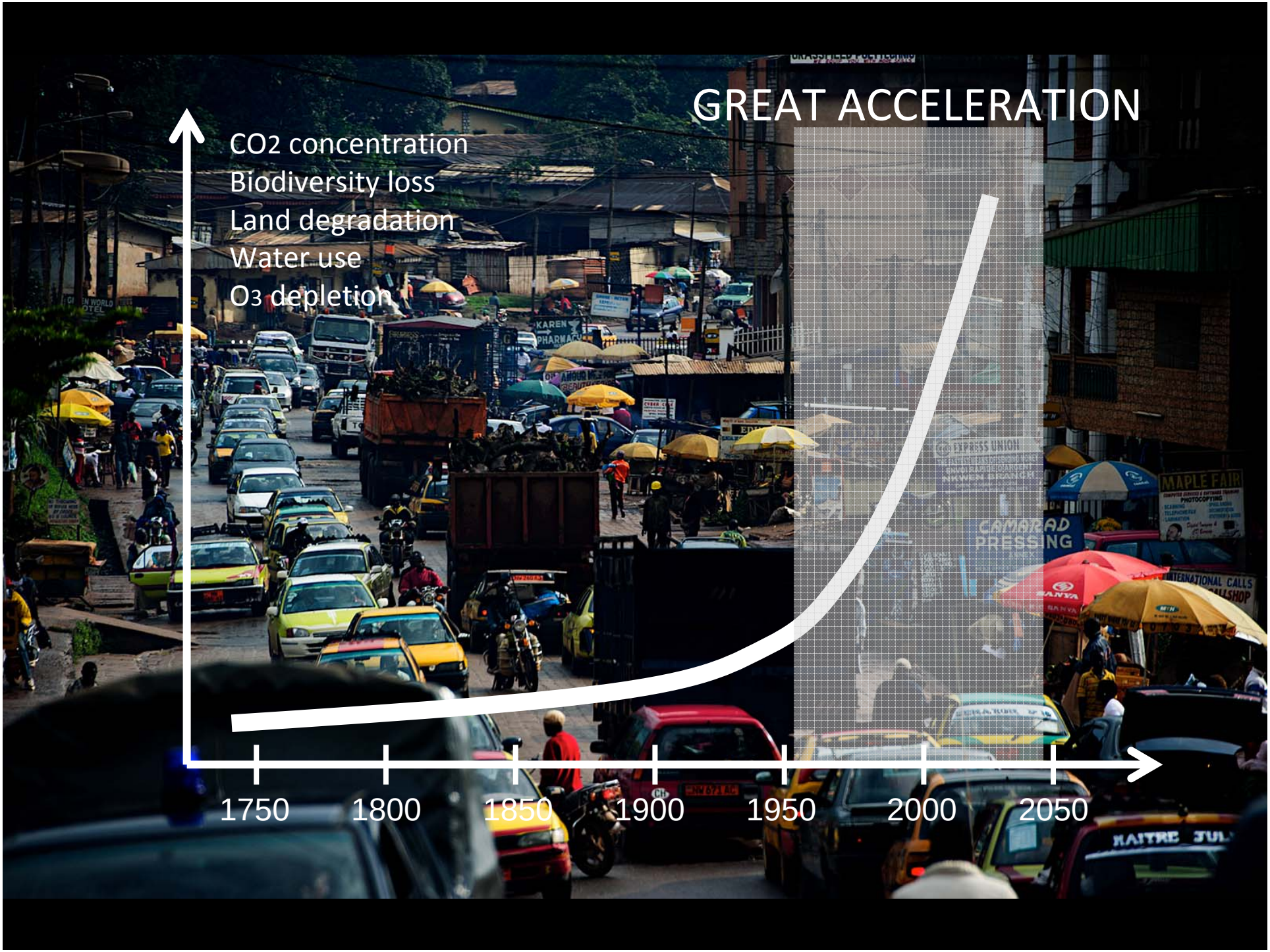
Article Will Steffen, Paul J. Crutzen and John R. McNeill

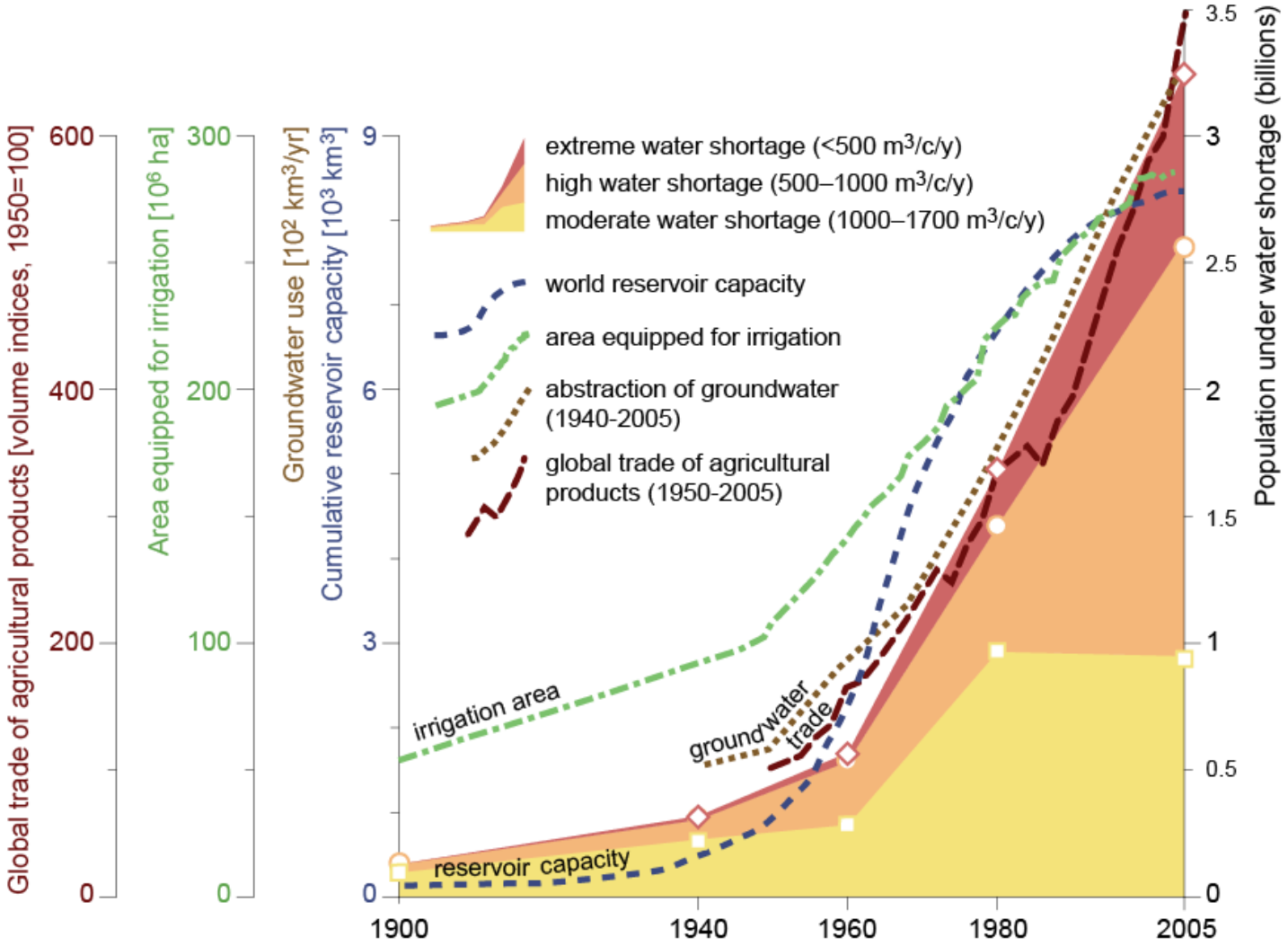
The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?

Photos: Mattias Klum

The Great Acceleration of the Human Enterprise

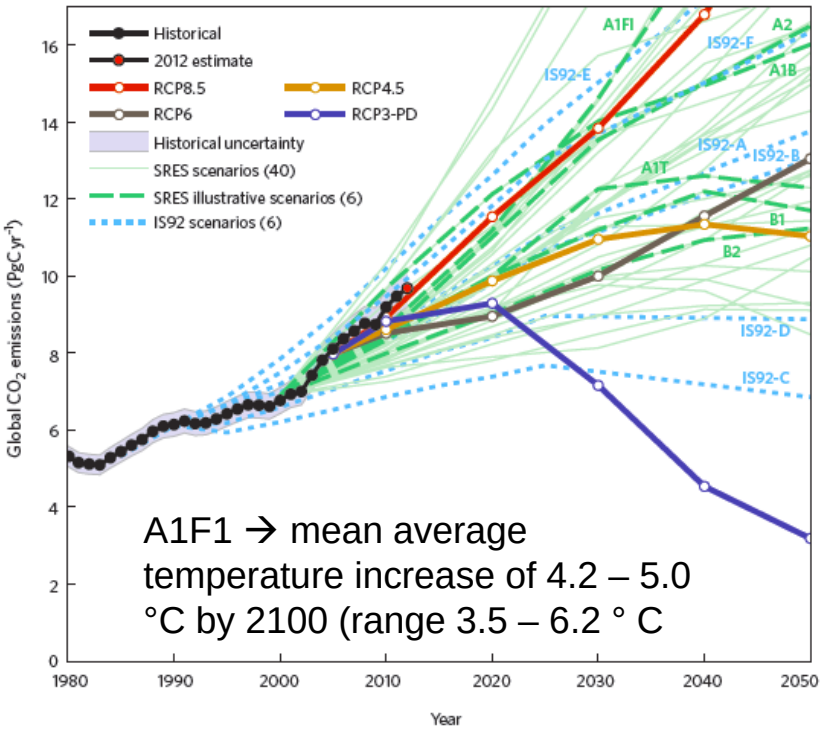



GREAT ACCELERATION
CO2 concentration
Biodiversity loss
Land degradation
Water use
O3 depletion
...
1750
1800
1850
1900
1950
2000
2050



Kummu, Ward, de Moel, Varis 2010 Environmental Research Letters

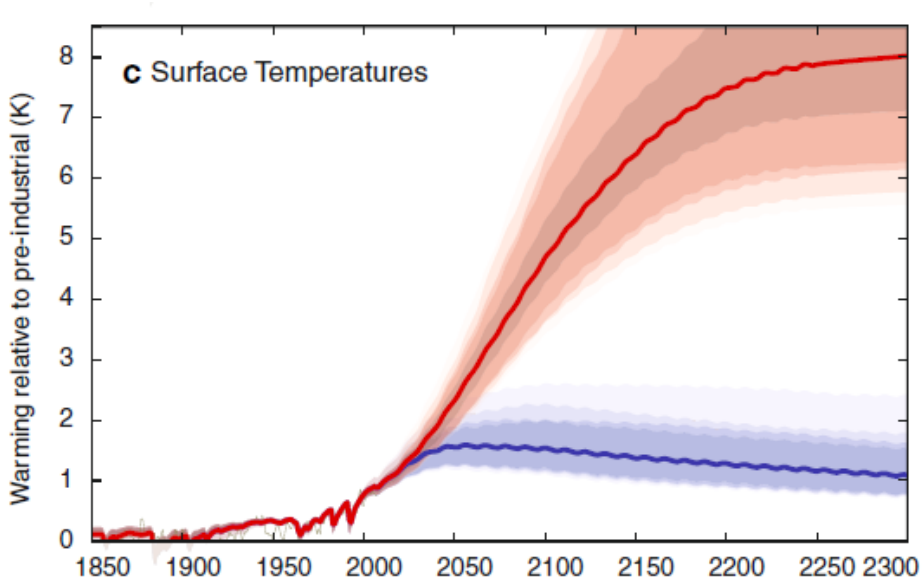
Tipping the Scales towards a stable future basis for humanity



The challenge to keep global warming below 2 °C

Glen P. Peters, Robbie M. Andrew, Tom Boden, Josep G. Canadell,
Philippe Ciais, Corinne Le Quéré, Gregg Marland, Michael R. Raupach and Charlie Wilson

NATURE CLIMATE CHANGE | VOL 3 | JANUARY 2013 | www.nature.com/natureclimatechange



The RCP greenhouse gas concentrations and their extensions from 1765 to 2300

Malte Meinshausen • S. J. Smith • K. Calvin • J. S. Daniel • M. L. T. Kainuma • J-F. Lamarque • K. Matsumoto • S. A. Montzka • S. C. B. Raper • K. Riahi • A. Thomson • G. J. M. Velders • D.P. P. van Vuuren

