Our Planet

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CHRISTIANA FIGUERES CLOSING THE GAPS NAOKO ISHII INNOVATION AND IMPACT

UNEP

BRIDGING GAPS

Are You?

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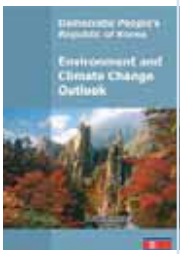
Green Carbon, Black Trade: Illegal logging, tax fraud and laundering in the world's tropical forests

This report Green Carbon, Black Trade by UNEP and INTERPOL focuses on illegal logging and its impacts on the lives and livelihoods of often some of the poorest people in the world set aside the environmental damage. It underlines how criminals are combining old fashioned methods such as bribes with high tech methods such as computer hacking of government web sites to obtain transportation and other permits. The report spotlights the increasingly sophisticated tactics being deployed to launder illegal logs through a web of palm oil plantations, road networks and saw mills.



Democratic People's Republic of Korea Environment and Climate Change Outlook

The Environment and Climate Change Outlook (ECCO) report provides an important update to the 2003 State of the Environment by identifying environmental and climate change trends that have occurred in recent years. The ECCO Report contains an analysis of key environmental issues that is expected to guide environmental policy, strategy development and planning in the coming decades.

The ECCO Report describes the state and trends in the environment and the drivers and pressures that influence them. It is also identifies impacts on people and describes policy measures that have been introduced to address the situation and reduce threats to socioeconomic development and human wellbeing.

Avoiding Future Famines: Strengthening the Ecological Foundation of Food Security through Sustainable Food Systems

The report summarizes for policymakers and stakeholders in the clearest possible way two important points: 1. The ecological foundation of the world food system and how we are undermining it; 2. What we can do about it, in particular, taking a green economy approach, through more sustainable agriculture and fisheries and improved resource efficiency.

The contribution of Space Technologies to Arctic Policy Priorities

This report compares the needs of Arctic stakeholders (as articulated in policies and strategies) with the contribution different types of satellite technologies (communications, weather, navigation, earth observation, surveillance, and science) can make to meet current and future requirements. It will help the European Space Agency (ESA) understand Arctic issues, increase the synergy between ESA activities and Arctic initiatives, and assist ESA in preparing relevant Arctic related programme proposals to meet future requirements.

Greening the Economy Through Life Cycle Thinking: Ten Years of the UNEP/SETAC Life Cycle Initiative

In 2012, the UNEP/SETAC Life Cycle Initiative marks its 10th year of activities. Over the past decade, it has become known as the 'one-stopshop' for science-based research and development on life cycle-related tools, capability development for practitioners, and guidance on life cycle-based methodologies and approaches addressing the three pillars of sustainability (environmental, economic and social).

This publication, launched on the occasion of the World Summit on Sustainable Development in 2012, demonstrates that life cycle approaches are an important cornerstone for building the green economy. Seven messages outline the current level of the global application of life cycle thinking and show how the Life Cycle Initiative has, though several ground-breaking deliverables, contributed to moving the agenda forward. In addition, it provides a glimpse into the tools and techniques on the horizon that will shape the future practice of life cycle approaches, and how the Life Cycle Initiative's Phase 3 activities (2012- 2017) will continue to underpin the development and implementation of life cycle approaches worldwide.

Vital Graphics on Payment for Ecosystem Services - Realising Nature's Value

This publication highlights the concept and selected market segments relating to payments for ecosystem services. It emphasises the role natural capital can play in both environmental conservation and in poverty alleviation, and highlights the potential benefits of ecosystem-based economic development in an accessible, non-technical manner.

reflections

Achim Steiner

UN Under-Secretary-General and
Executive Director, UNEP

The UN climate convention meeting in Doha, Qatar comes at a critical time for global action to avert dangerous climate change.

The UNEP-convened Emissions Gap Report, released just prior to the conference, pulls no punches: the gap between ambition and reality is growing rather than receding. Indeed without action between now and 2020, emissions are likely to be 58 gigatonnes (Gt) in eight years' rather than the around 44 Gt needed to give the world a chance of staying below 2 degrees C this century. Even if the most ambitious level of pledges and commitments were implemented by all countries under the strictest set of rules, the analysis shows, there will still be a gap of 8 Gt of CO_2 equivalent by 2020. This is 2 Gt higher than in last year's assessment – and yet another 12 months have passed by.

