

# our planet

The magazine of the United Nations Environment Programme — September 2011



ABDELAZIZ BOUTEFLIKA  
UNIVERSAL STRUGGLE

ZHOU SHENGXIA  
SHIELDING  
ECOLOGICAL SECURITY

ANGELA CROPPER  
SEIZE THE MOMENT

JEFFREY SACHS  
IN THE FRONT LINE

JOHANN ROCKSTRÖM  
COMMON BOUNDARIES



## GLOBAL COMMONS

The planet we share



**Our Planet, the magazine of the United Nations Environment Programme (UNEP)**

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International Year of  
**CHEMISTRY**  
**2011**

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Climate change presents the greatest challenge to the wellbeing of the Commons, but governments are adopting

# books

[www.unep.org/publications](http://www.unep.org/publications)



## World Resources Report 2011: Decision Making in a Changing Climate

World Resources Institute, United Nations Environment Programme,  
United Nations Development Programme, World Bank

This exercise by WRI, UNEP, UNDP and the World Bank provides policymakers around the world - government, civil society, and business - with analysis and insight about major environmental and development issues. Already, the world is experiencing the destructive effects of rising global temperatures, altered rainfall patterns and extreme weather. Short term, such impacts create pressing needs for disaster relief, such as followed the recent unprecedented floods in Pakistan and heatwave in Russia. Longer term effects will continue for decades, with intensifying and wide-ranging impacts on agriculture, water supplies and other ecosystems, and human habitation. To build climate resilience, developing country national decision makers urgently need to integrate climate change risks into planning and policies across sectors such as agriculture, electricity production and forestry and water management.

## Adapting for a Green Economy: Companies, Communities and Climate Change

Samantha Putt del Pino, Eliot Metzger, Sally Prowitt, United Nations Global Compact, United Nations Environment Programme (UNEP), and Oxfam

This report is a resource for companies with a national, regional or global reach that are interested in increasing their strategic focus on adaptation in developing countries where they have operations, supply chains, employees and current or potential customers.

This report is also aimed at national and international policymakers involved in climate change and sustainable development dialogues and decision-making, including those who will participate in the United Nations Conference on Sustainable Development in 2012 (Rio+20). It is hoped that the report's findings will be useful for a much wider range of actors as well, including small, local businesses in developing countries that are on the front line of climate impacts; civil society organizations seeking to strengthen their work around climate change and sustainable development; and sub-national policymakers, who are in a key position to shape a productive interface among government, communities and businesses.

## Africa Water Atlas

Division of Early Warning and Assessment (DEWA/UNEP)

This Atlas is a visual account of Africa's endowment and use of water resources, revealed through 224 maps and 104 satellite images as well as some 500 graphics and hundreds of compelling photos. However, the Atlas is more than a collection of static maps and images accompanied by informative facts and figures: its visual elements vividly illustrate a succinct narrative describing and analyzing Africa's water issues and exemplifying them through the judicious use of case studies. It gathers information about water in Africa and its role in the economy and development, health, food security, transboundary cooperation, capacity building and environmental change into one comprehensive and accessible volume.

UNEP undertook the production of this Atlas at the request of the African Ministers' Council on Water (AMCOW) and in cooperation with the African Union, European Union, United States' State Department, United States Geological Survey and other collaborators.



## The Atlas of Coasts and Oceans Mapping Ecosystems, Threatened Resources and Marine Conservation

Don Hinrichsen.

The Atlas of Coasts and Oceans is a comprehensive assessment of the challenges faced in the governance of the blue planet; a global common resource. It details the ecological, environmental and economic importance of each of the world's coasts and oceans. The impact of climate change, industrial growth, tourism, pollution and over-fishing as well as the steps being taken towards conservation are well illustrated with global and regional maps, from the Arabian Gulf to the Great Barrier Reef and including the Baltic, the Black Sea, the North Atlantic, the Mediterranean, the Red Sea and Gulf of Aden, the South Pacific and all the other major global waterways. It is a timely contribution to the understanding of marine science.

## Taking Steps toward Marine and Coastal Ecosystem- Based Management – An Introductory Guide

Tundi Agardy, John Davis, Kristin Sherwood, Ole Vestergaard

The Guide outlines operational considerations in an accessible language, drawing upon practical experiences and lessons across the globe - from tropical coastlines to temperate estuaries and polar ocean ecosystems. An important message is that this is an incremental process and there are different paths toward Ecosystem-Based Management. Cross boundary considerations and working with neighbours and even countries far away will be an essential component.



Achim Steiner

UN Under-Secretary-General and Executive Director, UNEP

With less than nine months to go before the Rio+20 conference, international momentum is building as a result of growing understanding of the need to re-think economies and reform an international system of governance that is falling short of what is required. On issues ranging from desertification to biodiversity loss, current responses and the institutions established to facilitate them are struggling to keep up with the magnitude and velocity of environmental, social and economic change.

Governments, civil society and business are meeting under an agreed timetable to follow a road map to sharpen and shape their positions on Rio+20's twin themes — the Green Economy in the context of sustainable development and poverty eradication and an institutional framework for sustainable development. October's meeting of the desertification convention, for example, will include a focus on livelihoods in drylands and sustainable agriculture.

Across all the issues nothing is clear cut: But there is some coalescing of possible transformative, cooperative proposals — from scaling up clean energies to new ways of managing the oceans, freshwater, food security, and disaster preparedness.

To date the main focus has been on the Green Economy. One key issue is tackling fossil fuel subsidies: by some estimates, these range from \$400-\$600 billion a year — or four times what it would cost to bring Official Development Assistance up to the 0.7 per cent target. Another is green procurement: on average public purchasing accounts for 23 per cent of GDP worldwide, enough — it is thought — to tip entire markets onto a more sustainable track. Other such areas under consideration range from reforming bilateral investment agreements that hinder the adoption of clean energy to developing a smarter indicator of wealth that goes beyond GDP.

Meanwhile governments from Kenya and Germany to Malaysia and France are signaling support for strengthening or upgrading UNEP to boost the environmental pillar of sustainable development. Other governance proposals include transforming the Commission on Sustainable Development into a Council or merging its functions in a strengthened UN Economic and Social Council.

The missing overall link so far is broad political support. Brazil, however, is signaling its determination to provide leadership as are several African, Asian and European heads of state. If more like-minded leaders — including from civil society — demonstrate their backing, there is every chance that the promise of Rio 1992 can be finally transformed into profound outcomes, reflecting a fresh sense of purpose unfolding among nations to put sustainability both front and centre stage.



Luc Gnacadja

Executive Secretary of the United Nations Convention to Combat Desertification (UNCCD)

Soil, featured prominently in this issue of Our Planet, is a critical part of the global commons. Productive land is pivotal in the survival of life on Earth, yet 12 million hectares of it is lost every year due to desertification and drought. Over the next 25 years, such losses may reduce global food production by up to 12 per cent, increasing world prices by as much as 30 per cent. If we are serious about moving to a Green Economy, in which agriculture and food security are embedded in sustainable development, we must switch to sustainable land-use practices. To do so, the global dimension of desertification and land degradation must be

recognized at all levels. Without healthy soils, we will lose other global commons like water and biodiversity.

Soil's importance as a global common has yet to be anchored in the minds of decision makers. But there are signs of change. On 20 September, world leaders will gather at the United Nations General Assembly in New York for a high level-meeting on addressing desertification, land degradation and drought in the context of sustainable development and poverty eradication. The time is ripe for a paradigm shift that takes land and soil as finite resources. The current famine and drought in the Horn of Africa reminds us that building the resilience of the drylands communities and pursuing sustainable land management globally are critical to the future well-being of a civilized international society in the 21st century. The cost of action today is far less than the future costs from inaction.

In practical terms, this means pursuing a target that makes history of the loss of land — such as for example, 'zero net land degradation' as part of the global sustainable development target. The long-term sustainability of productive land is under threat, but together, we can reverse the trend if we act swiftly. Now, more than ever, the international community must intensify its efforts to forge a global partnership to reverse and prevent desertification and land degradation, and to mitigate the effects of drought. Poverty reduction and environmental sustainability will be among the quick and lasting returns on our investment.

# Universal struggle



ABDELAZIZ BOUTEFLIKA  
.....  
President,  
the Republic of Algeria



Desertification and land degradation are like climate change and biological diversity, major challenges for the 21<sup>st</sup> century. Indeed, they are even more complex because they are multidimensional phenomena underlain by diverse factors, especially climatic variations and human activities.

These phenomena have irreversible economic and social consequences. They deprive hundreds of millions of people

of the land that nourishes them, thus creating additional sources of tension and exacerbating migrations. International responsibility is undoubtedly engaged in the fight against desertification, drought and land degradation. In fact, the universal struggle against them is an urgent burden on us all, since they lead to forced migrations and challenge social stability, moving us further away from the objectives of sustainable development.



*“The success of this struggle requires the implementation of the three conventions (on climate change, biodiversity and desertification) agreed at the 1992 Rio Earth Summit.”*

The success of this struggle requires the implementation of the three conventions (on climate change, biodiversity and desertification) agreed at the 1992 Rio Earth Summit. This will also depend on the funding and green technologies that wealthy countries agree to make available to the least fortunate countries.

Africa is the hardest hit region. Numerous studies show that our continent will lose two-thirds of its arable land by 2025, in the absence of urgent and effective measures therefore destroying its efforts for both development and environmental protection.

The Millennium Declaration (2000), the Millennium Development Goals and the New Partnership for Africa’s Development (NEPAD) offer us opportunities for effective management of the problems related to desertification and land degradation.

Very early, Algeria associated itself with multilateral efforts to negotiate

and consolidate the United Nations Convention to Combat Desertification. She has brought in important measures aimed at fighting the effects of desertification and drought in arid and semi-arid areas within her own territory.

Major programmes, based on an appropriate institutional framework and covering 20 million hectares, have been put in place to combat desertification and land degradation, by using reforestation, rationalising use of grazing areas, raising awareness and mobilizing local authorities and citizens. The “green wall”, already covering an area of 300,000 hectares, will be expanded by 100,000 hectares by 2015.

And a new national map, based on remote sensing and creating awareness on desertification, has been developed to strengthen these efforts.

Moreover, the fight against desertification should also be combined with improved understanding of deserts, both as complete ecosystems and as specific sites for sustainable development, due to the natural resources and unique biodiversity they contain. Their value for human settlements and their invaluable cultural richness also demand such recognition.

Southern Algeria is home to two huge national parks in the midst of the Sahara at the Ahaggar and the Tassili. These open-air museums, part of world heritage, cover a total area of 452,000 square kilometers. An important project for preserving the biodiversity and cultural heritage is under way with the assistance of the United Nations Development Programme (UNDP).

It is increasingly essential to develop an integrated international strategy for the protection of our planet. In this precise case, the commitment of the international community should be up to the challenges that we are facing.