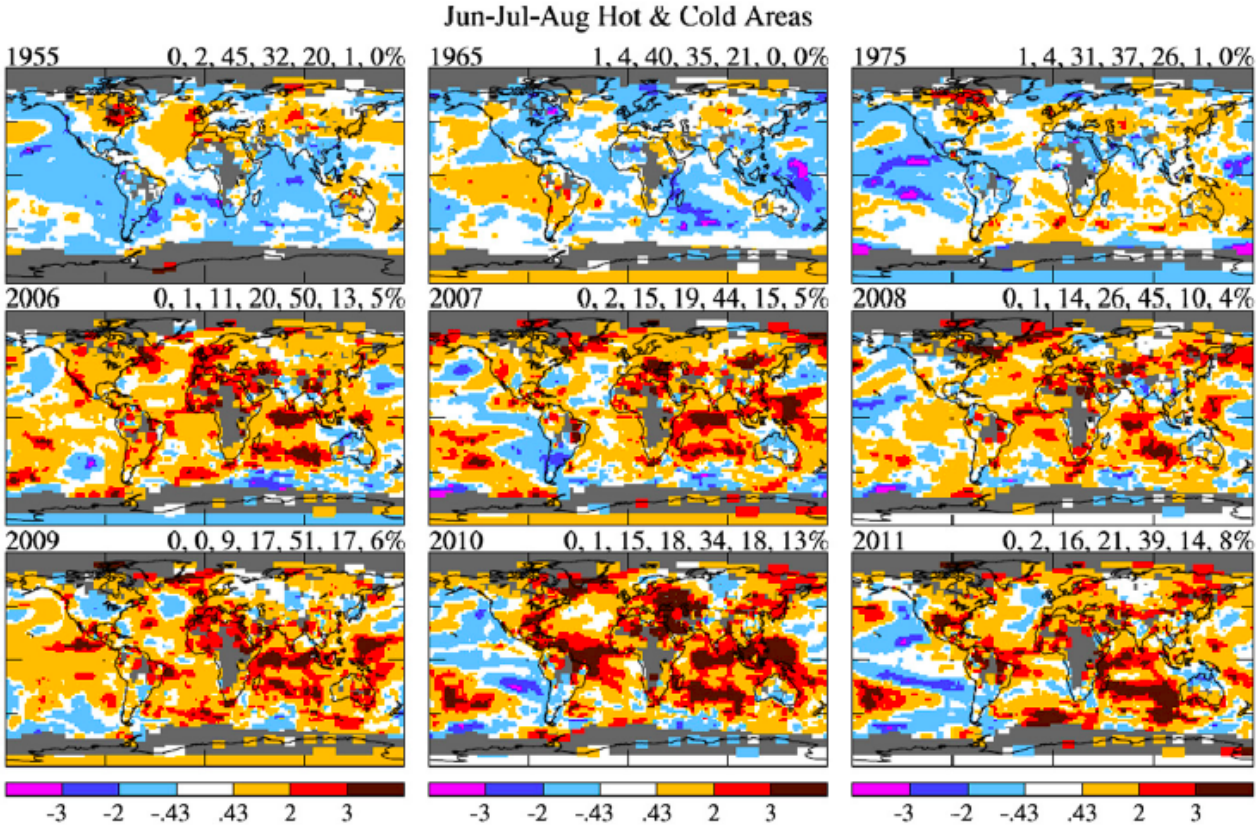
The Extreme Exception has become Today's Normality

% of Earth's surface hit by + 3 SD Events:

1955: 1 %

2011: 15 %

Sandy
US 2012 Drought
Russian forest fires
Europe 2003 Heatwave
East African Drought

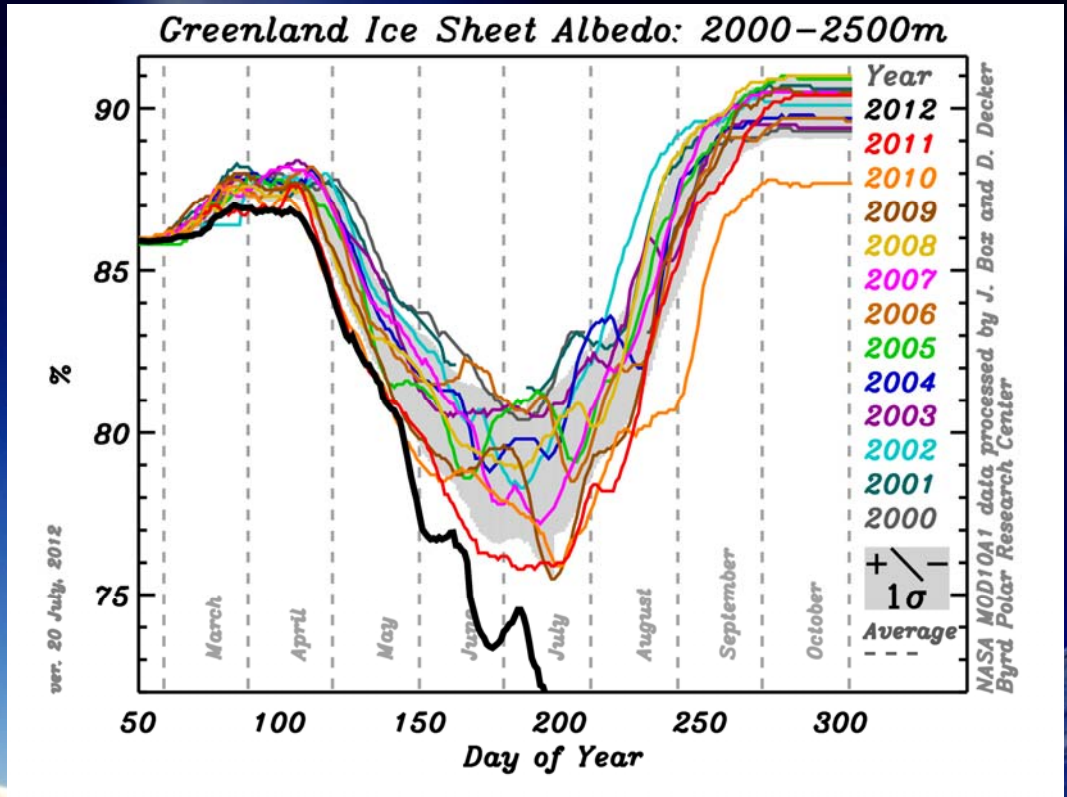


Hansen et al 2012

Humanity in the Anthropocene

+

Rising risks of Catastrophic Tipping Points



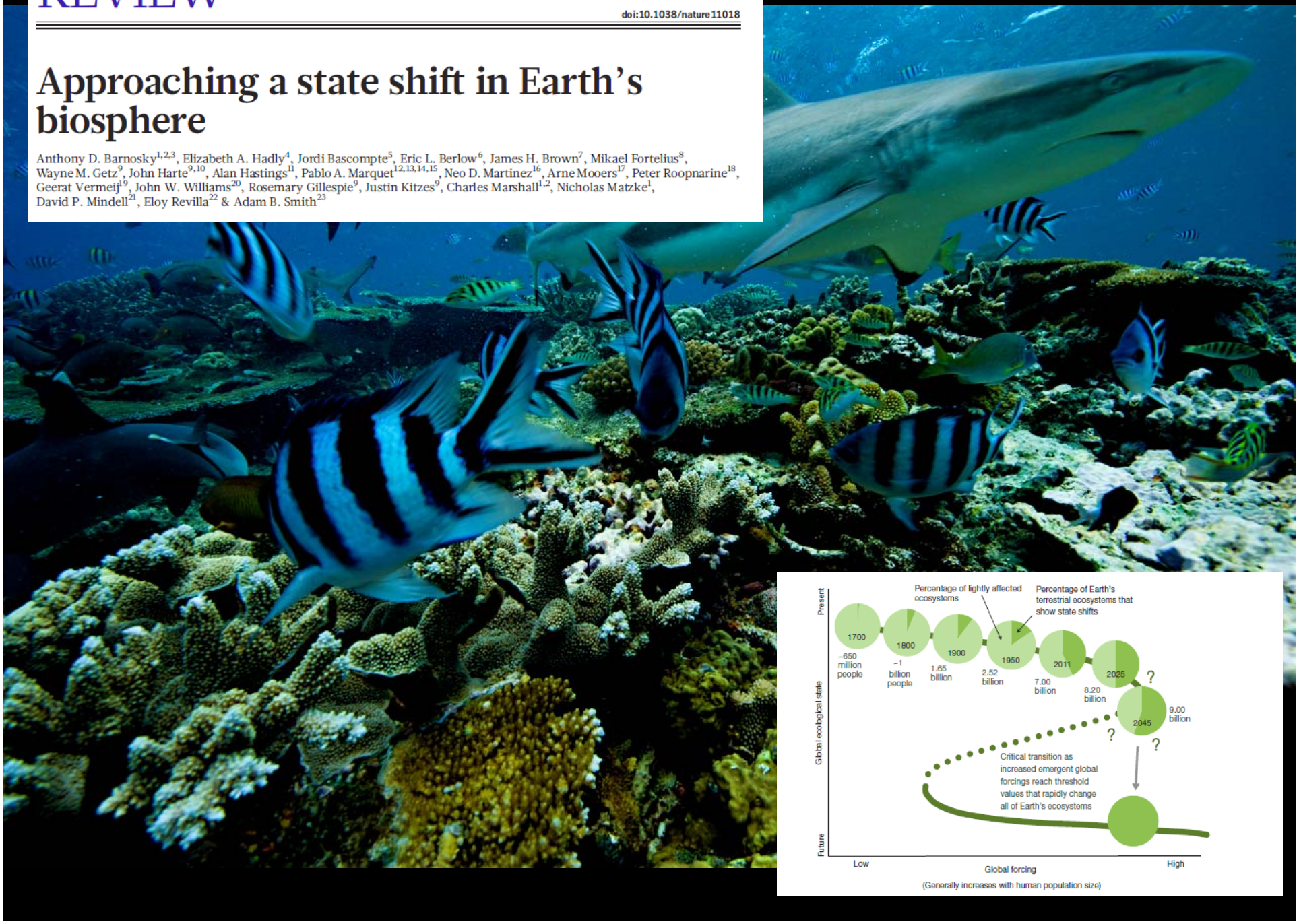
Jason Box et al., 2013. Byrd Institute

REVIEW

doi:10.1038/nature11018

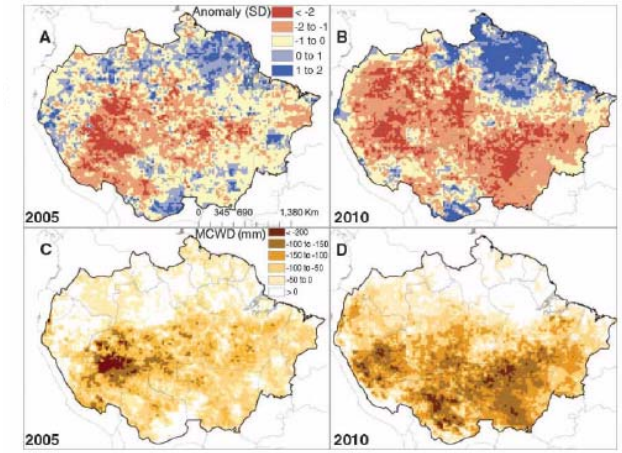
Approaching a state shift in Earth's biosphere

Anthony D. Barnosky[1,2,3], Elizabeth A. Hadly[4], Jordi Bascompte[5], Eric L. Berlow[6], James H. Brown[7], Mikael Fortelius[8], Wayne M. Getz[9], John Harte[9,10], Alan Hastings[11], Pablo A. Marquet[12,13,14,15], Neo D. Martinez[16], Arne Mooers[17], Peter Roopnarine[18], Geerat Vermeij[19], John W. Williams[20], Rosemary Gillespie[9], Justin Kitzes[9], Charles Marshall[1,2], Nicholas Matzke[1], David P. Mindell[21], Eloy Revilla[22] & Adam B. Smith[23]