UNEP's theme for the Doha meeting is *Bridging Gaps–Are You?* Bringing down emissions is technologically achievable, but it will take increased ambition not just among nations but among cities, companies, civil society and citizens. While governments negotiate an agreement to come into operation by 2020, the intervening years need to see the scaling-up and acceleration of low carbon strategies aimed , for example, at increasing the share of clean energy, improving the energy efficiency of buildings, and increasing finance for forests and other mitigation measures

Moving forward on the outcomes of the Rio+20 can assist in areas ranging from sustainable procurement of goods and services by governments and local authorities to more widespread corporate sustainability reporting by companies. Countries have also begun working towards a suite of Sustainable Development Goals, to compliment the poverty-related Millennium Development Goals, by 2015. These will underline that such issues as climate change, loss of the natural world, deforestation and pollution are everyone's challenge and are unlikely to be resolved unless developed countries rapidly decouple growth from over-consumption of natural resources– including fossil fuels.

Rio+20 also gave the go-ahead to an inclusive Green Economy in the context of sustainable development and poverty eradication. Analysis under UNEP's Green Economy initiative indicates that investing about one and a quarter per cent of global GDP each year in energy efficiency and renewable energies could cut global primary energy demand by nine per cent in 2020 - and close to 40 per cent by 2050. Employment in the energy sector would be one fifth higher than under a business as usual scenario as renewable energies meet close to 30 per cent of primary global energy demand by mid-century. And, under a Green Economy scenario. savings on capital and fuel costs in power generation would amount, on average, to $760 billion a year between 2010 and 2050.

There also needs to be progress on financing the Green Climate Fund, due to be operational in 2013: in 2009 developed countries pledged to provide $100 billion a year through public and private finance by 2020 to help developing countries reduce emissions and adapt to a changing climate. Doha can also take forward the Climate Technology Centre and Network, including deciding on the management and operationalization of what could be a key catalyst for innovation and the diffusion of low carbon technologies worldwide.

Fast action on short-lived climate pollutants such as 'black carbon' through the new Climate and Clean Air Coalition can also provide quick wins. This might assist, for example, in slowing the rate of Arctic melting up to the 2040s. Many of the required measures also make sense on health and food security grounds.

The Emissions Gap Report 2012 underlines that the world cannot wait and watch over these short, intervening years until a new international agreement is in place. Time is ticking rapidly by and the planet and its people need real, quick and decisive action on multiple fronts now if dangerous climate change is to be avoided, and sustainable development realized.

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JULIA MARTON-LEFÈVRE
Director General of IUCN,
International Union for
Conservation of Nature

Adapting naturally

Increasingly we hear about the negative impacts of climate change: some parts of our planet are getting drier, some wetter, most warmer - and many experience greater uncertainty and variation in weather patterns and seasonal change. We need to adapt both to the changes already underway, and to those which we are committed making in the coming decades.

Our inability to predict exact impacts of these changes makes us look for 'no-regrets' options – those that will bring cost-effective benefits under most climate change scenarios. Ecosystem-based adaptation emerges as one such response, providing natural solutions to help both people and nature cope.

Ecosystem-based adaptation may sound like an intricate invention, but in essence it means managing our natural environment in a way that boosts the resilience of local communities to climatic and other changes.

Nor is it an entirely new concept. Throughout human history, societies have adapted to changes in climate conditions by shifting settlements, alternating crops, or transforming their economies and lifestyles. Many of these adaptive solutions have relied on managing the immediate environment, giving people a chance to 'adapt', and nature to 'adjust'.

Today, studies from around the world – from the African Sahel to the Andean highlands – clearly show how climate change affects farming and fisheries, water supplies and carbon cycle, and human and wildlife migration, to name just a few. Resilience – the ability of communities and ecosystems to withstand shocks – is emerging as an increasingly important goal at a time of recurring environment and development crises.

The estimated two billion people who live on less than US$2 a day directly depend on natural resources – and particularly on healthy ecosystems -- for their wellbeing. These ecosystems are now under great pressure from climate change but, if well managed, they can also offer a solution to people who depend on them.