# Shielding ecological security



ZHOU SHENGXIA

Minister,  
Ministry of Environmental Protection,  
People's Republic of China

The eco-system consisting of air, ocean, lakes, land, grassland and forest nourishes the Earth — our warm and beautiful home — and provides such services as climate regulation, water conservation, sources of food and medicine and natural landscapes. It is an irreplaceable and significant basis for the subsistence and multiplication of mankind.

Rapid social and economic development, especially since the 20<sup>th</sup> century, has made the impact of the human activities on the eco-system more damaging than ever. Its functions have been rapidly degrading and the conflict between man and nature has been increasingly sharpened. People worldwide were

awakened to this by the first United Nations Conference on the Human Environment in 1972. Then the 1992 United Nations Conference on Environment and Development, held in Rio de Janeiro, reached extensive consensus on sustainable development. Now the concept of balanced development among economy, society and environment has sunk deep into our hearts and has become a development strategy of many countries.

The Chinese government developed “ten measures for environment and development” two months after the 1992 UN Conference on Environment and Development. In this new century, it put forward a scientific outlook on development characterized as people-oriented, coordinated and sustainable. It makes great efforts to promote ecological civilization, strives to build a resource-efficient and environmentally-friendly society, and pursues a refined development road that leads to economic growth, prosperous life and good eco-systems.

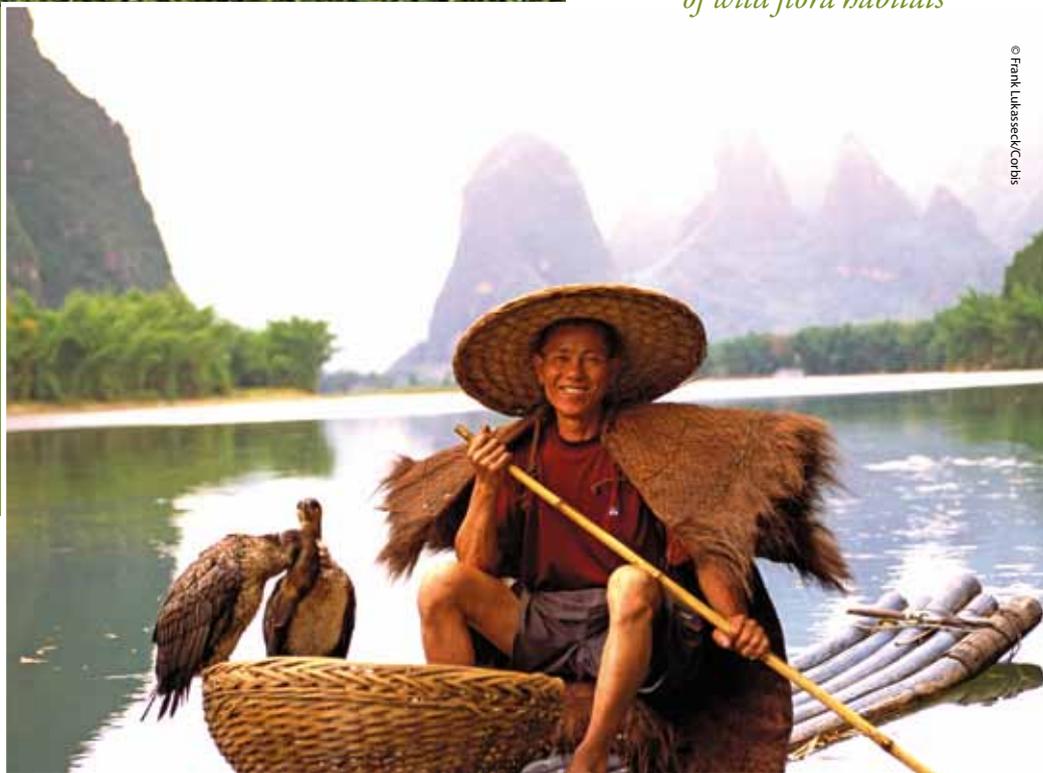
Remarkable progress has been made. The government has promulgated more than 20 laws and regulations to protect the environment and natural



*“By the end of 2010, China had 2,588 protected areas, accounting for 14.9 per cent of its land territory: these safeguard 85 per cent of terrestrial eco-systems, 40 per cent of natural wetlands, 85 per cent of wild fauna and flora and 65 per cent of wild flora habitats ”*

As one of the world’s richest countries for biodiversity, China boasts a variety of terrestrial and marine eco-systems and hosts the biggest total number of species in the northern hemisphere. By the end of 2010, it had 2,588 protected areas, accounting for 14.9 per cent of its land territory: these safeguard 85 per cent of terrestrial eco-systems, 40 per cent of natural wetlands, 85 per cent of wild fauna and flora and 65 per cent of wild flora habitats. However, China’s ecology remains fragile. 90 per cent of its 393 million hectares of grasslands are degraded to some degree, while 27.5 per cent of its land territories are subject to desertification. The country still faces daunting challenges in protecting its natural environment.

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resources, such as the Environmental Protection Law, the Forest Law, the Grassland Law, and the Law on Marine Environmental Protection. China has also set mandatory targets for cutting emissions of the main pollutants in its national plan for economic and social development. Pollution prevention and control programs in key river basins and regions have been continued and a number of other schemes, such as projects for

conserving natural forests and programmes for returning farm land to nature (forest/grassland/wetland/lake), have also been implemented. China has ratified such international conventions, as the Convention on Biological Diversity, the Ramsar Convention on Wetlands and the United Nations Convention to Combat Desertification and has carried out extensive bilateral and multilateral cooperation.

Looking ahead, the Chinese government will implement the scientific outlook on development, accelerate the transformation of the modes of economic development, uplift the level of ecological civilization, and explore a new path for environmental protection that features low cost, good returns, low emissions and sustainability. The government will make every effort to strike a balance between environmental protection and economic development — resolving the prominent environmental problems hampering balanced development and damaging public health — and to do a good job in cutting pollution. It will implement the National Biodiversity Strategy and Action Plan (2011-2030), the Regional Plan on Ecological Construction and Environmental Protection on the Qinghai-Tibet Plateau and other ecological conservation plans for specific key regions. The key ecosystem of rivers and lakes will also be rehabilitated. All these actions aim to build a shield for ecological security, to help protect the earth, and to build a harmonious world.

# Seize the Moment



ANGELA CROPPER

.....  
Former Deputy Executive Director,  
now Special Advisor  
to the Executive Director, UNEP

Next year's Rio+20 Conference is a golden opportunity for political leadership, given the dire, urgent and complex economic, social and environmental issues that confront the world. The requirement for such leadership and commitment on macro sustainable development issues is more pressing than the need for long lists of sectoral 'to dos', which mostly already exist on paper as outcomes of global summits and sectoral processes.

We know what needs to be done. We need, however, to examine why implementation lags so far behind such resolutions of mind and what would enable this Conference to elevate its ambition and make good use of the opportunity before it. How might it remove some of the impediments to sustainable development? What kind of outcomes would position the world to deal with some of the urgent, if complex, problems it faces?



Here are ten ideas for ambitious approaches which need political direction and subsequent commitment:

**I.** Shape the approach to economic growth to serve social objectives and recognize environmental limits and imperatives. The Conference will meet at a propitious moment, as the world now much better understands the issues of sustainable development and how the economy, the environment and human well-being are inter-related and mutually supportive. But this understanding is not put into practice: environmental imperatives and human well-being objectives are invariably traded off as optional and secondary to economic growth. This impedes sustainable development which unifies economic, social and environmental objectives — as opposed to adding on environmental and social considerations only where the economic bottom line remains unaffected.

*“National – as opposed to government – ownership of the approaches and measures to be taken needs to be cultivated and secured.”*

The Conference could set this relationship properly on its feet, putting economic growth at the service of the social objectives which governments have long enunciated over time and recognising and respecting resource and environmental constraints. This will require qualitatively different attention to decisions about policy, investment, and other development interventions, so that environmental and human well-being outcomes are not sacrificed in the preoccupation with, and pursuit of, economic growth.

**2.** Make a commitment to reduce inequity, domestically and globally.

The Conference could draw attention to how the present economic approach generates persistent poverty and increasing inequity, recognizing that the peripheral means by which the world tries to alleviate them do not allow it to catch up. It could commit itself to reducing that equity gap consciously and urgently both within and among countries, and put in place arrangements to keep the process under global and national scrutiny. Without achieving this for the present generation we can hardly expect to meet the concern for equity between generations.

**3.** Require more appropriate measures of development to be formulated and applied

It is well established that relying on Gross Domestic Product as the measure of development is misleading, especially given the goal of sustainable development, yet we persist in its use. The Conference could call for urgent and accelerated work, in a specified time frame, towards a new set of measurements and indicators that reflect the three dimensions of sustainable development as equally important. National Income Accounting Systems will also need to reflect the same characteristics.



**4. Require corporate reporting on integrated sustainability parameters.**

It is important to understand how economic activities affect national economic, environmental and social dimensions of sustainable development. Much available technical guidance is available on how such sustainability reporting can be done, and some countries have already moved to require this important measure of accountability by law. The Conference could conclude that such national reporting should be made mandatory, to permit oversight of corporate practice and to guide enabling policies and institutional arrangements. This would contribute to measuring national progress and, if universally applied, would not affect competitiveness.

**5. Commit to enhanced investment and arrangements for public involvement.**

Moving towards sustainable development cannot be done by governments alone: they must guide and enable societies along that pathway. Societies must understand the nature of the changes required and be prepared to support them. National — as opposed to government — ownership of the approaches and measures to be taken needs to be cultivated and secured. This requires educational programmes that build understanding and could lead to changes in values and behaviour; access to information that enables and empowers citizens to make choices and inputs; and mechanisms for public involvement and consultation that are part of national governance arrangements.

**6. Make an affirmative intervention on the economic interests of youth.**

Youth unemployment — and the tensions to which it leads — is a global phenomenon. The Conference could decide to establish a global programme for training and employing young people to equip them with the skills and opportunities to share more equitably in the development process. This could be especially useful if linked to the nature and range of skills required to ‘green’ economies.

**7. Agree to take action to restore the world’s marine commons.**

The science on the degradation of the marine commons is unambiguous; the policy actions required are clear; but political decision-making lags behind. Effective action is invariably sacrificed to national interests and practices while, globally, there is a laissez-faire approach, even though the issue is vital to global environmental sustainability and many livelihoods. With present practice and approaches, the assets of the marine commons will continue to degrade, perhaps irretrievably, in spite of the many polices, programmes and instruments in place from national to global levels. These urgently need to be unified and gaps filled, including by paying attention to ocean areas not covered by present governance arrangements. The Conference could declare its commitment to the systemic action required to address this need and require that it be served through all the related global processes.



*“Commit to transforming land management and food production and consumption systems to ensure national and global food security.”*

**8. Commit to transforming land management and food production and consumption systems to ensure national and global food security.**

This is essential for many reasons: avoiding a new wave of converting forests and wetlands in response to the pressures for world food security; ensuring that existing agricultural land is used sustainably; addressing the multiple pressures that lead to processes of land degradation and desertification; and addressing the needs of the estimated two billion people who subsist in threatened ecological systems and are at the bottom of the human well-being ladder. The Conference could commit to increased investment in alleviating such processes and to the national policies and actions required.