Risk of Tipping Point in the Amazon Rainforest

Interactions between climate and land use change

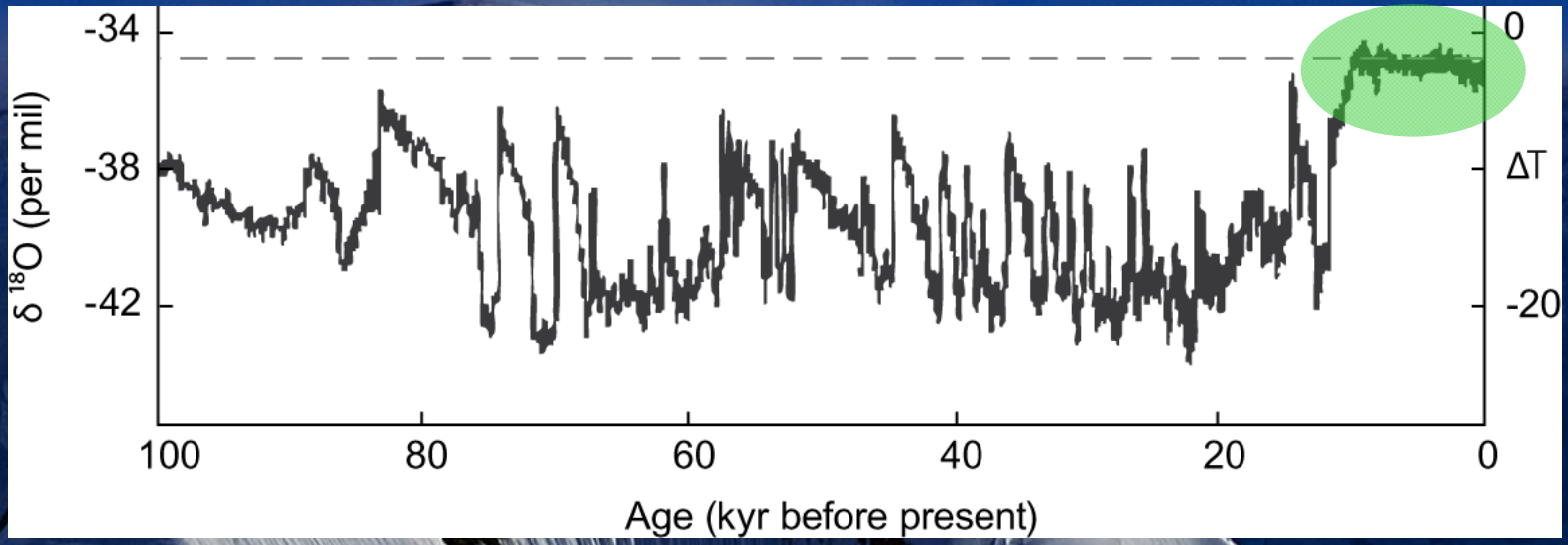


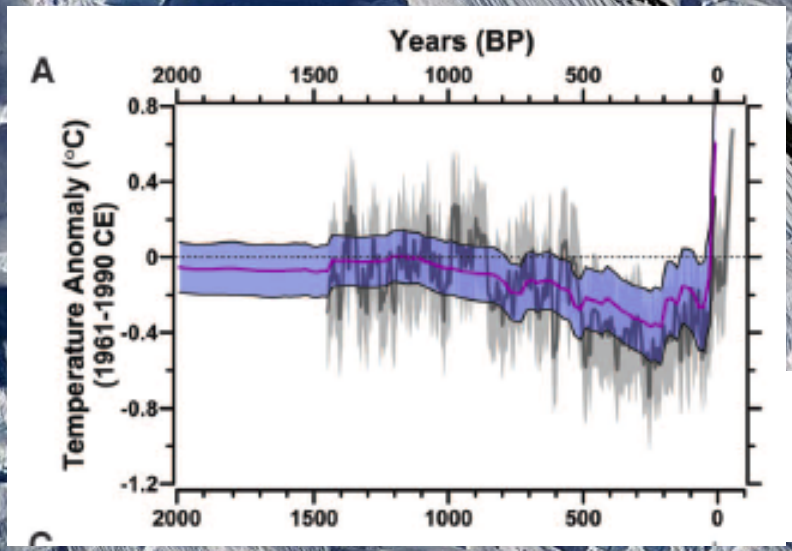
Lewis et al. 2011 Science

Fig. 1. (**A** and **B**) Satellite-derived standardized anomalies for dry-season rainfall for the two most extensive droughts of the 21st century in Amazonia. (**C** and **D**) The difference in the 12-month (October to September) MCWD from the decadal mean (excluding 2005 and 2010), a measure of drought intensity that correlates with tree mortality. (A) and (C) show the 2005 drought; (B) and (D) show the 2010 drought.

“Global sustainability
has become a prerequisite for human development at all scales,
from the local community to nations and the world economy. “

A new unified framework for human development within Earth's safe operating space

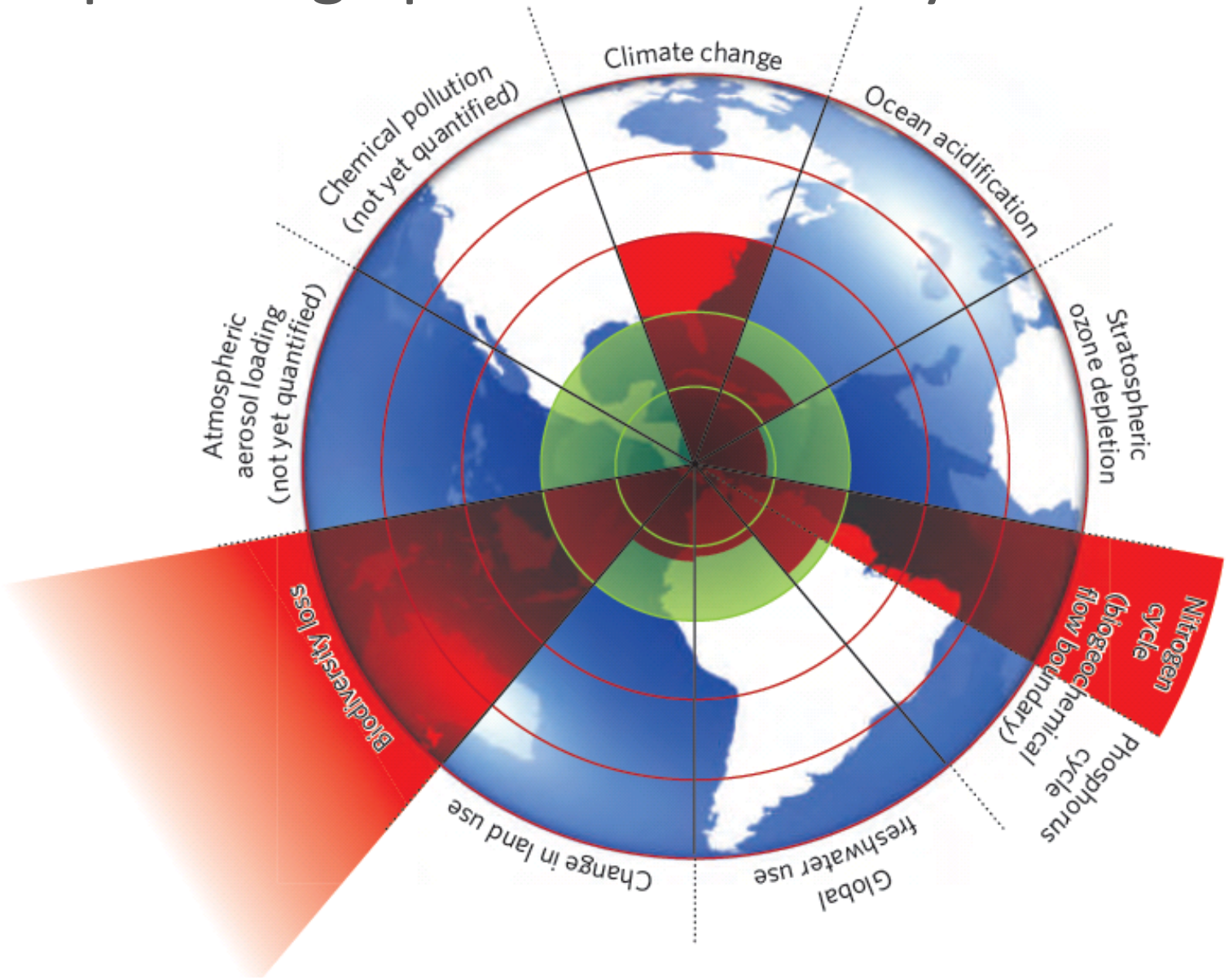




A Reconstruction of Regional and Global Temperature for the Past 11,300 Years

Shaun A. Marcott,[1] Jeremy D. Shakun,[2] Peter U. Clark,[1] Alan C. Mix[1]

Human Development within the Safe Operating Space of Planetary Boundaries



Widening the Horizon

1.Kick away the Ladder
"the party is over"

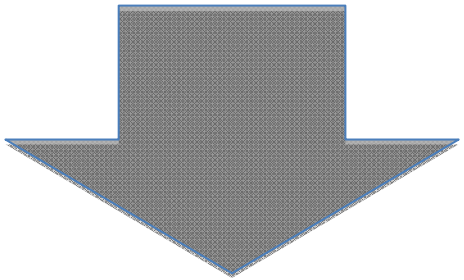
2. Contract and Converge
"burden pathway"

3. Business as Usual
"head in the sand pathway"

4. Sustainable Development Trajectory of Growth within Earth's playing field

- New Rules of the Game (Cooperation)
- Sustainable technologies/Innovations
- Stabilise World Pop
- Protect remaining ecosystems

Growth without Limits



Growth within Limits

Global issue of concern *(Inaction affects which Planetary Boundaries?)*	Priority Actions	Key Science Reviews and Assessments
Climate Change *(Climate change and ocean acidification)*	Halt the annual increase in CO_2 emissions by 2015, then decrease by >5%/yr thereafter.	IPCC 1990, 1995, 2001, 2007 plus literature in AR5 (2013) IPCC SREX 2012 UN HDR 2007/8 MDG Report 2012 UNEP Gap report 2010 Global Energy Assessment, IIASA 2012
Ecosystem destruction and degradation *(Biodiversity loss; impact on land use and climate change)*	Restore >15% of degraded habitats. No net loss of land and marine habitats.	Millennium Ecosystem Assessment 2005 IPBES SGA reports, PECS IPO reports TEEB 2010; UNEP 2012 GEO5, FAO 2010, GFA 2012, SOFA 2012, SOFIA 2012
Release of nutrient elements *(Biogeochemical cycles – nitrogen & phosphorus; impact on atmospheric aerosol)*	A 20% improvement in full-chain nutrient use efficiency (N&P). Reduce annual nitrogen fertilizer use by 20 Mton	Sutton et al 2013 (*Our Nutrient World*, unep.org) GESAMP reports 1987-1990 Bouwman et al 2009, Mahowald et al. 2008, Elser et al 2007, Jahnke 2000.
Release of harmful substances *(Chemical pollution; stratospheric ozone depletion; impact on climate change and biodiversity loss)*	Restrict environmental release of chemicals of high concern. Account for 50% of fate of e-waste (ozone depleters) Press for policy improvement worldwide.	UNEP 2013 (*Global Chemicals Outlook*) UNEP 2013 (*Costs of inaction*) GESAMP 2012 AMAP 2009 Thornton 2000, Depledge et al 2013, Balbus et al 2013, Fu et al 2011, Klaassen 2007, plus SETAC technical papers

Reaching Twin-objectives of global sustainability and Eradicating Poverty

21 MARCH 2013 | VOL 495 | NATURE | 305

Sustainable development goals for people and planet

A UNIFIED FRAMEWORK

A set of six sustainable development goals (SDGs) follow from combining the Millennium Development Goals (MDGs) with conditions necessary to assure the stability of Earth's systems.

NEW PARADIGM

Earth's life-support system

Society

Economy

NEW DEFINITION

Sustainable development in the Anthropocene: "Development that meets the needs of the present while safeguarding Earth's life-support system, on which the welfare of current and future generations depends."