That is the essence of the concept of nature-based solutions, which IUCN coined first in the context of climate negotiations, and increasingly as our overarching response to the biggest challenges facing the planet: from food and energy security to economic development and poverty eradication.

Resilient ecosystems are proven to reduce the impacts of extreme climatic events on the most vulnerable. Mangroves and coral reefs serve as buffers for floods and tsunamis, forests help prevent landslides, wetlands act as sponges that can release water in times of drought. Such natural buffers are often less expensive to install or manage, and often more effective than physical engineering structures, such as dykes, levees, or concrete walls.

Healthy coral reefs in the Caribbean provide up to US$2.2 billion worth of coastal protection to 18,000km2 of beaches. The forests of Andermatt, a major ski destination in Switzerland, provide US$2.5 million of avalanche protection each year. And in Vietnam, planting and protecting nearly 12,000 hectares of mangroves cost just over US$1 million but saved annual expenditures on dyke maintenance of well over US$7 million.

Water is at the centre of many climate change impacts, and is closely linked to the challenge of food security. Farming in Africa's drought-prone regions has always been risky but, with the onset of climate change, producing enough crops to survive until the next harvest is an ever-growing challenge.

"Ecosystem-based adaptation may sound like an intricate invention, but in essence it means managing our natural environment in a way that boosts the resilience of local communities to climatic and other changes."

The value of Niger's 1,000-plus wetlands for livestock production alone is estimated at US$35 million per year - and they also provide habitat for some 1.8 million birds coming from Europe and Asia to spend the winter in Africa.

The residents of 450 villages in the regions of Casamance and Sine Saloum, in Senegal, have planted more than 100 million mangrove trees, improving the quality of agricultural land by reducing the build-up of salt in the soil. The mangroves also created a habitat full of such valuable sources of food as fish, oysters and crabs.

There is a growing recognition of forests' role in both mitigation and adaptation. They also provide a crucial lifeline to the poor, creating jobs and boosting incomes for local residents. In Miyun, China, local incomes increased by an estimated 50 per cent thanks to an influx of tourists following extensive forest restoration. As a result, the Beijing government has now invested US$1.5 billion in protecting the Miyun watershed, which delivers 80 per cent of Beijing's water.

In an area previously called 'The Desert of Tanzania', over 500,000 hectares of restored forests are today offering better protection against drought for over two million people – and doubled household incomes.

Besides helping nature and communities cope with global warming, halting the loss and degradation of natural systems and promoting their restoration has the potential to contribute over one third of the total mitigation of climate change that science says is required by 2030.

And there are an estimated 2 billion hectares of degraded and deforested land worldwide that could be transformed into a resilient, multifunctional asset for rural communities.

How we treat our natural assets today will determine how well we will withstand the changing climate of tomorrow. Ecosystem-based adaptation helps us move from short-term coping tactics to deal with immediate climate change impacts to developing the long-term strategies necessary to address climate change. It is a nature-based solution whose time has come.