**9. Help Least Developed Countries onto a ‘fast runway’ for Sustainable Development.**

The Conference could take global leadership on behalf of the world’s 48 most disadvantaged countries, and set the stage for a transformative moment in the

Global Partnership for Development. It could decide on global affirmative action to help them overcome impediments over domestic investible resources, access to modern technologies on affordable terms, and technical capacity for designing accelerated economic transformation and the institutional framework of policies, legislation, regulation, fiscal measures that will be required. This would also include establishing and harmonizing a public/private investment and financing platform.

**IO. Commit to an energy compact to expand access, efficiency, and investment in renewables.**

The Conference could catalyze a new global energy mix by relating energy demand (access, saving and efficiency) and supply (including incentive policies, subsidies, investments and the deployment of renewable energy sources). This could be an important lever for simultaneously addressing economic, social and environmental aspirations in the context of climate change targets and sustainable development.



# In the front line



PROF. JEFFREY SACHS  
Director, Earth Institute,  
Columbia University

The drylands are on the front line of climate change, and they include the world's poorest and most vulnerable people. We are already seeing in them the harrowing effects of climate change on poverty, survival, health, hunger, human well-being — and on peace itself, because the heavily impacted drylands are among the most unstable parts of the world. The stretch from Senegal through to Afghanistan is a region of great vulnerability, poverty, and deprivation of basic needs — whether food and nutrition, access to health and veterinary care, safety for crops and livestock, or, of course, water. Instability is rising throughout this region: conflicts that are branded under the political headline of extremism, or political conflict, often have at their roots the challenges of desertification, increasing droughts, more unstable rainfall, many more failed harvests than in the past, and — in some regions — an inability to grow crops reliably any longer. The current famine in the Horn of Africa, which has left more than ten million people fighting for survival, is a vivid and harrowing demonstration of the perils of desertification and drylands instability.

*“We need several different kinds of responses. The first is scientific. Secondly, there are huge gaps in our knowledge of the adaptation — or failure to adapt — of human systems. The third element is, of course, the intervention measures that are desperately needed for adaptation to climate change.”*



Population has also increased fourfold or more in such regions since the middle of the twentieth century. Climate change is hitting massive demographic pressures head on — an enormously threatening phenomenon. And yet these issues are not getting the level of global policy attention and response required. Even our standard and security approaches do not understand that underlying the surface manifestation of violence and conflict lies a much deeper and even more threatening danger — of ecological risk from climate change, demographic pressures, and many other pressures. Military engagement is not working, because such issues as hunger, livestock survival, and increasing stresses between sedentary populations and nomadic or semi-nomadic livestock herders cannot be addressed by these means. We have not seen a coherent, consistent, persistent, scaled, science-based approach to these challenges, because the resources and political attention have not been devoted to them.

We need several different kinds of responses. The first is scientific. We do not have a truly thorough understanding of how global and regional changes are really affecting the climates of the Sahel, the Horn of Africa, or West and Central Asia. One priority is a thorough, state-of-the-art, and detailed account of how the dryland regions are feeling the global climate signal. We need down-scaled models and better evidence about what the large models are saying about future threats for these regions. And we need an authoritative collection of weather station data to be made available to compile a detailed and thorough account of climate over the last thirty years, to create not just a baseline for the future, but a much richer base to enable us to attempt attribution of observed changes.

Secondly, there are huge gaps in our knowledge of the adaptation — or failure to adapt — of human systems. What has really happened in the populations in the Sahel since the

extreme drying in the 1970s? There has been some recovery; but how robust is it? How are nomadic and semi-nomadic communities doing? Can we get much more systematic data? Of course the Secretariat of the UN Convention to Combat Desertification collects a lot of this information and, crucially, helps disseminate it to the wider scientific and development community. But there's a lot more work to be done to get on-site real-time verification of these changes; to use remote sensing more systematically to measure fluctuations in herders, livestock, and assets, and to understand their vulnerabilities; and to see how demographic pressures are affecting these communities. Total fertility rates remain at six, seven, or eight children per woman in many locations. A demographic disaster seems to be on the way as a result of a huge overload on an already strained and fragile ecosystem that is only going to become more stressed in future. Widespread family planning and modern contraceptive services need



*“how can impoverished  
dryland communities  
ensure that  
the next generation  
is raised with the skills  
and knowledge  
to meet the growing  
challenges facing them?”*

to be put in place to mitigate the crash between expanding populations and the future climate.

The third element is, of course, the intervention measures that are desperately needed for adaptation to climate change. These range from preparedness for emergencies to other kinds of risk mitigation strategies, such as creating financial insurance, diversifying economic activities, or establishing alternatives in landscape management and water storage.

Impoverished communities facing a multiplicity of shocks and challenges need a holistic approach. The Millennium Villages Project has helped to pioneer such an approach in the drylands, such as in Dertu, Kenya, near the Somalia border. Its integrated strategy focuses on five key areas. The first aspect is the whole complex of livestock and crops. Second is the health system, which is affected by tremendous climate-related shocks, as well as by such huge challenges as epidemics of malaria, Rip Valley Fever, Rinderpest, or other endemic diseases. The third is education: how can impoverished dryland communities ensure that the next generation is raised with the skills

and knowledge to meet the growing challenges facing them? The fourth, critically, is infrastructure, starting with water — encompassing irrigation, storage, and water security in the event of drought — but also including transport, storage, the ability to connect local communities with regional and international markets, and telecommunications and internet connectivity, which can be a very powerful tool for these often very dispersed dryland populations. And the fifth area is business development, especially around livestock and other areas where increased value-added could bring greatly improved well-being to communities.

In 2008, the Swedish Government’s Committee of Climate Change and Development put out

a report on climate change and the drylands recommending how to build resilience, adaptability, emergency preparedness, and risk mitigation strategies. It proposed that there should be scaled-up pilots of community-based adaptation projects with poor and vulnerable communities, in urban and rural areas, in the drylands. Three years on, projecting is starting to take hold, as Ethiopia, Somalia, Kenya, Uganda, Djibouti, and South Sudan have joined together in a Drylands Initiative. They will work to use best practices and cutting-edge technologies to support their pastoralist communities’ effort to escape the scourges of extreme poverty and famine, supported by partners including Ericsson, Airtel, Novartis, Sumitomo Chemical, and the Islamic Development Bank. There is a pressing need for holistic, community-based responses — which are scientifically-grounded and address health and veterinary needs, water storage and other infrastructure, children’s education, the improvement and survival of herds, and linkages to markets. This is of paramount and growing importance, not only for these communities’ well-being, but for resolving what otherwise will be a growing epidemic of violent conflict.

# verbatim

Achim Steiner, UNEP Executive Director

“The world can no longer afford to delay restoring the health and wealth of the oceans.”

Jesse Ausubel, Vice-President of the Alfred P. Sloan Foundation and co-founder of the Census of Marine Life

“Awaiting our discovery are a half million fungi and moulds whose relatives gave humanity bread and cheese.”

Luc Gnacadja, Executive Secretary of the United Nations Convention to Combat Desertification (UNCCD)

“Droughts do not happen overnight. We stress the need for effective long term solutions to the root causes of famine in drought prone regions.”

Andreas Carlgren, Swedish Minister for Environment

“It is urgent to put a price on the services on ecosystems.”

Christiana Figueres, Executive Secretary of the UN Framework Convention on Climate Change (UNFCCC)

“No nation will solve climate change alone. And no nation is alone in feeling its impacts.”

Zhou Shengxian, Minister of Environment, China

“Environmental protection is the way to development.”

Georg Kell, Executive Director of the UN Global Compact

Business can only thrive in stable and enabling environments

# numbers

**2.2 million**

Species dwelling in the ocean depths  
— **UNEP-WCMC**

**500 million**

People in developing countries who rely on fisheries and aquaculture for livelihoods — **Achim Steiner**

**145**

Countries that share one or more international river basins  
— **UNEP**

**US\$ 150 – 200 billion**

Estimated annual value of internationally traded forest products — **UNEP Forest and Green Economy Report**

**5–10 million**

Hectares of farmland that are lost each year to degradation  
— **UNEP IWMI Ecosystems Approach to Water and Food Security**

**2.1 billion**

Number of people living in the world's drylands — **Millennium Ecosystem Assessment**

**50 billion**

Migratory birds that make phenomenal annual journeys across borders and regions of the world — **African-Eurasian Waterbirds Agreement**

**12 million**

People in the Horn of Africa who are affected by drought — **Guardian**

**90%**

of China's 393 million hectares of grasslands are degraded to some degree, while 27.5% of its land territories are subject to desertification — **Zhou Shengxian, Minister of Environment, China**

UNEP undertakes a wide range of activities in promoting and facilitating the development and uptake of clean technology. Here are a couple of recent examples. For further examples of UNEP's climate change work visit: [www.unep.org/unite/30Ways](http://www.unep.org/unite/30Ways)



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## New “Cool Tools” for Waterbird and Wetland Conservation

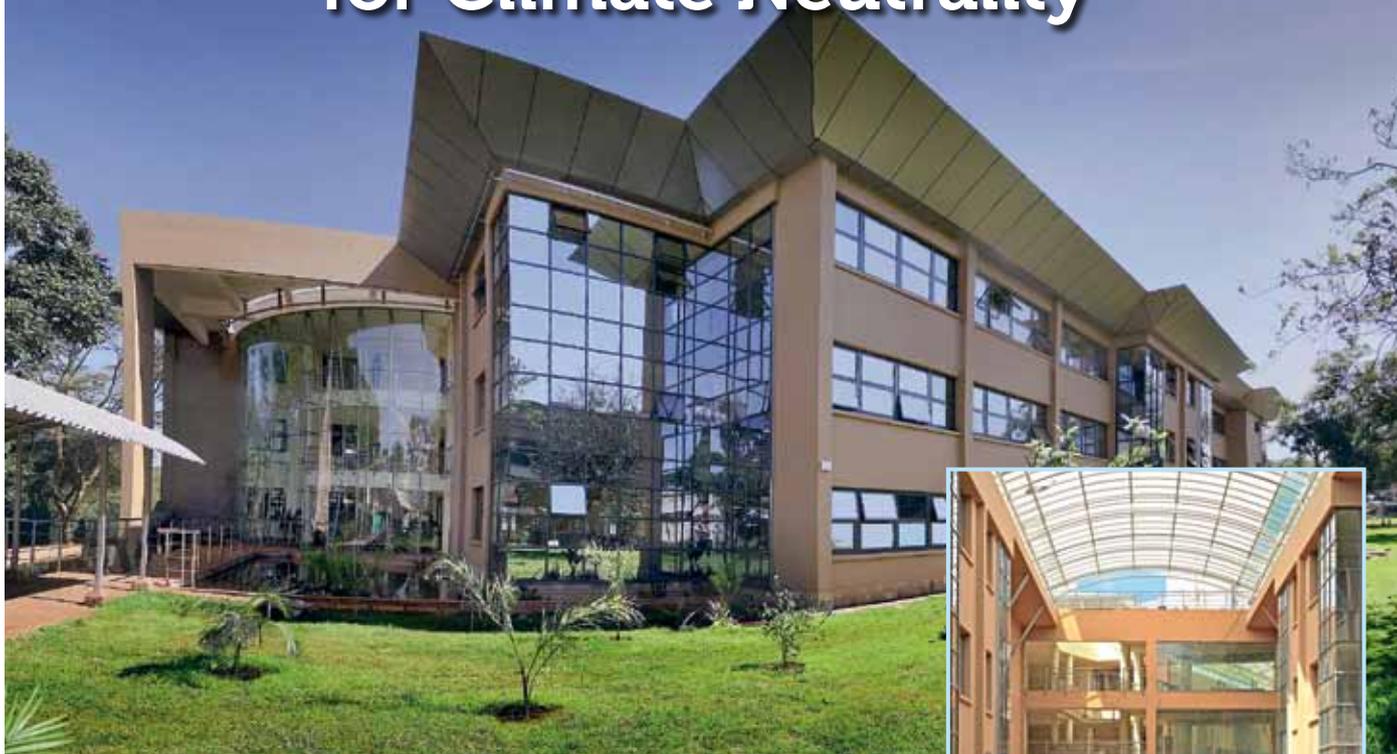
An innovative tool for tracking the migratory patterns of waterbirds has won first prize in an ESRI International Conservation Mapping Competition. The “Critical Site Network Tool” (CSN Tool) and the supporting “Flyaway Training Kit” (FTK) are some of the products of the Wings over Wetland (WOW) project, the largest flyway-scale waterbirds conservation initiative ever attempted, covering the 118 countries included in the range of the African-Eurasian Waterbirds Agreement (AEWA).