People

UPDATED MILLENNIUM DEVELOPMENT GOALS

End poverty and hunger
Universal education
Gender equality
Health
Environmental sustainability
Global partnership

⊕

Planet

PLANETARY MUST-HAVES

Materials use
Clean air
Nutrient (N and P) cycles
Hydrological cycles
Ecosystem services
Biodiversity
Climate stability

⊖

SUSTAINABLE DEVELOPMENT GOALS

Thriving lives and livelihoods
Sustainable food security
Sustainable water security
Universal clean energy
Healthy and productive ecosystems
Governance for sustainable societies

Goal 1: Ending Extreme Poverty

Goal 2: Achieving Development within Planetary Boundaries

Goal 3: Achieve Gender Equality, Human Rights and the Rule of Law

Goal 4: Achieving Food Security and Rural Prosperity

Goal 5: Empowering Inclusive, Productive and Resilient Cities

Goal 6: Achieving Health and Wellbeing at all Ages

Goal 7: Ensure Effective Learning for Every Child for Life and Livelihood

Goal 8: Curbing Human-Induced Climate Change

Goal 9: Securing Ecosystem Services and Biodiversity

Goal 10: Transforming Governance for Sustainable Development

Sustainable Development Trajectory

6 Transformations:

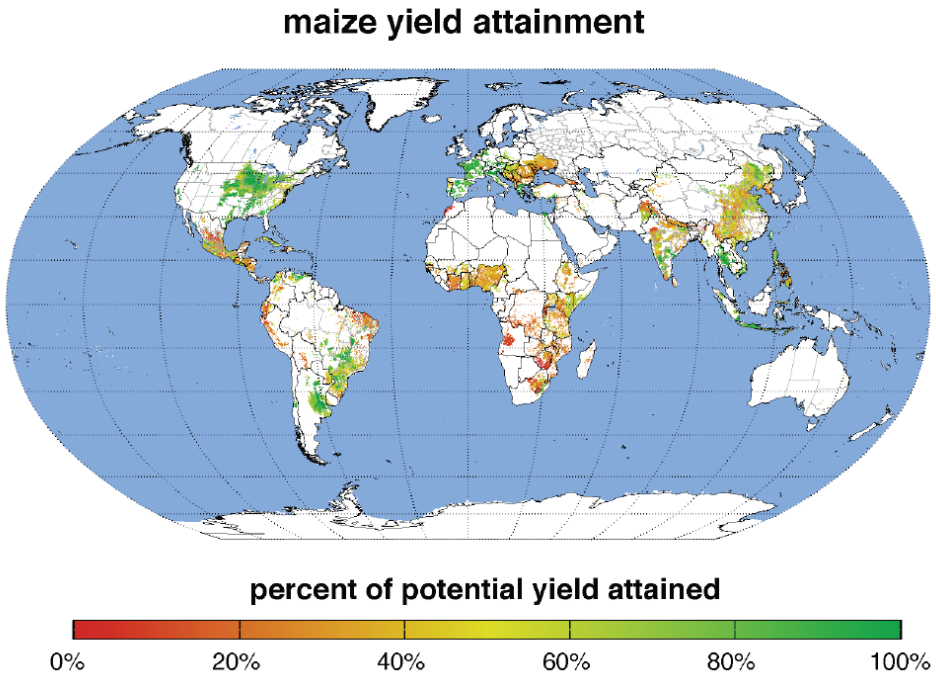
1. Global Energy Transformation (>80 % reduction in CO_2 emissions 2050)
2. Food Security Transformation (+70% by 2050; Sustainable Intensification)
3. Urban Sustainability Transformation
4. The Population Transition (Aim for a 9 billion world or below)
5. The Biodiversity Management Transformation (Protect, Restore, Manage; Sustain Critical Biomes)
6. Private and Public Governance Transformation (Strengthen Global Governance)

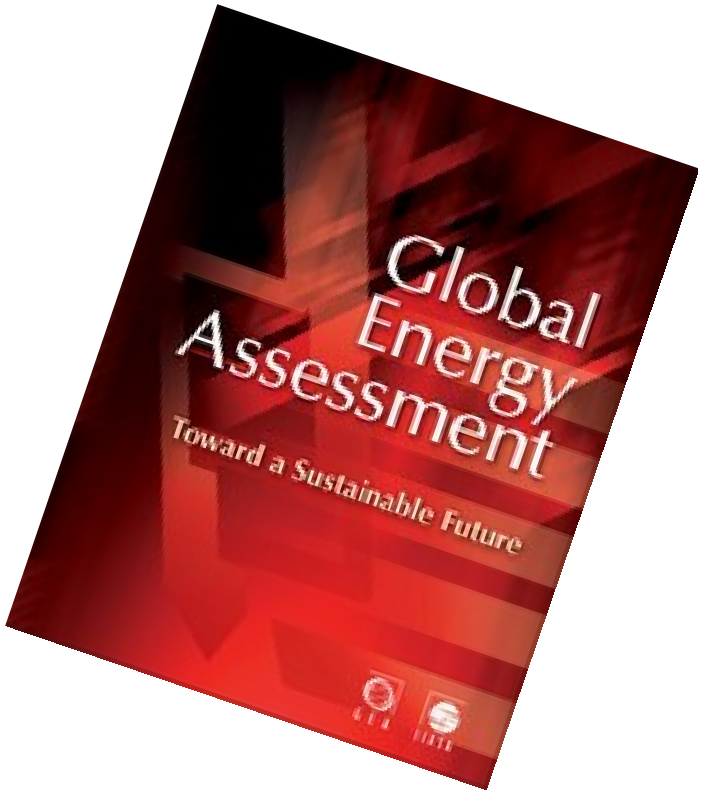
ANALYSIS

doi:10.1038/nature10452

Solutions for a cultivated planet

Jonathan A. Foley[1], Navin Ramankutty[2], Kate A. Brauman[1], Emily S. Cassidy[1], James S. Gerber[1], Matt Joh
Nathaniel D. Mueller[1], Christine O'Connell[1], Deepak K. Ray[1], Paul C. West[1], Christian Balzer[3], Elena M. B
Stephen R. Carpenter[5], Jason Hill[1,6], Chad Monfreda[7], Stephen Polasky[1,8], Johan Rockström[9], John Shee
David Tilman[1,11] & David P. M. Zaks[12]





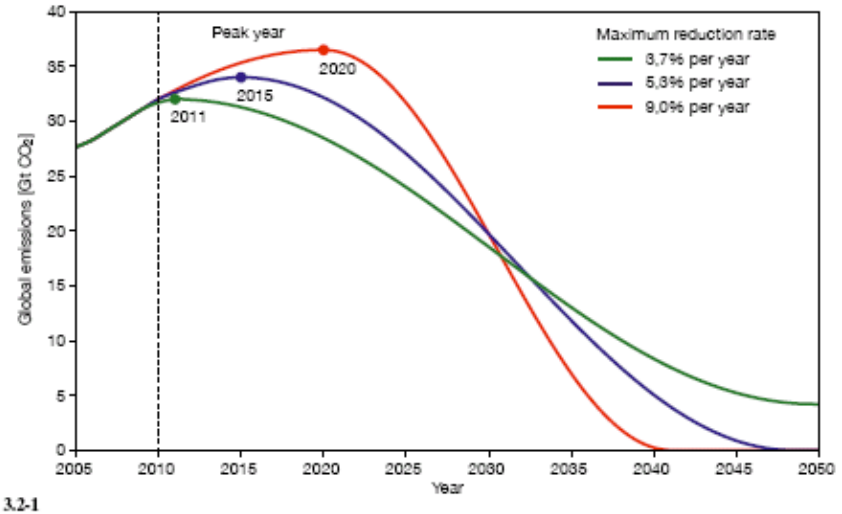
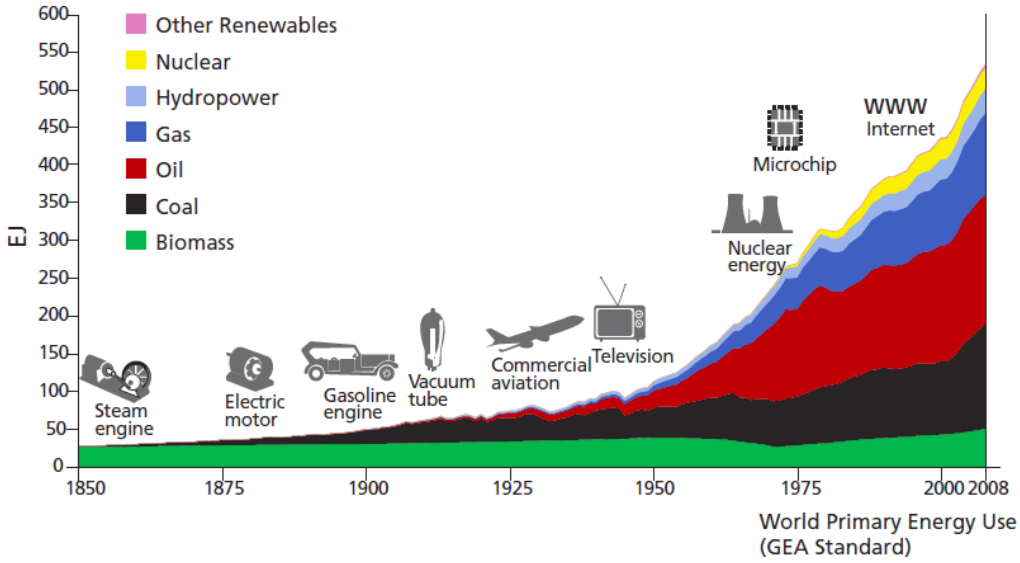
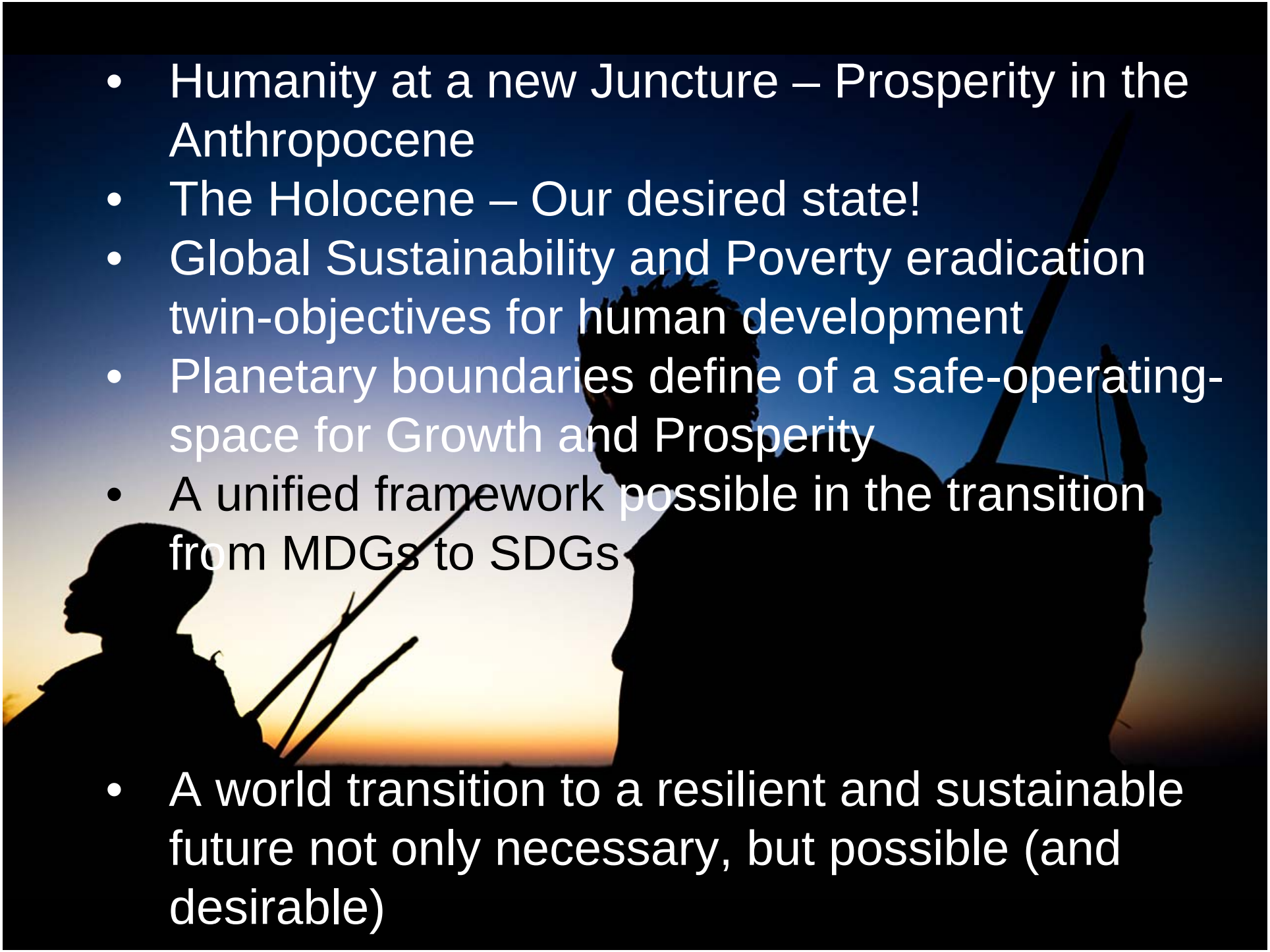


Figure 3.2-1
Examples of global emission pathways for the period 2010–2050 with global CO_2 emissions capped at 750 Gt during this period. At this level, there is a 67% probability of achieving compliance with the 2°C guard rail (Chapter 5). The figure shows variants of a global emissions trend with different peak years: 2011 (green), 2015 (blue) and 2020 (red). In order to achieve compliance with these curves, annual reduction rates of 3.7% (green), 5.3% (blue) or 9.0% (red) would be required in the early 2030s (relative to 2008).
Source: WBGU





- Humanity at a new Juncture – Prosperity in the Anthropocene
- The Holocene – Our desired state!
- Global Sustainability and Poverty eradication twin-objectives for human development
- Planetary boundaries define of a safe-operating-space for Growth and Prosperity
- A unified framework possible in the transition from MDGs to SDGs
- A world transition to a resilient and sustainable future not only necessary, but possible (and desirable)