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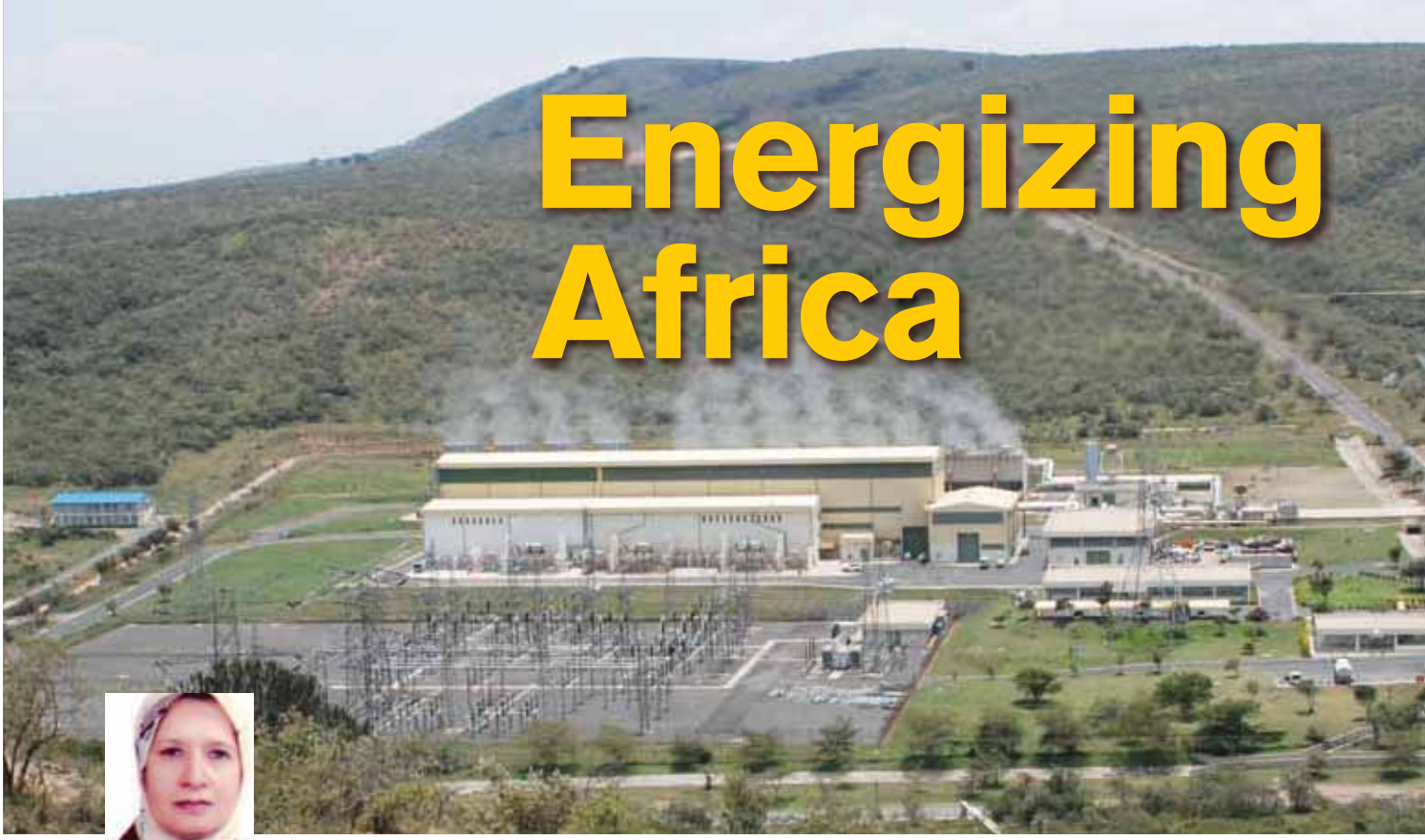
Energizing Africa



ELHAM MAHMOUD AHMED IBRAHIM,
Commissioner for Infrastructure and Energy,
African Union Commission.

Energy is at the heart of development, and, providing it, is a prerequisite for reaching the Millennium Development Goals. Indeed, meeting energy needs is one of the main challenges of the 21st century.

We Africans, supported by the whole world, must work hard to realise the goals of the United Nations' Sustainable Energy for All Initiative – to achieve by 2030 universal access to modern energy services, doubling the global rate of improvement in energy efficiency, and doubling the share of renewable energy in the global energy mix. Indeed, the universal access objective must be addressed as an utmost priority by the international community.

Worldwide 28 per cent of people in developing countries lack access to electricity. In Sub-Saharan Africa the proportion is about 70 per cent. Only nine African countries have access rates of over 50 per cent.

Africa is well endowed with energy resources. These include crude oil, natural gas, coal, nuclear, tar sand, hydro-electricity, geothermal, biomass, solar, wind and other renewable energy. But their exploitation is very limited. This, in turn, constrains the socio-economic development of the continent.

The African Energy Vision and Objectives, articulated by the African Union since 2000, aims to develop an efficient, reliable, cost effective, and environmentally friendly infrastructure for the continent's physical integration, and to enhance access to modern energy services for the majority of the African population.

Its main objectives and policy initiatives are, among others, to: ensure energy security for economic and social development; achieve energy integration by increasing regional and continental energy trade; lower the cost of energy to improve access to basic energy services for Africa's population; create a welcoming climate for direct investment; and reduce greenhouse gas emissions and address climate change issues.