The WOW project is funded by the GEF (Global Environment Facility), the German Government and several other donors, and it is implemented by UNEP as a joint effort by leading global conservation organizations and partners such as Wetlands International, BirdLife International, the AEWA, the Ramsar Convention on Wetlands, and UNEP-WCMC (World Conservation Monitoring Centre) and United Nations Office for Project Services (UNOPS).

An estimated 50 billion migratory birds make phenomenal annual journeys across borders and regions of the world, covering thousands of kilometers. For this reason, they are a link between countries and ecosystems, making them one of the world's great wonders. Because of their use of several habitats as stopover sites during migration, the health of migratory birds is an important indicator of the state of our environment.

The CSN Tool will be instrumental to improve our understanding of waterbirds migration, and it will promote their conservation through better management and more informed decision making at the flyways scale. This will also help combat the adverse effects of climate change by protecting the critical wetlands habitats used by water birds. These habitats are also important for the livelihoods of millions of people in rural communities living around those wetlands.

# UNEP wins UN21 Award for Climate Neutrality



The United Nations Environment Programme (UNEP) won the UN21 Award for Climate Neutrality. UNEP was the co-winner of the award along with the UN Department of Field Support during a ceremony at the Dag Hammarskjöld Library Auditorium at UN Headquarters in New York in August. Held every year, the UN 21 Awards recognize outstanding initiatives by United Nations staff members or teams to improve the delivery of the Organization's programmes and promote its values. The winners' stories are intended to inspire other staff members to follow their example, replicate good practices and make strides to improve the delivery of UN programmes and services.

UNEP, which has been climate neutral since 2008, is at the forefront of ongoing sustainability efforts within the United Nations. Last year, it became the first UN organization to publish an Emission Reduction Strategy, including a target to reduce emissions by three per cent per annum in 2010-12 (from 2009 levels). Implementing the efficiency measures could save UNEP an estimated US\$800,000 per year. The new office facility that houses UNEP and UN-HABITAT headquarters in Nairobi also set a new benchmark for sustainable buildings when it was opened by UN Secretary-General, Ban Ki-moon in March 2011.



# Common Boundaries

Human pressure on the planet is reaching a saturation point which, if exceeded, may undermine social and economic development. This is new, as are its effects on our global commons — the stratospheric ozone layer, the climate system, the biosphere, the hydrosphere, and the cryosphere — verified through empirical observations over the past 20 years or so. These manifestations include, the rapid depletion of the ozone layer, a continued exponential rate of biodiversity loss, degradation of air quality, land and freshwater, aerosol loading and chemical pollution at regional scales, climate change, and unsustainable appropriation of such finite natural resources as oil and phosphorus. The impacts are starting to manifest themselves in ways that affect economies around the world.

The scale of human influence is so large that we may have entered a new geological epoch, the Anthropocene, where humanity constitutes

a geological planetary force. We may therefore be pushing ourselves out of our current epoch, the Holocene, the last 10,000 years of inter-glacial, which has provided extraordinarily stable environmental conditions, enabling world development as we know it.

The driving forces behind this globalization of environmental challenges starts in the mid 1950s. Up until this point, the relative impact from humanity on the global commons was low — the environmental impacts from almost 200 years of industrialization remained, until then, largely limited to local and regional impacts on water, land, air. After mid-century the human enterprise changes pace. The industrial metabolism goes to scale, and we start seeing an exponential increase in social wellbeing, GDP growth, population numbers, health improvements and human impacts on the environment. So, this is the point when global environmental



JOHANN ROCKSTRÖM

Director,  
Stockholm Environment Institute

change manifests itself on essentially all parameters that matter for human wellbeing: from habitat loss to climate change.

Three additional and interacting factors accentuate the challenge. The first is the growth of population and affluence: we are largely committed to grow from the current 7 billion to 9 billion people by 2050, in a world that is rapidly urbanizing and becoming more affluent (the majority of the world population, which remains poor, has so far claimed only a limited fraction of the global commons, while having a right to a share of them). Secondly, science increasingly indicates the risk of abrupt and irreversible changes, when systems — from local ecosystems to the climate — are pushed across tipping points. This can lead to catastrophic shifts in conditions for nations and regions, potentially triggered by changes in global commons, such as increasing greenhouse gases in the atmosphere, triggering a destabilization of the Greenland ice sheet. The third is the growing evidence of our social and economic dependence on ecosystem services for human wellbeing, from such local functions as fertile soils to global ones like a stable Arctic.

We need to rethink human development in this new Anthropocene epoch. We urgently need to bend the curves of negative global environmental change in order to navigate within a safe operating space in the

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Earth system. Global commons must be governed as an integral part of national and regional development.

The concept of planetary boundaries provides a framework in this context. It identifies environmental processes that determine the stability of components of the Earth system — and proposes sustainable boundaries for the key variables that determine change for each process, set in order to try to avoid tipping points that may cause abrupt and deleterious regional and global disruption.

Nine such planetary boundary processes have been proposed. These include the three global commons where there is evidence of large scale thresholds — climate change, depletion of the ozone layer, and ocean acidification — and processes that provide regulatory functions that determine the resilience of major biomes — and ultimately the Earth system — land use change, freshwater use, the rate of biodiversity loss, and human interference with the global nitrogen and phosphorus cycles. The final two are chemical pollution and aerosol loading. Safe boundaries have been quantified for the first seven and were chosen at the lower — more risk averse — end of the uncertainty range articulated by science, as a way of applying a precautionary principle: for climate change, for example, it was placed at 350 ppm CO<sub>2</sub> (parts per million), when science indicates the risk of crossing tipping points in the range of 350 – 550 ppm CO<sub>2</sub>.

Together these nine planetary boundaries provide a safe operating

space for humanity. The first analysis indicates that we have transgressed the safe space for three of them — climate change, rate of biodiversity loss and extracting nitrogen from the atmosphere. This places us in a slippery and risky danger zone where we cannot exclude hitting tipping points: the accelerated melting of ice in the Arctic may be one early warning of such a non-linear dynamic.

Governance of the global commons is required to achieve sustainable development and thus human wellbeing. We can no longer focus solely on national priorities for economic development and environmental protection. The influence all nations have on the global commons — at a point of growing environmental saturation — generates worldwide feedbacks that influence local economies. Nor can we focus on climate change alone. We must now simultaneously address sustainability at the planetary scale for all the key environmental processes linked to the stability of the Earth’s biophysical systems.

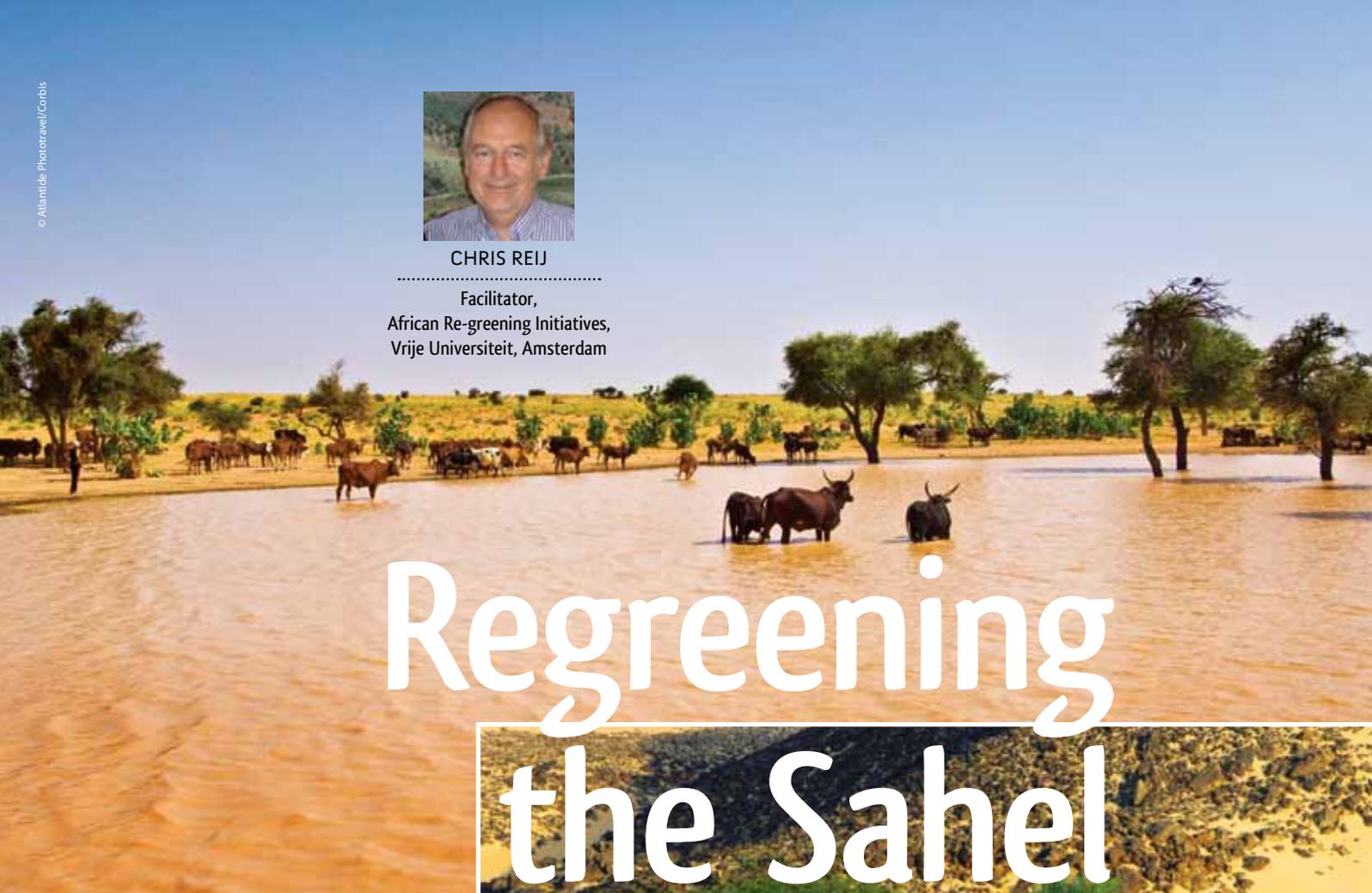
The planetary boundary concept may be useful in supporting the governance of our global commons. We need to recognize the social implications of living within safe boundaries, and all the boundaries have to add up, within safe levels, at the global scale. Thus no nation or region can appropriate a larger share of the global commons without both transparently reporting this to all other nations, and agreeing on mechanisms to ensure that the aggregate use of planetary space remains within safe boundaries. Staying within the safe operating space in the Anthropocene, in a world with growing populations and affluence, will require distributing the planetary space among nations. This is, to say the least, a challenging but necessary task, which, when we succeed, will benefit humanity as a whole for generations.