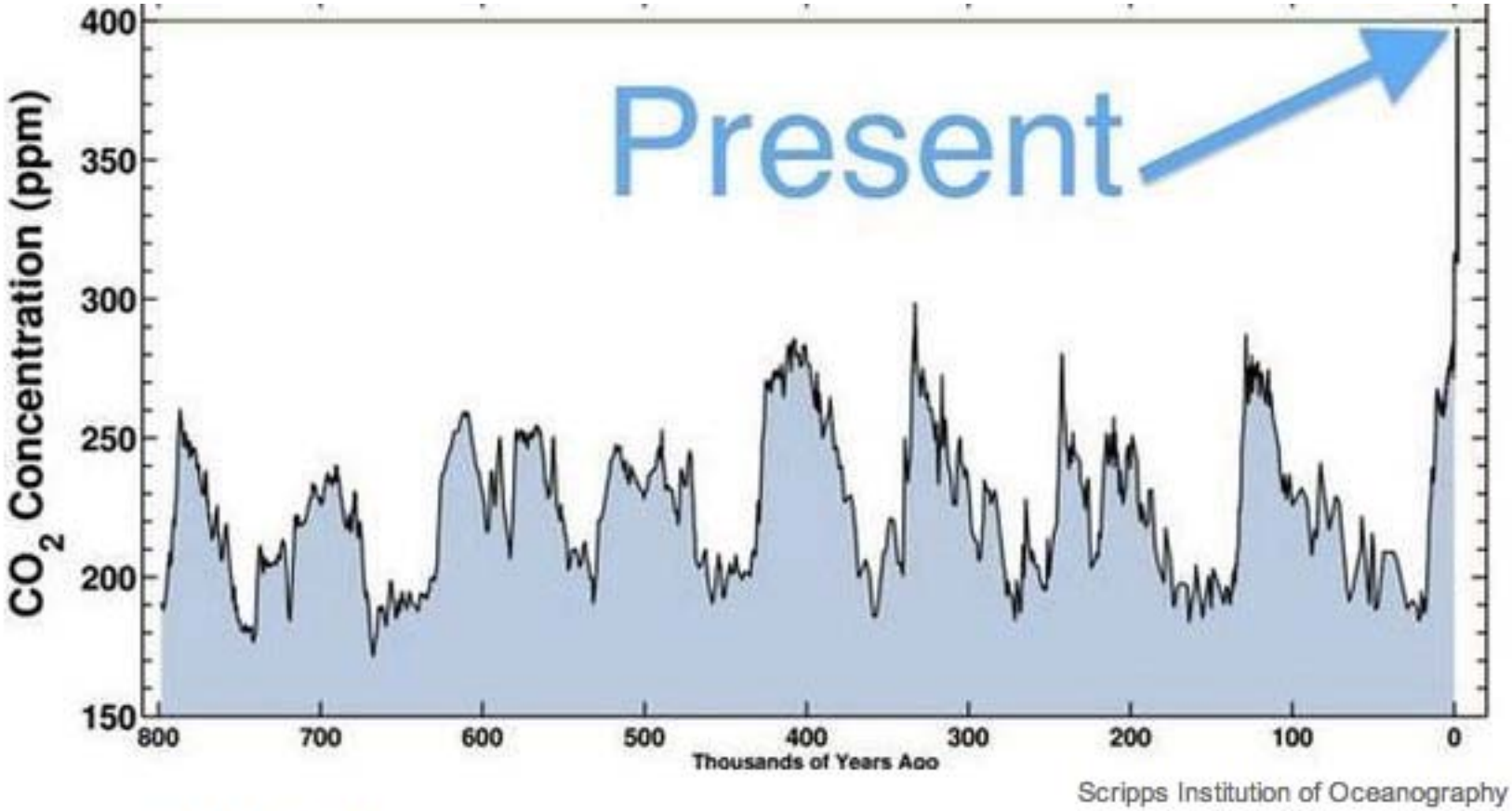
UN General Assembly Thematic Debate On

Sustainable Development and Climate Change: Practical Solutions in the Energy-Water Nexus

Professor Jeffrey D. Sachs
Special Advisor to
UN Secretary-General Ban Ki-Moon
Director of the Earth Institute
at Columbia University

16 May 2013

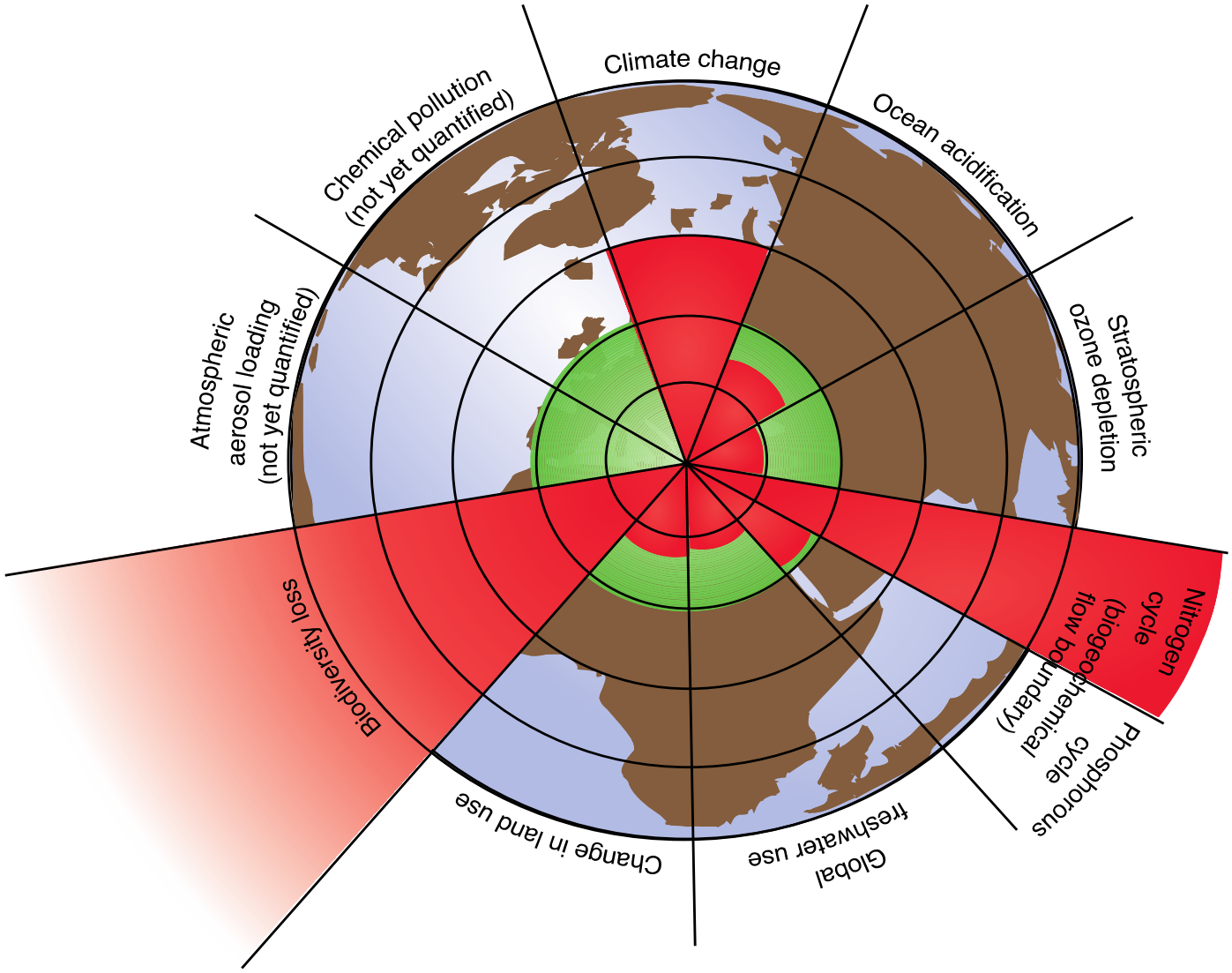
CO2 CONCENTRATION REACHES 400 PPM FOR FIRST TIME IN 3 MILLION YEARS



Ice core data before 1958

“ANTHROPOCENE”

“PLANETARY BOUNDARIES”



Source: Rockström et al 2009a)