Despite a variety of initiatives on the ground, regional investments in energy in Africa have not performed well in terms of attracting resources or supporting regional integration. The discrepancy between the economic attractiveness of regional projects, on the one hand, and their modest performance in mobilizing financing and developing a regional market, on the other, is the main challenge that needs to be addressed by suitably empowered African continental and regional institutions. Innovative approaches for structuring regional investments in a commercially viable manner are now required.

The 12th Assembly of Heads of State and Government requested the

African Union Commission formulate the Programme for Infrastructure Development in Africa (PIDA) to address these challenges both for energy and for all infrastructure. Launched in 2010, PIDA provides new analysis and insights to bring existing or previous continental infrastructure initiatives together, under one coherent programme. It fills in gaps and - based on previous lessons - affords proper weight to the value of local ownership, the necessity of both hard and soft interventions, and the need for diverse financing. Its programme was adopted by the African Union Summit in January 2012. This is now being implemented.

The programme yielded a macro-outlook for infrastructure demand in energy, transport and trans-boundary water up to 2040 and information and communications technology up to 2020. It is organized for the short and medium term - 2020 and 2030 - with a long-term view to meet demand to 2040. Given Africa's urgent infrastructure needs, PIDA also has a Priority Action Plan (PAP) for projects and programmes to be implemented in the short term. This details the immediate way forward by presenting actionable projects and programmes that promote sound regional integration between 2012 and 2020. Its 51 projects include 15 in the energy sector

The capital cost of PIDA's long-term implementation through 2040 is currently estimated at $360 billion. The overall capital cost of delivering the PAP from 2012 through 2020 is expected to be nearly $68 billion (or about $7.5 billion annually) of which $40.3 billion is designated for energy projects.

All the PAP's projects and programmes include accompanying soft measures to unlock the necessary investment requirements. The capital investment required for 2020 is far below 1 per cent of African GDP. And some of the actions carry almost no financial cost but require political will, and willingness to act.

Under business-as-usual scenarios, funding sources for infrastructure for the PAP could optimistically amount to about $30 billion by 2020. But $68 billion is needed. Countries will have to mobilize their own public and private domestic resources, attract foreign private investments, and ensure a competitive market based on clear legislation and regulations. And, as well as bringing in more private sector funds, African countries must embrace new and innovative sources of financing such as infrastructure bonds, loan guarantees, and community levies. The African Union Commission is mandated to strengthen regional and continental cooperation for sustainable development and the efficient use of energy resource. Its programmes to facilitate energy access and energy security for Africans includes:

- The **Africa-EU Energy Partnership.** This aims to bring access to modern and sustainable energy services to at least an additional 100 million Africans by 2020, within the renewable energy cooperation programme.
- The **Hydropower 2020** initiative, which promotes the development and exploitation of the hydropower potential of the major rivers basins in Africa.
- The **Regional Geothermal** programme, which aims to accelerate the development of the huge geothermal resources in the East African Rift System countries. So far a 50 million euro Risk Mitigation Facility has been established in cooperation with the German Government and the EU Infrastructure Trust Fund, to support the geothermal projects' developers in the drilling processes.

Accelerating progress towards sustainable poverty reduction and energy access improvement also requires addressing such adverse environmental impacts land degradation, deforestation, desertification and global warming at the same time. Although Africa's greenhouse gas emissions are the lowest in the world, strategies for energy poverty reduction should be environmentally friendly because Africa is extremely vulnerable to climate change. The continent should also have a fair share of climate finance.

Africa is open, welcoming cooperation and investment on a win-win basis with all interested partners.

Beyond adaptation and mitigation

SALEEMUL HUQ
Director of the International Centre for Climate Change and Development at the Independent University, Bangladesh

Among the many topics on the table in Doha is a relatively novel one, the question of how to deal with loss and damage caused by climate change. I believe it characterizes a new paradigm in addressing the issue, which must acknowledge that mitigation and adaptation will not, by themselves, go far enough.

Included as a new element in the Cancun Framework on Adaptation, adopted at COP 16 in December 2010, loss and damage was elaborated into a one-year work programme in Durban a year ago. Workshops have been held in Japan, Mexico, Ethiopia, Thailand and Barbados and a further decision will be taken at COP 18.