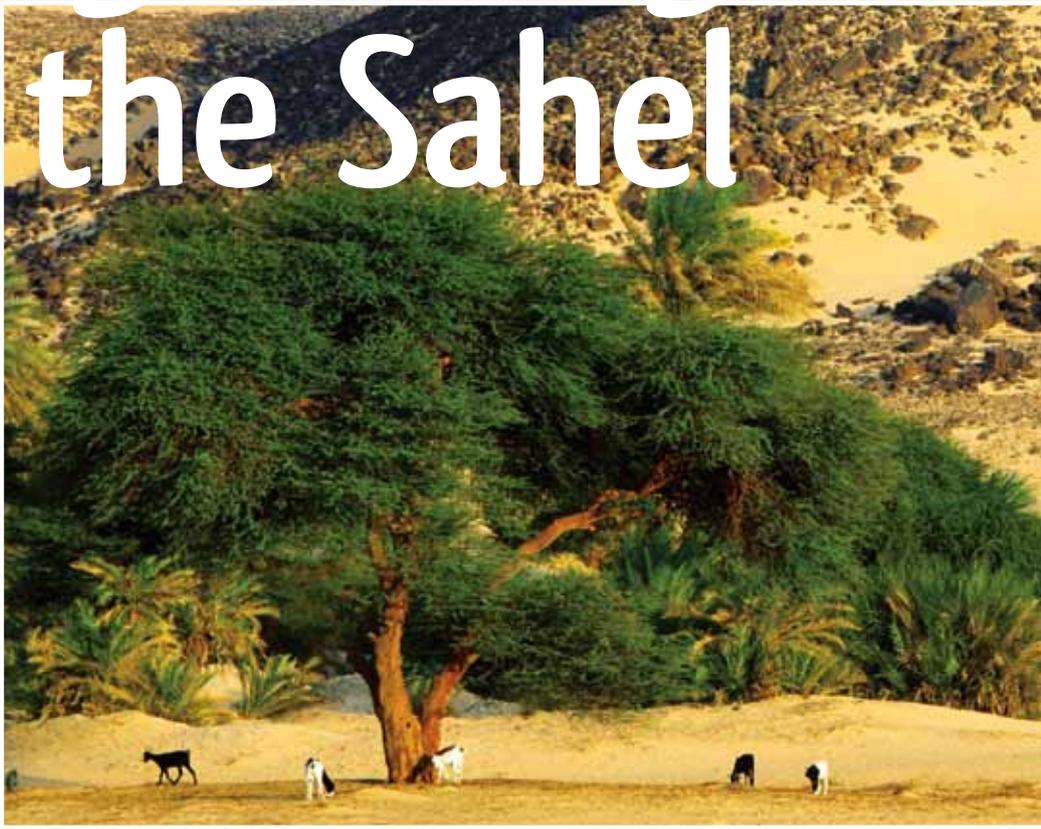


CHRIS REIJ

Facilitator,  
African Re-greening Initiatives,  
Vrije Universiteit, Amsterdam



# Regreening the Sahel



Something surprising has been found to be happening in the Sahel. Recent studies on long-term trends in agriculture and environment in Niger's densely populated Maradi and Zinder Regions show that local farmers have greened some five million hectares, simply by protecting and managing the natural regeneration of trees and bushes on their land — producing the largest scale environmental transformation in the Sahel, possibly in Africa. This process began around 1985, but — although some researchers had noticed that farmers in some villages had increased the number of trees, no one had come to grips with the scale of the re-greening until 2006. Then the use of high resolution satellite images, combined with field visits, allowed researchers to work out what was happening.

Over the last two decades, farmers in Niger have grown 200 million new trees on their cultivated fields.

Where farmers had only 2 or 3 trees per hectare 20 years ago, they now have 40, 60 or even over 100. Remarkably, they did not plant them, but protected and managed trees and bushes which regenerated spontaneously from underground root systems or from seeds remaining in the topsoil. They thus achieved

almost 20 times more than all tree planting projects in Niger over the same period combined; though these planted about 65 million trees, an average of only about 20 per cent survived. The farmers, moreover, did this at a very low cost, since protecting and managing natural regeneration does not require estab-

“Conflicts between herders and farmers have decreased by about 80 per cent as the land has been re-greened and since the resource pie has grown, there is more to share.”



lishing tree nurseries or transporting seedlings to planting sites.

What triggered this re-greening? The Sahelian droughts and environmental crisis of the 1970s and 1980s put many farmers with their backs against the wall. They had to fight land degradation or migrate. A non-

governmental organisation catalysed the process by offering farmers food aid during two drought years in the mid-1980s in exchange for protecting natural regeneration, and farmers quickly realised the benefits of re-greening. A survey of about 400 farmers showed that:

- ✔ trees reduce wind speed, and thus young crops are no longer destroyed by windblown sand; as a result, farmers now only need to plant crops once, instead of having to try three or four times, as they did 20 years ago;
- ✔ some tree species produce fodder, allowing farmers to increase the number of their livestock;
- ✔ instead of being burned as fuel, like 20 years ago, all dung is used on the cultivated fields, helping to maintain and improve soil fertility;
- ✔ farmers are aware that some species, notably *Faidherbia albida*, improve soil fertility by fixing nitrogen from the air (depending on density and age, they can fix 80 to 90 kilogrammes per hectare);
- ✔ women now only have to spend 0.5 hours a day collecting firewood compared to 2.5 hours 20 years ago;
- ✔ trees contribute to food security even if crops fail, for they produce edible leaves and fruit;
- ✔ during drought years, poor farmers literally can survive by pruning trees and selling the wood to buy food;
- ✔ conflicts between herders and farmers have decreased by about 80 per cent as the land has been re-greened: since the resource pie has grown, there is more to share.

A report published by the International Food Policy Research Institute estimates that new agroforestry systems on the re-greened five million hectares produces an extra

500,000 tons of cereals a year, feeding an additional 2.5 million people. The trees, moreover, are capital assets, which help increase aggregate agricultural production and thus help reduce rural poverty. The annual production value of the new trees is at least around 200 million euros, which all goes to the farmers, in the form of produce, if not cash.

This process of re-greening by farmers is not confined to parts of Niger. Many new agroforestry systems, big and small, can be found in the Sahel. Farmers in Mali’s Seno Plains — between the Plateau Dogon and the Burkina Faso border — for example, have protected and managed trees on 450,000 hectares of their land. About 90 per cent of the trees are less than 20 years old. Similarly farmers in Senegal’s Kaffrine region, who visited the re-greening in Niger, began to protect and manage natural regeneration on their return. Their re-greening covers about 30,000 hectares and it is spreading like wildfire.

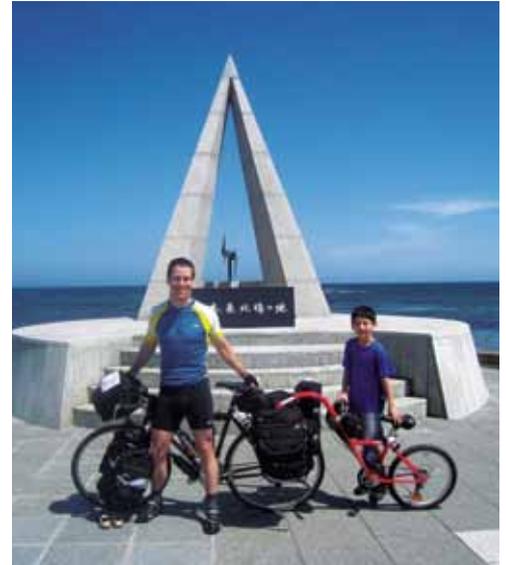
The African Re-greening Initiative (ARI) which aims to expand the scale of such successes, currently operates in Burkina Faso, Mali and Niger and is now planning to expand to other African countries. Its strategy includes organizing farmer-to-farmer study visits, developing national policy dialogues around agricultural policies and forestry legislation, and mobilizing the attention of national and international media to re-greening.

Developing agroforestry increases aggregate production and creates more drought-resilient farming systems. It is the only major low cost option for intensifying agriculture open to small-scale farmers in Africa with limited financial and resource capital. Experience shows that they will invest in trees on their land if they perceive that they own them. For, as farmers in Tigray, Ethiopia, say: “trees are our backbone”.

## CHARLES and SHO SCOTT

Charles and Sho Scott are endurance sports enthusiasts who use their passion towards environmental sustainability. In 2009, Mr. Scott and his 8-year old son Sho were named “Climate Heroes” by the United Nations Environment Programme. They rode connected bicycles the length of mainland Japan, covering 2,500 miles in 67 days to raise money for UNEP’s Billion Tree planting campaign.

Their more recent challenge was a 1,500-mile trek through Iceland on connected bicycles with Sho’s 4-year old sister joining them in a bike trailer. Mr. Scott is currently writing a book about the Japan ride called “Rising Sons.”



## MICHAEL SAM MULI and RUTH CHERONO SEGO

Michael Sam Muli, 18, Ruth Cheroni Sego, 23, have been selected as Young Environmental Envoys for Kenya by the United Nations Environment Programme (UNEP) and Bayer, a global innovator enterprise with core competencies in the fields of health care, nutrition and high-tech materials.