MANHATTAN, HURRICANE SANDY, OCTOBER 29, 2012

BEIJING, JULY 21, 2012

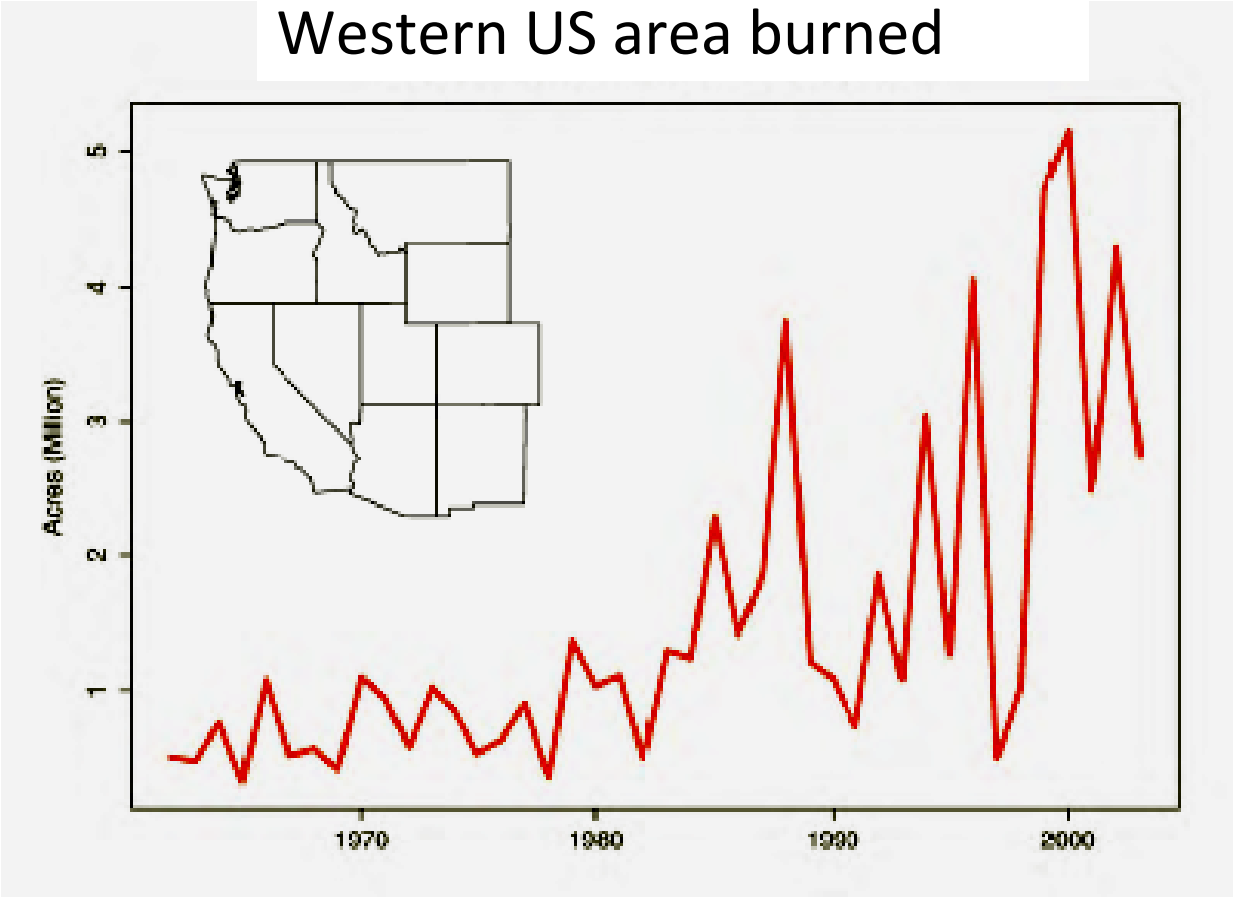
BANGKOK OCTOBER 2011

INDIANA MAIZE AUGUST 2012

Homes are destroyed in Colorado Springs, June 2012

Fires Are Increasing World-Wide

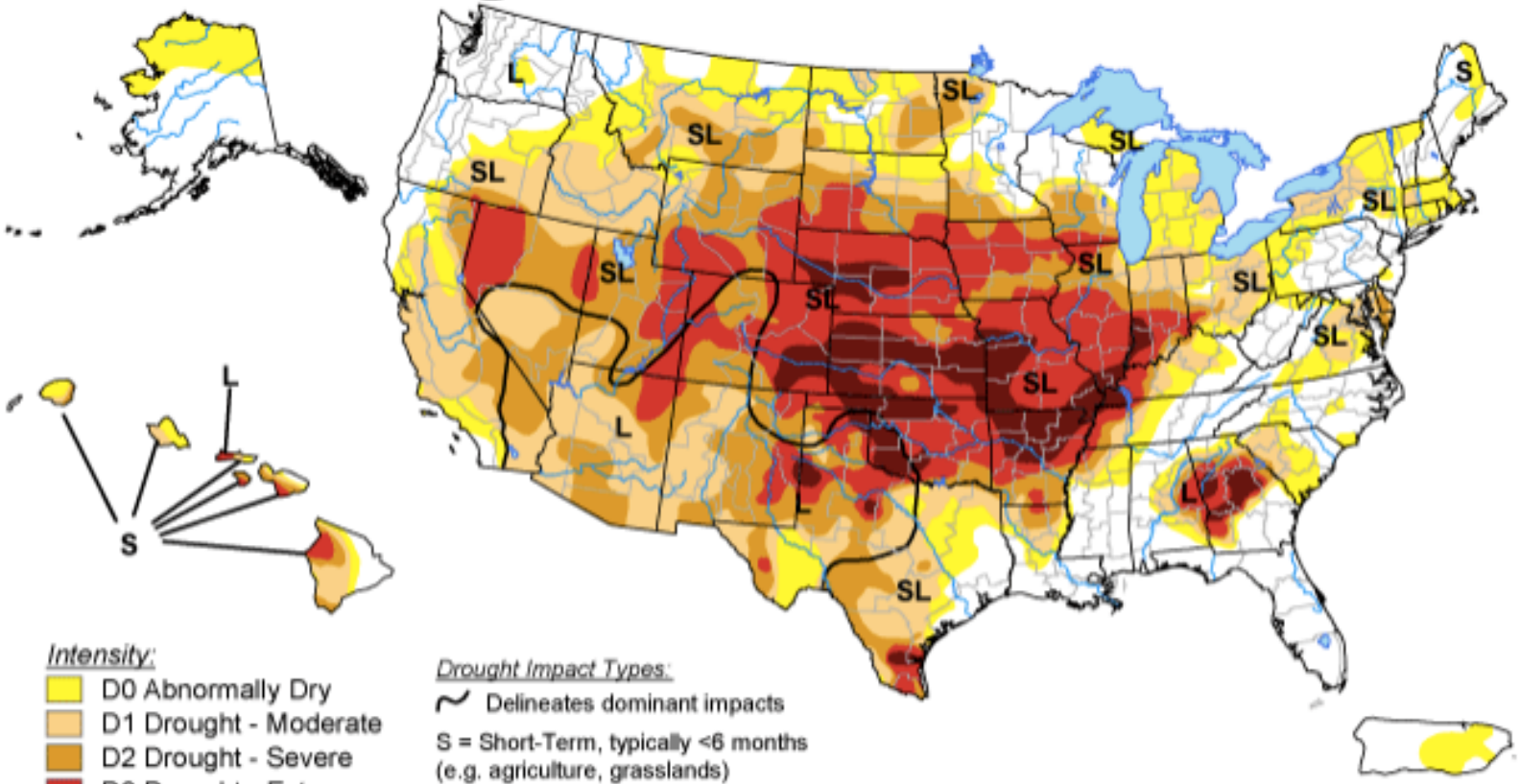
Wildfires in Western US have increased 4-fold in 30 years.



Source: Westerling et al. 2006

U.S. Drought Monitor

August 28, 2012
Valid 7 a.m. EDT



Intensity:
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

~ Delineates dominant impacts

S = Short-Term, typically <6 months (e.g. agriculture, grasslands)

L = Long-Term, typically >6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu/

Released Thursday, August 30, 2012

Author: Brian Fuchs, National Drought Mitigation Center

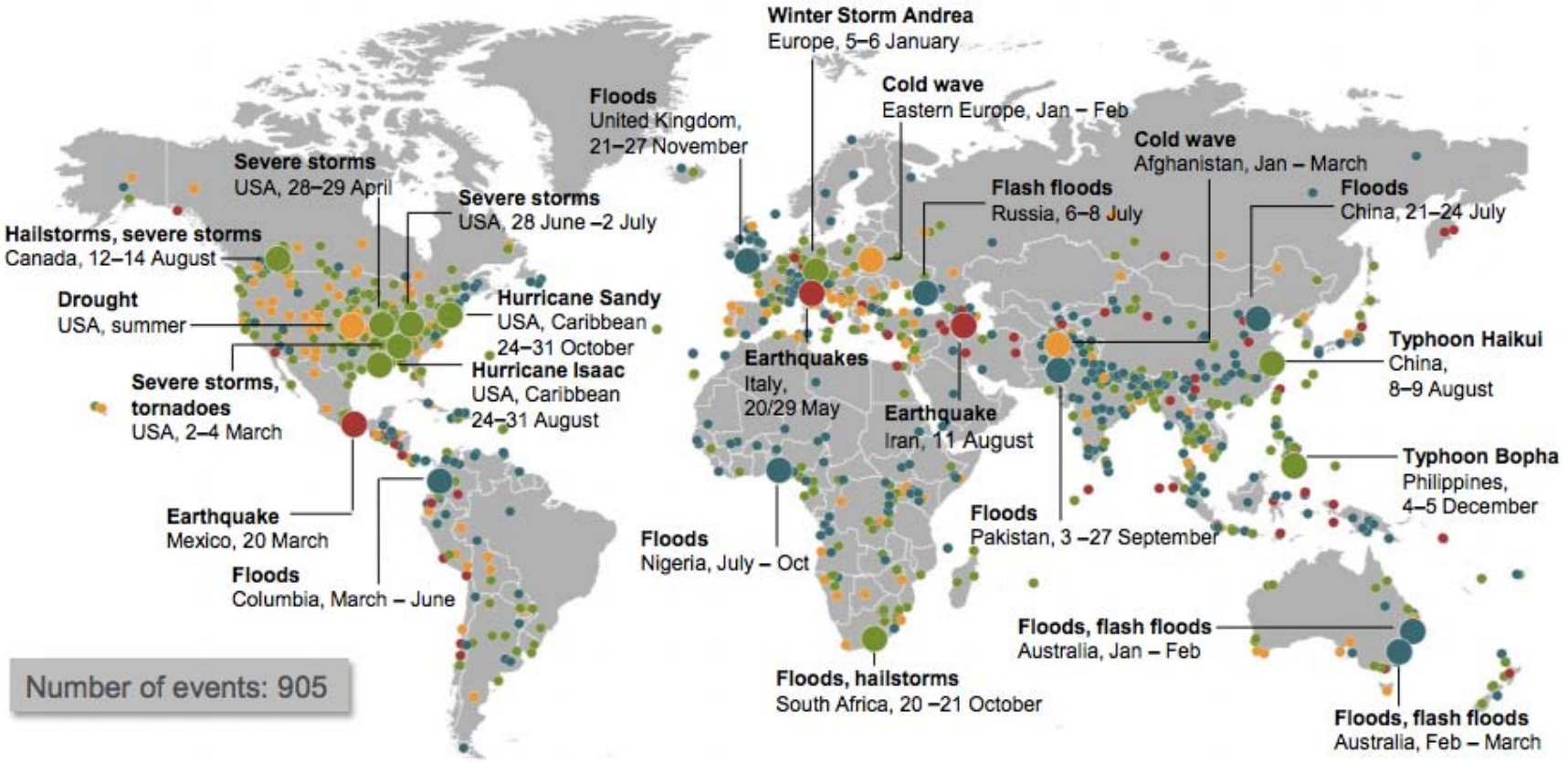
CHAD 2012

NatCatSERVICE

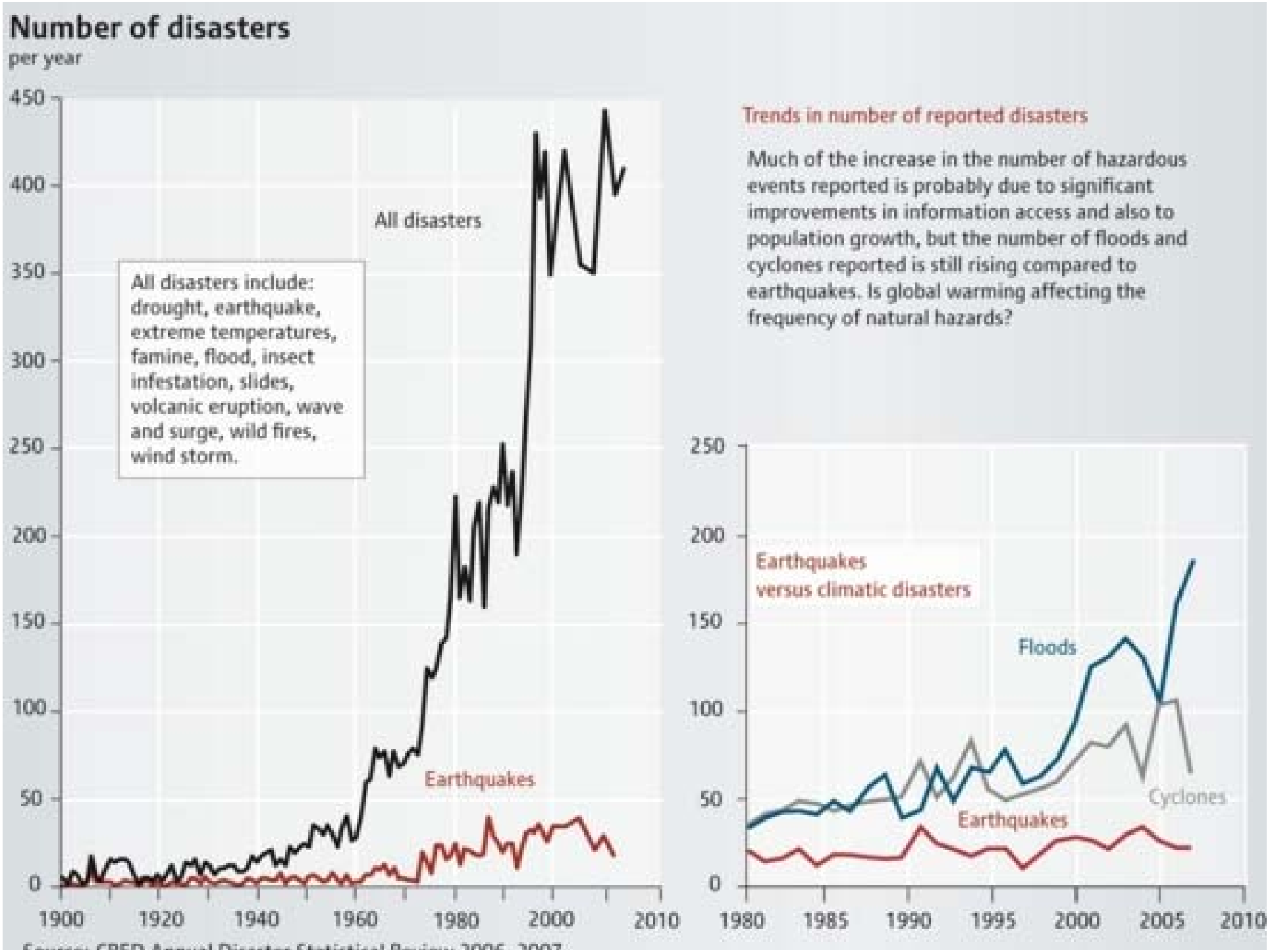
Natural Catastrophes 2012

World map

Munich RE



- Natural catastrophes
- Selection of significant Natural catastrophes
- Geophysical events (earthquake, tsunami, volcanic activity)
- Meteorological events (storm)
- Hydrological events (flood, mass movement)
- Climatological events (extreme temperature, drought, wildfire)


Number of disasters
per year
450
400
350
300
250
200
150
100
50
0
1900
1920
1940
1960
1980
2000
2010
All disasters
All disasters include: drought, earthquake, extreme temperatures, famine, flood, insect infestation, slides, volcanic eruption, wave and surge, wild fires, wind storm.
Earthquakes
Trends in number of reported disasters
Much of the increase in the number of hazardous events reported is probably due to significant improvements in information access and also to population growth, but the number of floods and cyclones reported is still rising compared to earthquakes. Is global warming affecting the frequency of natural hazards?
250
200
150
100
50
0
1980
1985
1990
1995
2000
2005
2010
Earthquakes versus climatic disasters
Floods
Cyclones
Earthquakes

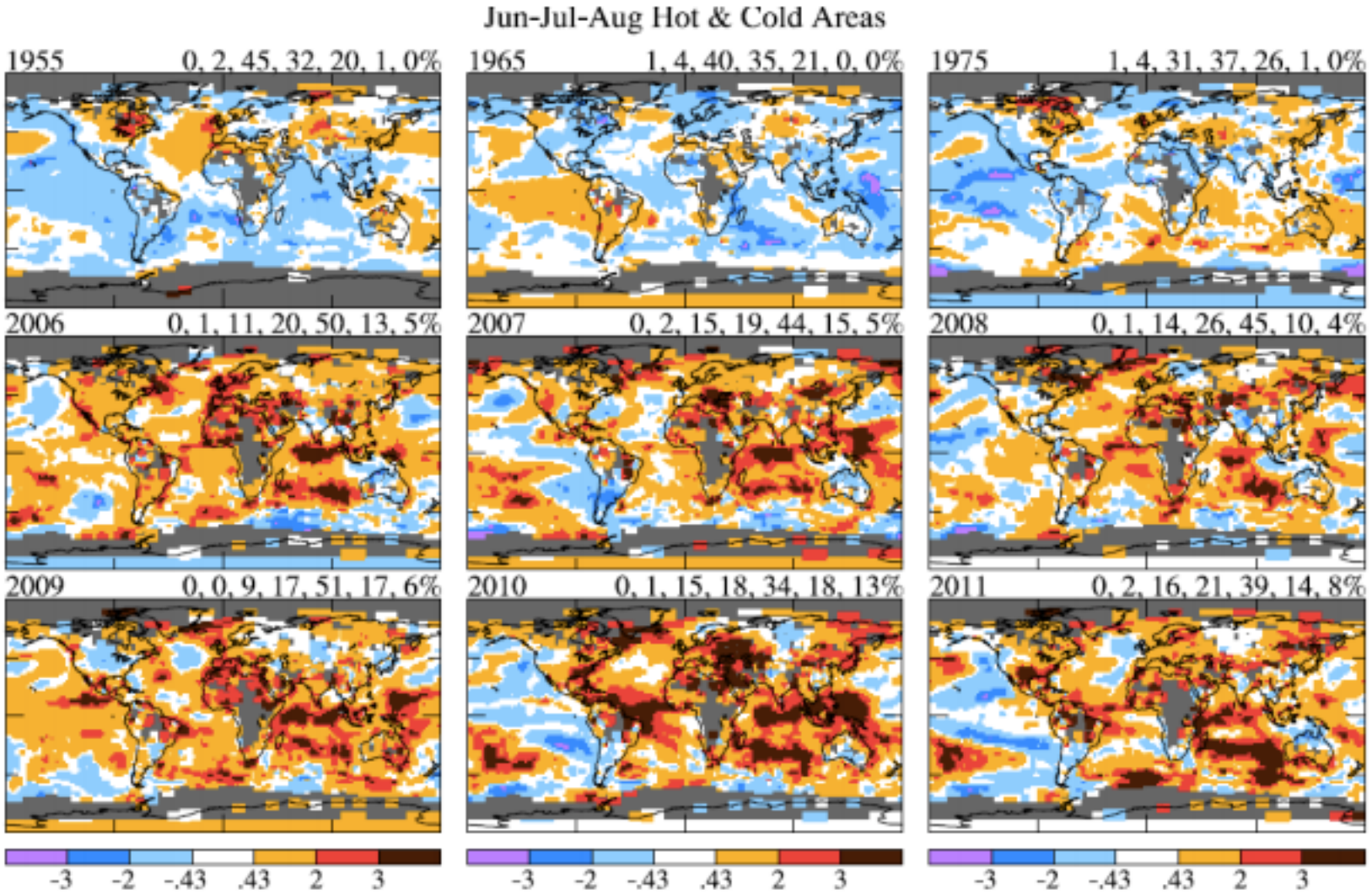
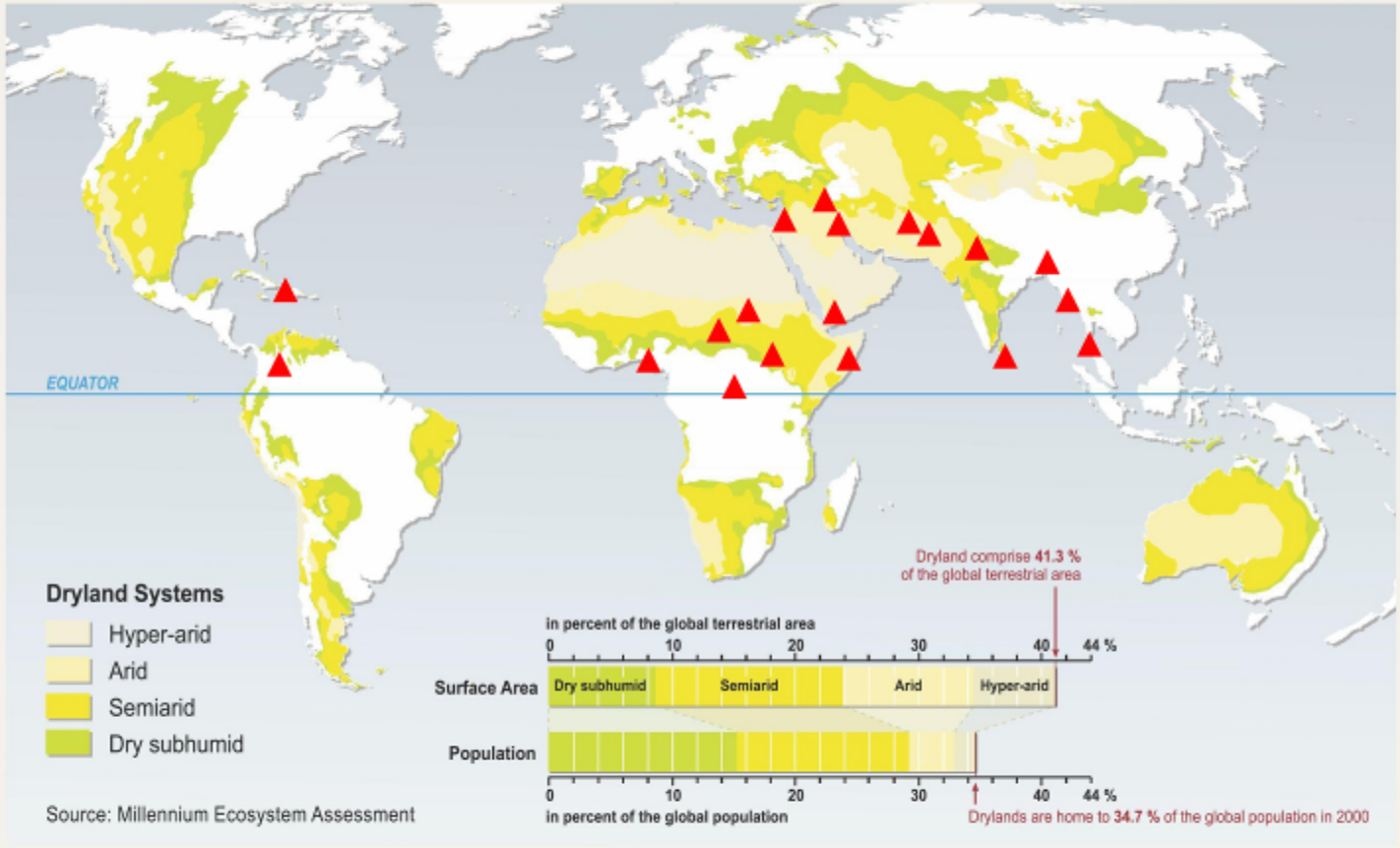


Fig. 3. Jun-Jul-Aug surface temperature anomalies in 1955, 1965, 1975 and in 2006-2011 relative to 1951-1980 mean temperature in units of the local standard deviation of temperature. The numbers above each map are the percent of surface area covered by each of the categories in the color bar.

Figure 5.1: Drylands and Confict

Drylands include all terrestrial regions where the production of crops, forage, wood and other ecosystem services are limited by water. Formally, the definition encompasses all lands where the climate is classified as dry subhumid, semiarid, arid or hyper-arid. This classification is based on Aridity Index values†.



† The long-term mean of the ratio of an area's mean annual precipitation to its mean annual potential evapotranspiration is the Aridity Index (AI).

Notes: The map is based on data from UNEP Geo Data Portal (http://geodata.grid.unep.ch/). Global area based on Digital Chart of the World data (147,573,196.6 square km); Data presented in the graph are from the MA core database for the year 2000.

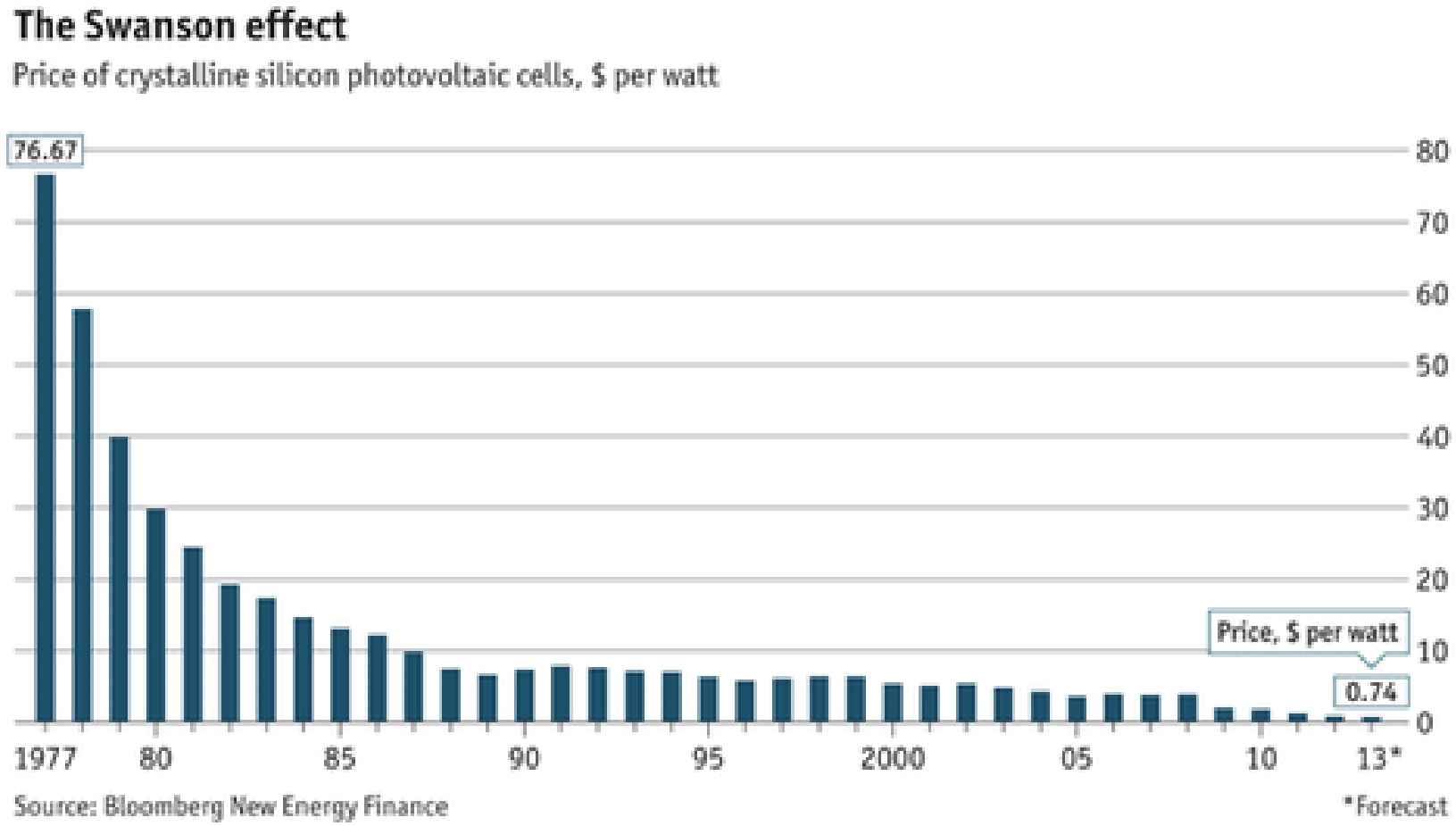
▲ Major episodes of political violence, defined as political violence involving the systematic use of lethal violence and terror by organized groups and/or states that substantially affect the society or societies that directly experience the armed conflict (resulting in at least 500 directly related fatalities substantial destruction of infrastructure and population displacements). Episodes may involve states, a state and non-state group, or non-state groups only, including inter-state and independence war, ethnic and revolutionary (civil) war, inter-communal warfare, genocide and communal massacres. Each episode is rated on a ten-point scale according to its total impact on the society or societies that are directly affected by the violence. (Center for Systemic Peace, 2007)

THE WORLD NEEDS TO *DE-CARBONIZE*
THE ENERGY SYSTEM, THROUGH:

EFFICIENCY
EXPANDED ELECTRIFICATION (EG AUTOS)
LOW-CARBON ENERGY:
- RENEWABLES (SOLAR, WIND, HYDRO)
- SAFE NUCLEAR POWER
- CARBON CAPTURE AND STORAGE

THE NEW POTENTIAL OF RENEWABLE ENERGY

COST OF SOLAR POWER DOWN BY 100X



FROM MDGS TO SDGs:

END EXTREME POVERTY IN ALL ITS FORMS BY 2030

TRANSITION TO LOW-CARBON ECONOMY, SUSTAINABLE AGRICULTURE AND SUSTAINABLE CITIES

SOCIALLY INCLUSIVE SOCIETIES: JOBS, GENDER, HUMAN RIGHTS, ACCESS TO PRIMARY HEALTH AND EDUCATION

PUBLIC AND CORPORATE GOOD GOVERNANCE: ACCOUNTABILITY, MONITORING, DEVELOPMENT AID, END TAX HAVENS, POLLUTERS PAY

THE NEW GLOBAL PROBLEM SOLVING:

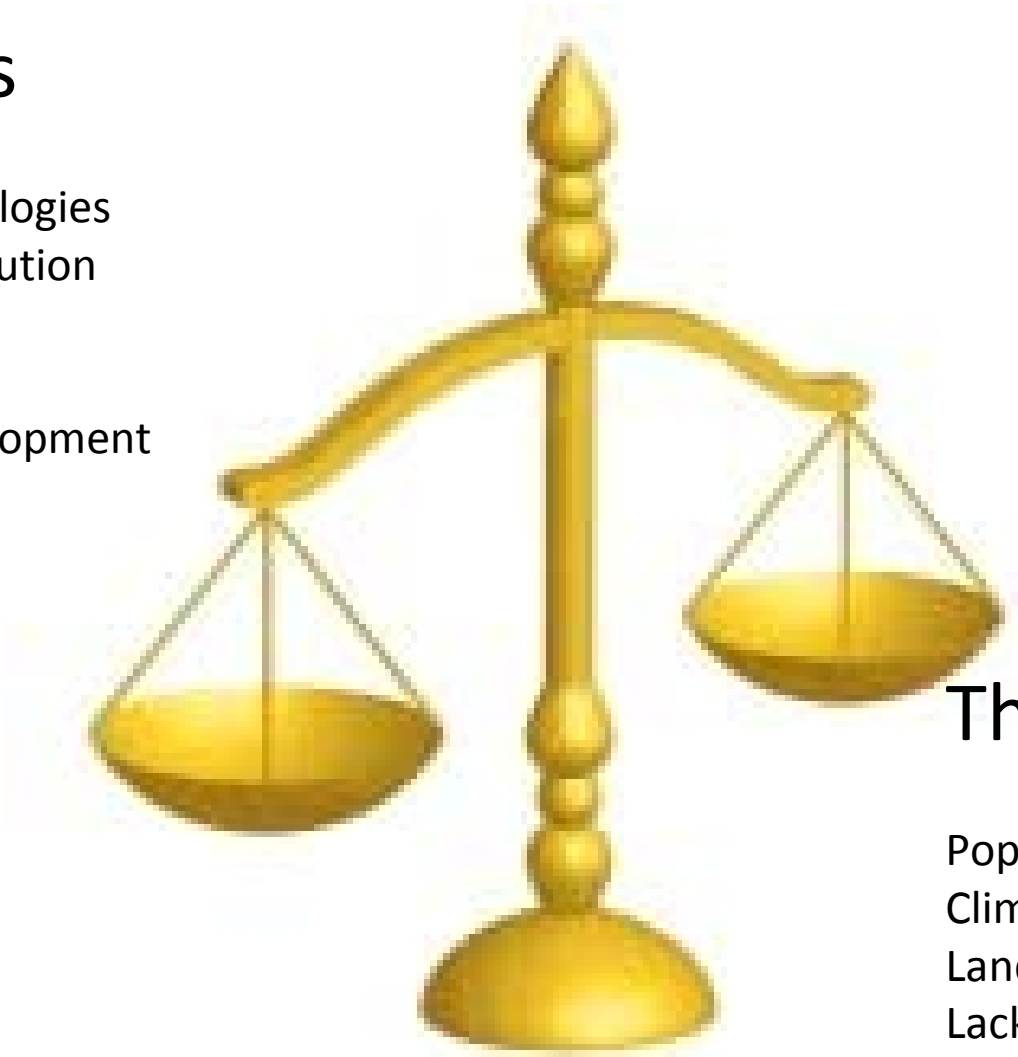
THE ***U.N. SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK*** (UN SDSN):

TO FOSTER A GLOBAL NETWORK OF PROBLEM SOLVING, EMPOWER UNIVERSITIES, PROMOTE PUBLIC-PRIVATE SOLUTION INITIATIVES, AND ENCOURAGE BOLD FIRST MOVERS

A Sustainable Planet?

The Pluses

Advanced Technologies
Information revolution
Corporate SD
    Leadership
Sustainable Development
    Goals



The Minuses

Population Pressures
Climate Change
Land Grabs
Lack of Planning
Global lawlessness

BRAZIL

United Nations General Assembly

(Thematic Debate)

"Sustainable Development and Climate Change: Practical Solutions for the Water-Energy Nexus"

by Minister Izabella Teixeira
Minister of the Environment of Brazil
Keynote speaker

16 May 2013, New York
(Please check against delivery)

Mr President of the General Assembly,
Honorable Ministers,
Distinguished Heads of Delegation,
Ladies and Gentlemen,

A year ago, at the opening ceremony of Rio+20, I spoke before the United Nations on the pressing need to address the environmental challenges that affect the lives of people across the globe. That Conference showed the strength of multilateralism and of this Organization in dealing with such challenges through the lens of sustainable development. Almost a year later we must continue to work together and strengthen our bonds of cooperation. It is strategic to tackle at the political level the tasks of setting in place the Post 2015 Development Agenda, the Sustainable Development Goals as well as the other processes agreed to in Rio, and a global binding agreement under the UNFCCC to effectively address climate change.

Today's topic brings to the fore a fundamental issue the international community is facing: how to establish a balanced approach considering access and efficient use of water and energy. Projections show that a significant portion of the global population is already living in regions under severe water stress and that water scarcity will increase in the coming years. Fossil fuels, on the other hand, have become increasingly expensive, and alternative energy sources, mainly renewables, are yet to reach the necessary scale so as to move the global economy towards less carbon intensive models.

Human communities are pressed to achieve enabling conditions for energy and water resources to be made available, distributed and used in an equitable and efficient manner, while ensuring economic growth.

Nations must find solutions to better manage their water resources, including groundwater, and improve national water governance mechanisms; to reduce future water withdrawals, through greater efficiency in water use in irrigation for agriculture, by far the largest water use. In this International Year of Water Cooperation, a greater emphasis should be placed on dialogue and exchange of information among countries in these areas.

The Post 2015 Development Agenda should address this complex set of issues by also recognizing the opportunity to upgrade infrastructure, use new, cleaner technologies, while at the same time creating jobs and boosting our economies.

Brazil's energy matrix is one of the greenest in the world with 45% of the energy generated by renewable sources (as compared to the world average of 13%). 14% come from hydroelectricity. However, 90% of the electric energy in Brazil comes from renewable sources, and 80% comes from hydroelectricity. This, of course, has a direct impact on the patterns of Brazilian GHG emissions.

Brazil has been investing in energy generation that is less carbon-intensive, especially due to its hydrological advantages. Hydroelectricity, however, while being a clean alternative for the mitigation of climate change, is potentially subject to the impacts of the very phenomenon that it helps to avoid. In short, an energy matrix that is dependent on water is vulnerable to climate change, and a diversification of clean alternatives should be sought. Biofuels, for their dependence on irrigation and rain patterns, may also be negatively affected by climate change.

Hydropower plant operations are affected when certain conditions change: air temperature, humidity, wind patterns, rainfall patterns. But the most important aspects are river flow and reservoir management. Climate change may significantly affect hydropower generation, and adaptive measures will have to be adopted to make up for the eventual gap. Brazil has a ten-year energy plan that considers alternative sources and stimulates energy efficiency. This plan prioritizes actions for the sector that contribute to low carbon emissions by increasing the supply of energy from renewable sources (mainly hydropower, wind and biomass), and by increasing the energy efficiency and the consumption of biofuels.

It is important that the future supply of energy be oriented by a balanced approach regarding energy sources, always favoring renewables. For that, our challenges are not limited to the eficiency of the energy matrix. These challenges relate to the more extensive use of technologies

and economic instruments which enable greater access and more efficient energy use, and that are competitive as well as socially and economically viable.

One should not forget the role of technological progress in redefining the limits of the possible and providing new solutions. The human genius has proved again and again to be able to overcome seemingly impossible barriers and go beyond the status quo. Technological research and development will play a crucial role in taking humankind to a new level of prosperity, in line with nature resilience. We can mention as an example the recent breakthroughs in shale gas extraction – hydraulic fracturing –, which has allowed access to huge reserves that were out of reach only a few years ago, and will probably affect GHG emission cenarios. These developments indicate the magnitude and dynamic nature of changes affecting the global energy matrix. They point to the importance of identifying clear guiding posts and innovative approaches in the context of the Post 2015 Development Agenda in order to stimulate innovation, access to technologies and technology transfer while combatting climate change– issues which still cloud the North-South agenda – and facilitate the transition to a new model of energy generation and sustainable development.

In the Brazilian context, water availability is crucial. A series of measures are being adopted to maintain or increase natural water availability and keep rivers flowing and reservoirs full: policies to combat deforestation, reforestation of river margins, protection of wellsprings and recharge areas, efficient water use, proper soil management, adequate reservoir management, payment for environmental services. All these can be achieved by proper management of river basins.These challenges are not limited to forested countries. It is important to better understand the interlinked agendas and challenges and how the global economy has to deal with them.

The role of forests in the hydrological cycle and their impact on rain production, as well as carbon stock and sequestration, cannot be overestimated. Brazilian efforts have resulted in a reduction of 83% the rate of illegal deforestation since 2004, and will help Brazil achieve its national voluntary commitment to cut emissions by 38.9% by 2020. In Brazil, we are calling this "green air" and for us this is not a contribution free of charge.

The integrated water resources management should lead to optimal benefit to present and future generations. International exchange of experiences should be stimulated to reach a new level of water use efficiency. This is an issue that must also be at the top of the Post 2015 Development Agenda

The international community sent a vigorous and consensual signal at Rio+20 recognizing the need to promote sustainable development as a mandatory response to a world that is expected to have a global middle class of 9-10 billion people by 2050. We need to abandon unsustainable and promote sustainable patterns of production and consumption as well as focus on greater efficiency in our cities.

Increasing awareness regarding the importance of promoting sustainable patterns of production and consumption and constructing policies towards that effort are crucial. The international community must promote and inspire concrete actions to ensure that the necessary strive towards greater levels of prosperity is effectively articulated with the sustainable use and conservation of natural resources and with social policies addressing poverty, focused on universal access to social services and on the respect and promotion of all human rights, including the right of women and children.

One aspect that must not be neglected in the future SDG framework is the huge weight cities can play to control the energy-water nexus and climate change. More than half of the world's population lives in cities, and this number will continue to increase, especially in developing countries. It is becoming increasingly clear that sustainable Cities must be brought to the center of the political agenda as a crucial dimension of the struggle against climate change and its associated vulnerabilities.

Mr. President, Ladies and Gentlemen,

Strengthening our political dialogue is essential to generate the common understanding on the collective challenges before us and the innovative ways to overcome them as we look towards " The Future We Want". I am speaking about consolidating an universal vocabulary and an

universal commitment to provide answers to these questions. It is high time to set in place a transformative agenda that cannot limit itself to environmental issues and that faces squarely the requirements imposed by a necessary global shift from prevailing economic and social models.

We should seize the opportunity given by the consensus reached at Rio+20 and the processes launched at that historical Conference to eradicate extreme poverty and to promote sustainable patterns of production and of consumption in order to fully implement sustainable development. We have to expeditiously and collectively move away from the current business-as-usual scenario and address at full face the most pressing global environmental challenges.

Negotiations under the UNFCCC have progressed in an important way. The second commitment period of the Kyoto Protocol and the creation of a series of new institutions as a result of negotiations since Bali have strenghtened the Climate Regime in spite of diminished confidence in the process by many. We are now working with two clear objectives: increased ambition for the period prior to 2020, and to reach an agreement for the post-2020 period. Recent meetings have indicated that new perspectives are opening and that a context is being created in which constructive and effective solutions can be found for the new agreement we want to build by 2015.

Although Brazil has been very successful in drawing 40 million of its citizens from poverty and has consolidated its democratic institutions, moving forward in the conservation of its biodiversity and significantly reducing deforestation, we need to pursue further the trails of innovation and efficiency in order to continue to build a country with greater equity, with less regional disparities, in which its society holds dear and effectively recognizes inclusive and environmentally sound development as an essential value. My country is honored to share this perspective with the global society and this Organization. Let us commit today to preserve and defend the values and principles set forth in Rio and at major UN Conferences so that we can preserve and defend our future and ensure the well-being of current and future generations.

Thank you.