Mr. Muli, a student in Environmental and Bio-systems Engineering at the University of Nairobi, put forward a green energy project that aims to replace firewood and charcoal used as cooking fuel in households with briquettes made from dried foliage and waste paper. The project seeks to reduce carbon emissions from the burning of fossil fuels and to create jobs and income for local residents through the production and sale of the cleaner fuel briquettes.

Ms. Sego, an Environmental Health student at Kenyatta University, Nairobi, put forward a proposal focusing on the sustainable production of castor oil as a biofuel. The project explored how the castor oil plant, which is indigenous to East Africa, could be sustainably cultivated to help meet the fuel needs of communities in Kenya, but in a way that did not adversely affect food production.

## SYLVIA EARLE

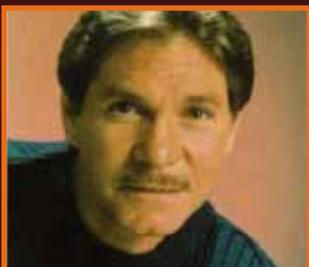
The Global Commons has a strong advocate with Sylvia Earle. As an oceanographer whose passion for the environment has great depth, Sylvia Earle is also an explorer, lecturer and research scientist. She has led more than 60 expeditions and logged more than 6,000 hours underwater, including leading the first team of women aquanauts. She has also set a record for solo diving to a depth of 1,000 meters (3,300 feet).

She has worked hard to raise public awareness of the damage being done to our aquasphere by pollution and environmental degradation and has received more than 100 national and international honors, including is the 2009 TED Prize for her proposal to establish a global network of marine protected areas. She calls these marine preserves “hope spots to save and restore the blue heart of the planet”.

## KWON BYONG HYON

Ambassador Kwon Byong Hyon of the Republic of Korea is the first Sustainable Land Management (SLM) Champion for the Convention to Combat Desertification (UNCCD).

A lawyer by profession, with a distinguished diplomatic career, Ambassador Kwon set up the Future Forest organization to raise awareness about desertification. In 2005, he begun a wall made of natural forests to ‘tame the yellow dragon’, or deserts, known as the “Korea-China Friendship Great Green Wall”. His target — planting one billion trees in China’s Kubuchi Desert — demonstrates that degraded land can be reclaimed, and to provides a research site on reclaiming degraded land. The Great Green Wall already has a 70 per cent success rate in tree planting.



## CHRISTOPHER STONE

As the world gears up for the Rio+20 Conference next year, Christopher Stone has plenty of experience to share, having helped shape resolutions on International Law of the Environment for the Rio Earth Summit Conference in 1992. An authority and teacher of environmental and global issues, Professor Stone has contributed to several spheres including international environmental law, environmental ethics, and trade and the environment.

He has researched a variety of areas affecting sustainability, including alternate energy policy, climate change, biodiversity, and ocean policy. He is also an advisor to the Foundation for International Environmental Law and Development in London, and the Center for International Environmental Law.



## MARK DODD

Mark Dodd is a UK film director who has won the 2011 International Wildlife Film Festival award as the best independent film for his documentary “The Man Who Stopped the Desert”, a film about Yacouba Sawadogo, a small-holder farmer in Burkina Faso who revived a traditional agricultural technique to restore barren land. The beautifully shot film, showing that one man’s conviction can benefit many thousands living in the Sahel region of Africa, will leave you moved and inspired.



# Fishing for solutions



STEPHEN J. HALL

Director-General,  
The WorldFish Center

Fish has been the single most important source of the world's animal protein for most of the past thirty years. But though per capita consumption has almost doubled worldwide over that period, it has remained low in much of Africa and parts of Asia.

Paradoxically, however, the people of these regions — where undernutrition is most prevalent — depend more on fish as their major animal source food than those in Europe, Japan, Australia and North America, even though they actually get less of it. Six sub-Saharan African countries, for example, rely on fish for more than half of their animal protein, but the region still suffers the world's lowest per capita fish consumption.

The prevalence of fish in the diet of people with the lowest overall animal source food consumption and highest levels of undernutrition highlights the importance of sustaining and improving access to it for the world's poor. Helping more of them get more of this preferred, nutritious food could profoundly improve health and nutrition in the short to medium term.

Achieving this means sustaining the world's wild capture fisheries. This is because the countries that most depend on fish for food rely primarily on catches from the wild: although aquaculture continues to grow, there is no immediate prospect that it can replace these supplies. And since aquatic ecosystems are widely distributed throughout remote rural areas in many parts of the world, the fisheries they support often serve vital functions in supplying livelihoods and safety nets against famine that governments have so far been unable to provide. It is, of course, not enough for there to be sufficient food and services, they must also be available and accessible to the people who need them: wild fisheries often achieve this in developing countries without any help from us.

Yet, despite the importance of fisheries, we have, at best, had mixed success in making the most of our resources by managing them to ensure a sustained — and, where possible, enhanced supply. This is true for the inland fisheries, marine ones under national jurisdiction in Exclusive Economic Zones, on the high seas and for straddling migratory stocks. A recent study co-authored by 21 researchers and published in *Science* magazine examined in detail ecosystems that accounted for a quarter of world fisheries area and catch — and concluded that while “management actions have achieved measurable reductions in exploitation rates in some regions, a significant fraction of stocks will remain collapsed unless there are further reductions”. The Food and Agriculture Organisation assessments concur with this conclusion.

Much over-exploitation arises from the often free and open (or too cheap and insufficiently well-regulated) access to the resource. Some fisheries, such as those in the high seas,

are genuine global commons: many others share similar characteristics, but reside under national jurisdiction. Sadly — although the vast body of literature that followed Garret Harding's description of “The Tragedy of the Commons” indicates that we understand the problem — we are still not very good at doing anything about it.

So, given our failures to date, what do we need to do now and how should we do it?

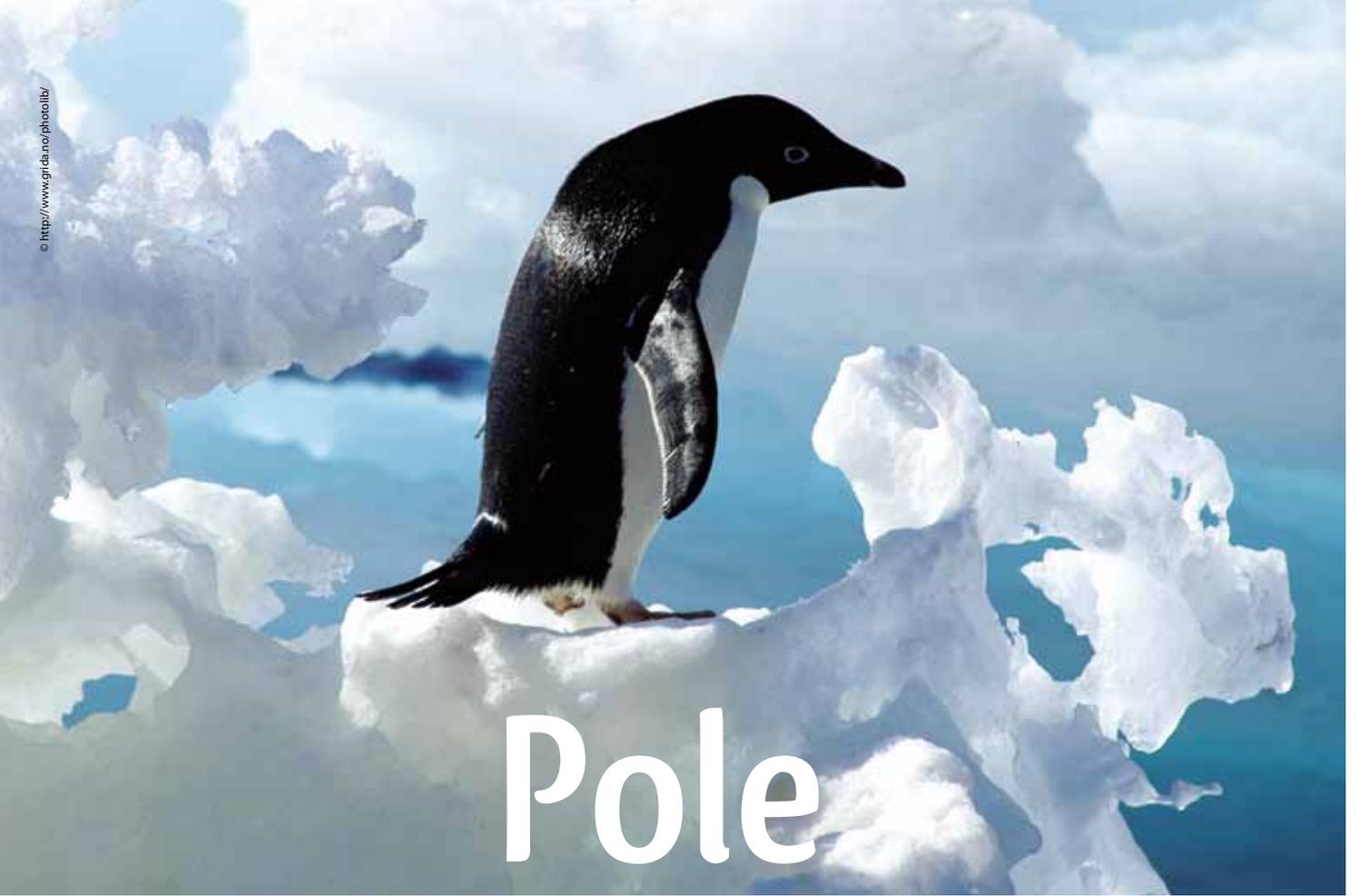
Five priority objectives that apply both on the high seas and in many fisheries under national jurisdiction supply the answer to the first question. These are:

1. Recognising and addressing structural weaknesses in access regimes (i.e. the design of fishing rights);
2. Minimising the ‘rent drains’ resulting from fuel, and other inappropriate, subsidies;
3. Minimising the prevalence of illegal and pirate fishing;
4. Ensuring inclusion of marginalized and poorer people in global value chains;
5. Incorporating environmental externalities into the cost of fisheries;

The much deeper question, of course, is how to achieve these objectives. Here I offer no simple prescriptions and think we should be sceptical of those that do. Instead, I believe we need to think again about how best to have the conversations among all the relevant actors so as to arrive at durable, adaptable solutions for global, regional and national fisheries. And, given the general failure of current institutions to resolve these issues, we may need to think about new ones that might help.

One option worth discussing, for example, is establishing a Global Action Network (GAN) — a global governance arrangement that focuses on a specific public good through an inter-organizational network — for fisheries. Serving as impartial bridging agents among diverse organizations, and driving for systemic change, GANS are increasingly seen as effective vehicles for addressing gaps in global governance concerning ethics, communication, and implementation. Familiar examples include the Global Alliance for Vaccines and Immunization, The Global Alliance for Improved Nutrition and the Global Water Partnership.

Given such apparent promise, should we not think about assembling an inclusive non-hierarchical peer network of institutions to help address local to global fisheries issues — and learn lessons in the process? Such an approach would not remove the need to strengthen and clarify roles and performance expectations for such intergovernmental institutions as the UN Agencies and Regional Fisheries Management Organisations: though needing reform, these have an important and continuing role in establishing normative standards. Nor should we forget the importance of strengthening global market mechanisms through such institutions as the World Trade Organisation, which appears to be making good progress on fisheries subsidies. But though our current institutions are necessary, they show no signs of being sufficient for the problems at hand. So — despite the considerable challenges to establishing an effective Global Action Network — it is surely worth considering exploring this option for helping meet the challenge of sustaining the world's fisheries so that they continue to underpin supplies and help meet our food security needs.



# Pole Position



MANFRED REINKE

Executive Secretary,  
Antarctic Treaty

Changes occur faster in the polar regions than elsewhere, making them the most sensitive indicators of global change. They are also the last extended pristine areas on the planet with extremely sensitive and unique ecosystems. And they are the drivers of the global climate; since climate systems are strongly coupled, changes in these regions have a strong impact on living conditions worldwide.

Environmental protection has been on the agenda of the Antarctic Treaty Consultative Meeting since the early sixties — soon after the birth of the treaty, one of the last century's most successful international instruments focused on peace and international collaboration. Signed in Washington in December 1959 by the twelve countries whose scientists had been active in and around Antarctica during the International Geophysical Year of 1957-58, it has since been acceded to by 36 other nations.

Though it does not itself contain environmental elements, the first conservation scheme applicable to Antarctica — the Agreed Measures for the Conservation of Antarctic Fauna and Flora — was adopted by the Antarctic Treaty Consultative Meeting in 1964. The Consultative Parties subsequently developed the Convention for the Conservation of Antarctic Seals (CCAS), which entered into force in 1978.

Negotiations under the UN Convention on the Law of the Sea raised concerns about the potential large scale exploitation of krill, which could have severe consequences for other Antarctic life which depends on it for food. The Convention on the Conservation of Antarctic Marine Living Resources, which entered into force in 1982, provides for the conservation and rational use of krill, fin fish and other marine resources. Unlike other regional fisheries management organizations, it is based on an ecosystem approach to conservation, and requires that effects on ecosystems be taken into account in managing the harvesting of marine resources.

In a similarly precautionary approach, the Consultative Parties agreed to start negotiations on a comprehensive regime on mineral resources of Antarctica in 1981 to minimize the environmental and political problems of unregulated exploitation. The Convention on the Regulation of Antarctic Mineral Resource Activities was concluded in Wellington in 1988, but never went into force since France and Australia declared the following year that they would not ratify the contract.

“The world had changed,” recalled Michel Rocard, the former Prime Minister of France. “Trends in ecological policies have been appearing everywhere, the requirements have widened. Two Prime Ministers, linked by friendship, Robert Hawke of Australia and myself, announce that they refuse to send the Convention to their Parliaments for ratification and request the opening of much more ambitious negotiations. Italy and Belgium followed immediately, Norway slightly later.”

This opened the door for negotiations on a Protocol on Environmental Protection to the Antarctic Treaty, which was signed only two



*“... the development of a comprehensive regime for the protection of the Antarctic environment and dependent and associated ecosystems is in the interest of mankind as a whole.”*

years later in Madrid in October, 1991 and entered into force in 1998. It states that “... the development of a comprehensive regime for the protection of the Antarctic environment and dependent and associated ecosystems is in the interest of mankind as a whole”. It designates Antarctica as a “natural reserve, devoted to peace and science”, sets out basic principles applicable to human activities in Antarctica, and prohibits all activities relating to Antarctic mineral resources, except for scientific research. Up to 2048 it can only be modified with the unanimous agreement of all Consultative Parties to the Treaty, while the prohibition on mineral resource activities cannot be removed unless a binding legal regime covering them is in force

The Protocol established the Committee for Environmental Protection as an expert advisory body to provide up-to-date advice and formulate recommendations on implementing it and constitutes the

strategic guideline for future environmental policies in the Antarctic Treaty Area.

In 2009 the Scientific Committee on Antarctic Research published its comprehensive study “Antarctic Climate Change and the Environment”, a highly cross-disciplinary effort, with the goal of “reflecting the importance of the continent in global issues, such as sea-level rise, the separation of natural climate variability from anthropogenic influences, food stocks, biodiversity and carbon uptake by the ocean”.

This year — the 50th Anniversary of the Treaty’s entry into force and the 20th of the signing of the Protocol on Environmental Protection — the Consultative Parties reaffirmed their continued commitment to upholding it and “their intention to continue “strong and effective cooperation” by inter alia, “continuing to identify and address emerging environmental challenges and strengthening the protection of the Antarctic environment and its dependent and associated ecosystems, particularly in relation to global climate change and human activities in the region, including tourism.” They also appealed to States that are party to the Treaty, but not yet to the Protocol, to ratify it, thus “reaffirming their will to protect the Antarctic environment, in the interest of mankind as a whole and to preserve the value of Antarctica as an area for the conduct of scientific research”.

# Adapting the Commons



KELLY LEVIN

.....  
Research Director,  
World Resources Report 2010-2011



MANISH BAPNA

.....  
Interim President,  
World Resources Institute



Environmental concerns have only relatively recently concentrated on the global commons, which are the shared resources that no one owns but all life relies upon. In the early days, the focus was mostly on local impacts — on traditional pollutants such as acid rain and sewage, on garbage damming rivers, or on pesticides. These problems were acute and tangible. Rivers caught fire and smog was so thick that visibility across cities vanished. True, the problems of the global commons were rising in this backdrop, but it was not until later in the 20th century that the environmental challenge spread planetwide, when governments woke up to the reality of a rapidly transformed world. In a few short decades, global forces of consumption, production, and population have made a profound, at times irreversible, mark on the planet's shared resources.

There is now no greater challenge to the wellbeing of the global commons than human-induced climate change. Since the industrial era began to trigger large-scale releases of fossil fuels, global average surface temperatures have risen by 0.8°C, already resulting in significant changes in physical, hydrological and ecological systems.

Worse, global climate change is not occurring in isolation, but is exacerbating other problems of the global commons. As the Intergovernmental Panel on Climate Change records climate-induced reductions in krill, for example, lead to the depletion of many fish species, undermining, in turn, the health of marine ecosystems, food supplies and livelihoods around the world. The Antarctic Peninsula has warmed substantially in recent decades causing 87 per cent of the edges of glaciers to retreat, with grave implications for life on the unique continent. Worldwide warming of 2-3°C above pre-industrial temperatures is very likely to herald major changes in terrestrial and marine ecosystems and likely to increase the risk of extinction for 20-30 per cent of species.

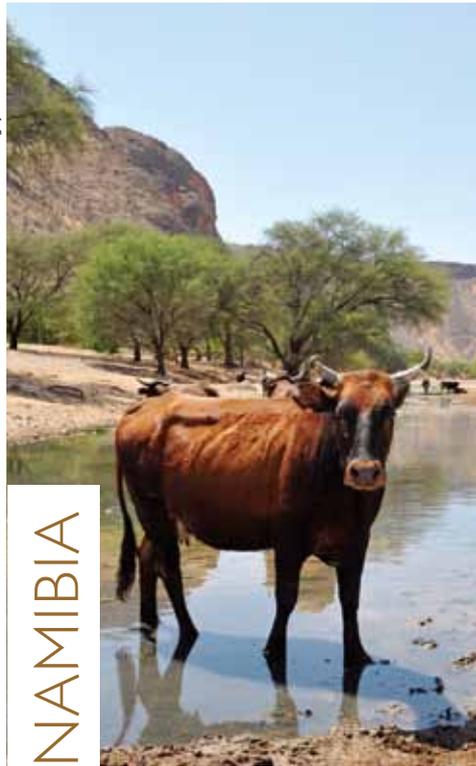
*“Worldwide warming of 2-3°C above pre-industrial temperatures is very likely to herald major changes in terrestrial and marine ecosystems and likely to increase the risk of extinction for 20-30 per cent of species.”*

These threats underscore an urgent need for steep reductions in greenhouse gas emissions. They also make adaptation an imperative, given the unavoidable impacts that will result from the greenhouse gases already emitted and the warming that will in future follow, thanks to the heat carrying capacity of the world’s oceans.

Over the past two years the 2010-2011 World Resources Report, developed in partnership between UNDP, UNEP, the World Bank and the World Resources Institute, has engaged government leaders and practitioners in Africa, Asia and Latin America to learn from, and build on, existing adaptation efforts. It focuses on how national policy makers and planners can make better decisions in a changing climate — an increasing priority for preserving the global commons, developing recommendations for public engagement, information collection and supply, institutional design, planning and policymaking tools, and resources. It also reports promising examples of how governments are integrating climate change risks into their practices, which could provide models for scaling up adaptation in the developing world. These include:

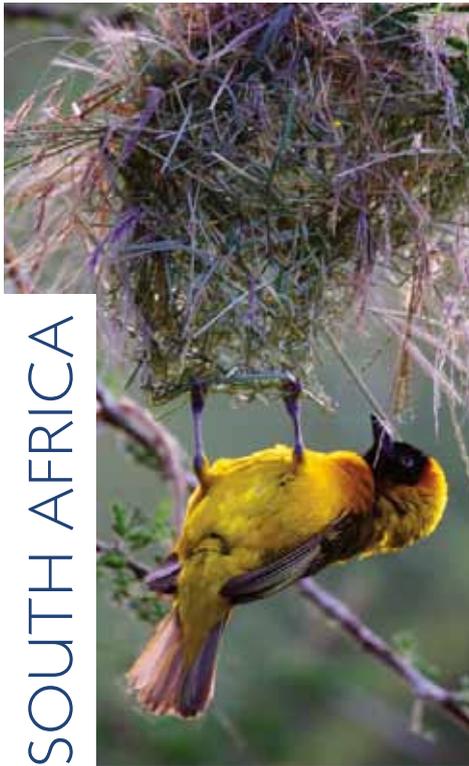


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NAMIBIA

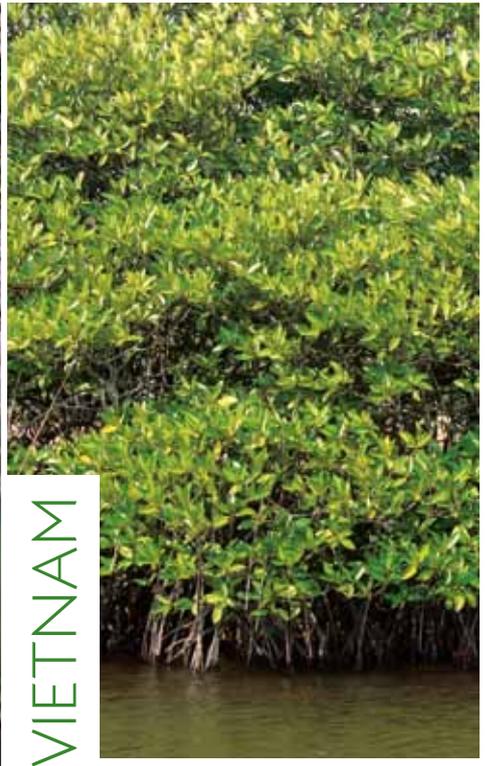
Farmers are engaged in a constant struggle against the desert in Namibia: the driest regions receive on average only 20mm of rainfall a year. With climate change likely to bring even shorter rainy seasons in future, Namibia’s government has established local Forums for Integrated Resource Management where farmers and extension service providers exchange information about how to help prevent land becoming infertile. Farmers monitor local rainfall, the availability of fodder and the condition of livestock, while officials provide guidance on sustainable farm management and good animal health practices. Farming communities have also established rotational grazing and rested grazing lands in danger of degradation and — if informed a dry period is coming — sell livestock, avoid over-grazing and bank the income. Such two-way information channels between public officials and farmers help enhance the ability of communities to withstand droughts and land degradation, and can be replicated both within and beyond Namibia.



SOUTH AFRICA

One of the world’s 17 mega-diverse countries, South Africa is home to almost 10 per cent of the world’s total known bird, fish and plant species and almost 15 per cent of its coastal and marine ones. Climate change threatens to compound threats to biodiversity from urban and industrial growth, since there are likely to be more droughts and floods, lower river levels and more frequent wildfires.

So, South Africa is pursuing an innovative strategy for maintaining enough intact natural habitat to protect threatened species and secure wildlife corridors. It has developed biodiversity plans, mapping whole areas’ natural features and species and use of land and resources. Climate change “design principles” have been integrated into the plans, prioritizing connectivity and refuge areas to enhance the resilience of species. Local authorities use them in developing municipal plans, helping them to decide where conservation should be prioritized and where development can be promoted.



VIETNAM

Being in the tropics, Vietnam is extremely vulnerable to impacts from climate change, particularly sea level rise. So the government has institutionalized the large-scale restoration of mangroves — with support from donors including the World Bank and the Red Cross — adding 15,000 hectares of protective forest to the country’s coastline since 2001.

The results, however, have been very different in the north and south of the country. In the north, the plantations have been officially protected, denying locals user rights, and creating conflict and resentment. In the south, the restoration has been coupled with efforts to alleviate poverty and diversify livelihoods — thus winning local communities’ support. The experience suggests that incorporating adaptation within a comprehensive development planning process is more likely to succeed in the long term.

*These case studies and other research can be found in full at [www.worldresourcesreport.org](http://www.worldresourcesreport.org)*



## Global commons: useful links

This page contains links to websites from Governments, international organizations, non-governmental organizations, businesses, media and other groups from around the world to help you research issues related to global commons. We have compiled these links from our own review of the vast amount of information available on the Internet to help you to find the most relevant sources for your research. *Our Planet* magazine does not, however, endorse the viewpoints of any of the groups to which we link, and we cannot guarantee the accuracy of the information posted on these sites. Rather, we hope to provide you with a broad range of opinions and perspectives.

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### [www.unep.org](http://www.unep.org)

#### [www.gpa.unep.org/](http://www.gpa.unep.org/)

Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA-Marine) was adopted by the international community in 1995 and to prevent the degradation of the marine environment from land-based activities by facilitating the realization of the duty of States to preserve and protect the marine environment. It is the only global initiative directly addressing the connectivity between terrestrial, freshwater, coastal and marine ecosystems.

#### [www.unep.org/regionalseas/](http://www.unep.org/regionalseas/)

The Regional Seas Programme aims to address the accelerating degradation of the world's oceans and coastal areas through the sustainable management and use of the marine and coastal environment, by engaging neighbouring countries in comprehensive and specific actions to protect their shared marine environment.

#### [United Nations Convention to Combat Desertification](http://www.unccd.int)

##### [www.unccd.int](http://www.unccd.int)

Desertification is a major economic, social and environmental problem of concern to many countries in all regions of the world. The convention was formed to solve the problem of intensifying land degradation in arid, semi-arid and dry sub-humid areas.

#### [www.unep.org/desertification/successstories/](http://www.unep.org/desertification/successstories/)

Although desertification still remains a major environmental problem, impeding dryland development, there are also many projects and community-based initiatives which have successfully addressed these problems.

#### [Convention on Biological Diversity](http://www.cbd.int/)

##### [www.cbd.int/](http://www.cbd.int/)

The Convention on Biological Diversity was inspired by the world community's growing commitment to sustainable development. It represents a dramatic step forward in the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources.

#### [International Union for Conservation of Nature](http://www.iucn.org)

##### [www.iucn.org](http://www.iucn.org)

Conserving biodiversity is fundamental to addressing some of the world's greatest challenges: tackling climate change, achieving sustainable energy, improving human well-being and building a green economy.

#### Forests

##### [www.unep.org/forests/](http://www.unep.org/forests/)

Forests cover one third of the earth's land mass, performing vital functions around the world. In fact, 1.6 billion people depend on forests for their livelihoods. They play a key role in our battle against climate change. Forests feed our rivers and are essential to supplying the water for nearly 50 per cent of our largest cities.

#### Forests Policy Brief

##### [www.unep.org/ecosystemmanagement/Portals/7/Documents/unep\\_policy\\_series/5thUNEPPolicySeries.pdf](http://www.unep.org/ecosystemmanagement/Portals/7/Documents/unep_policy_series/5thUNEPPolicySeries.pdf)

Forests have always been crucial to human life and economies, and they will become increasingly significant as the global human population grows. The entire global population depends on forests for their carbon-sequestering services and critical role in supporting the growth of a global green economy. This policy brief seeks to outline how forests can be a key part of a green economy that provides opportunities for innovative solutions to forest management.

#### [Integrated Assessment of Black Carbon and Tropospheric Ozone](http://www.unep.org/dewa/Portals/67/pdf/BlackCarbon_SDM.pdf)

##### [www.unep.org/dewa/Portals/67/pdf/BlackCarbon\\_SDM.pdf](http://www.unep.org/dewa/Portals/67/pdf/BlackCarbon_SDM.pdf)

This assessment looks into all aspects of anthropogenic emissions of black carbon and tropospheric ozone precursors, such as methane and analyses the trends in emissions of these substances and the drivers of these emissions.

#### [Vienna Convention for the Protection of the Ozone Layer](http://www.ozone.unep.org/new_site/en/index.php)

##### [www.ozone.unep.org/new\\_site/en/index.php](http://www.ozone.unep.org/new_site/en/index.php)

The Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer are dedicated to the protection of the earth's ozone layer. With 196 parties, they are the most widely ratified treaties in UN history, and have enabled reductions of over 97 per cent of all global consumption of controlled ozone depleting substances.

#### [www.unep.fr/ozonaction/](http://www.unep.fr/ozonaction/)

The UNEP OzonAction Branch assists developing countries and countries with economies in transition to enable them to achieve and sustain compliance with the Montreal Protocol.

#### [United Nations Framework Convention on Climate Change](http://www.unfccc.int)

##### [www.unfccc.int](http://www.unfccc.int)

The United Nations Framework Convention on Climate Change (UNFCCC) was formed to consider what can be done to reduce global warming and to cope with whatever temperature increases are inevitable. The Kyoto Protocol is an additional measure to the UNFCCC.

#### [UNEP Year Book 2011: Emerging Issues in our Global Environment](http://www.unep.org/yearbook/2011/pdfs/UNEP_YEARBOOK_Fullreport.pdf)

##### [http://www.unep.org/yearbook/2011/pdfs/UNEP\\_YEARBOOK\\_Fullreport.pdf](http://www.unep.org/yearbook/2011/pdfs/UNEP_YEARBOOK_Fullreport.pdf)

The UNEP Year Book 2011, examines global emerging issues and provides the latest environmental science. It also highlights major environmental events and developments over the past year, and presents the most recent data and indicator trends. The UNEP Year Book 2011 is essential reading for anyone with a keen interest in the future of our planet.

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### Earth Summits Rio+20

##### [www.worldsummit2002.org/index.htm](http://www.worldsummit2002.org/index.htm)

##### [www.unccd2012.org/rio20/](http://www.unccd2012.org/rio20/)

##### [www.un.org/esa/dsd/agenda21/](http://www.un.org/esa/dsd/agenda21/)



My quiet epiphany took place as I floated in space far removed from the sounds, smells and tastes of Earth, touched only by the clothes on my body. My first view of the planet was, not surprisingly, over water, the sunlight reflecting from the glistening blue sheet of the Pacific Ocean, though I couldn't hear the surf or taste the salt in the air. The light was piercing in its clarity with no atmosphere to soften the sun's rays. The earth's blue sky had been replaced by black, bordered by a thin band of fuzzy bright blue around the edge of the planet itself.

*"We must understand that, though an integral part of the environment, we are observers and change-agents.*

*We can induce and produce change in the environment, positively or negatively.*

# ROBERTA

# BONDAR

After observing the planet for eight days from space, I have a deeper interest and respect for the forces that shape our world. Each particle of soil, each plant and animal is special. I also marvel at the creativity and ingenuity of our own species, but wonder why we all cannot see that we create our future each day, and that our local actions affect the global community, today as well as for generations to come.

From space, to see the planet without humans certainly can be disconcerting. But we must come back to Earth changed, for only when we are on its surface can we see precious plants, trusting animals, and delicate butterflies. Humans should show their respect and admiration rather than bring destruction and extinction. Because we have developed frightening technologies and evolved quickly into a resource-depleting species, we have the ultimate responsibility of protecting others from ourselves.

We must understand that, though an integral part of the environment, we are observers and change-agents. We can induce and produce change in the environment, positively or negatively. Our beliefs, reasoning and wisdom are based on science and religious,

spiritual, or moral philosophies. Humans attempting to hold the environment in a steady state may withdraw the opportunity for natural evolution. We can, however, try to protect other life forms from the superforce of our technology, and the challenges of human population including pressure on these preserved environments.

We need to find time and place for peace and spiritual refreshment. We need reflective time so things that we do can take on a higher significance and order. Perhaps we desire a sense of purpose in life that can be achieved through setting and accomplishing goals. But we also need perspective on our own lives and our own mortality. This planet will after all, also be home to future lives with novel fears and challenges.

We do not have all the answers, but we continue to live and grow through the knowledge gained by observing other forms of life. That should be reason enough to be proactive in caring for our natural environment.

Dr. Roberta Bondar — the first neurologist in space and Canada's first woman astronaut — flew in the space shuttle on the First International Microgravity Mission in January 1992. For the next ten years she headed an international space medicine research team working with NASA to support two dozen missions on the space shuttle and the MIR space station and now has her own foundation which aims to inspire environmental learning through the art of photography.

The message should be clear. The expectations of future generations are unknown except for one — survival. If we do not protect the human-friendly environment of our planet, we eventually will fail to keep our souls and even our bodies nourished by our real home.



*Quttinirpaq National Park in the most northerly lands of Canada's Arctic and constitutes a true polar desert with only 60 ml of precipitation per year © Roberta Bondar*



[www.unep.org/ourplanet](http://www.unep.org/ourplanet)

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