The International Centre for Climate Change and Development at the Independent University, Bangladesh, the Institute for Environment and Human Security of the United Nations University and GermanWatch have been carrying out a series of case studies in Africa, Asia and the Caribbean and taking part in all the technical and regional workshops. Participating in these processes has left me with personal impressions on the state of play of this emerging subject.

There is still a lack of common understanding about the terms and their use in the UNFCCC process. To the disaster risk reduction community, which already has quite a lot of experience in estimating loss and damage from natural disasters, this looks like an old and already well understood topic. And many people in the climate change community view it as being almost the same as adaptation, with which they are already quite familiar.

I feel that while it has elements of both, it is also a new and emerging topic, unique to the UNFCCC process. Hence the definition of what that means does not yet exist and will need to be negotiated and agreed.

The UNFCCC process - and the corresponding scientific process under the Intergovernmental Panel on Climate Change (IPCC) - have gone through a number of phases over the last two decades. Each has characterised the main problem in a different way and hence come up with corresponding solutions. The first characterised the problem as primarily an environmental one of emissions of greenhouse gases. The solution was mitigation: the Kyoto Protocol for example was almost entirely about this.

The IPCC's third assessment report (AR3) in 2001 emphasised that for the next two to three decades a certain amount of climate change impacts were now unavoidable and no amount of mitigation would prevent them. So a new solution was needed in addition to mitigation, and the focus was shifted to include adaptation.

The AR3 also showed that the adverse impacts of climate change in the near term would fall on poorer countries, and on poorer communities in all countries. Thus climate change was no longer only an environmental problem but also

NASA photo

a development one – and many. more stakeholders from developing countries became engaged with it.

I would argue that we are now entering a new paradigm of the climate change problem (and hence its solutions) which goes beyond mitigation and adaptation, while not negating the need to continue to focus on them. It is characterized by the topic of loss and damage.

Both mitigation and adaptation are solutions that seek to avert the adverse impacts of climate change, by "preventing" them (through mitigation) or "minimising" them (through adaptation). But we now need to accept that neither will be able to prevent some amount of them. So we need to think about how to deal with such "Loss and Damage after adaptation". The UNFCCC is not well designed to do this, but it needs to come to an agreement on how to tackle the topic.

A few examples of elements that will need to be addressed are:

Long term future loss and damage: Over the next nine to ten decades, the world may face either a 4 degree centigrade global temperature rise (at present rates of emissions) or a 2 degree one (the agreed limit). However, the loss and damage that will occur from those two scenarios is not that one would be twice as bad as the other, but that the effects of 4 degree rise will be orders of magnitude bigger than those from a 2 degree one.

Slow onset events and rapid onset events: So far there has been a focus on such rapid onset events such floods and hurricanes, where there is much past experience in assessing loss and damage. However, such slow onset events as sea level rise and higher temperatures will give rise to new problems, such as loss of low lying lands in islands and river deltas. The loss of some island nations, such as Tuvalu, would present an entirely new dimension in global diplomacy and security.

Attribution of loss and damage: While it is not yet possible to attribute any given climate event to human induced climate change, it is clear that the magnitude of major climatic events such as floods, droughts and hurricanes are no longer due entirely to nature. Even if the percentage of human responsibility cannot yet be determined, it is no longer zero.

Over time (in fact sooner rather than later) scientists will be able to make such attributions for events with a high degree of credibility. This will open up the hitherto taboo subjects of assigning liability and claiming compensation for such loss and damage.

I would argue that the UNFCCC - while not designed to be the locus for these arguments on liability and compensation - is still the best place to think about, discuss, argue and agree on them, as the alternatives (of litigation or even retribution) are far worse.

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Innovation and Impact

NAOKO ISHII
CEO and Chairperson of the Global Environment Facility

Countries gathering in Doha for the conference of the United Nations Framework Convention on Climate Change (UNFCCC) are dealing with serious problems affecting real people in communities worldwide.

At the Global Environment Facility (GEF), we are investing money and effort to address climate change – both to mitigate human contributions to it and to adapt to effects already upon us.

Mitigation involves reducing the production of greenhouse gases, and finding alternative ways of doing things that benefit, or at least do not harm, the environment - such as, for example, through increasing the use of clean forms of energy, like solar and wind power, and energy efficiency.

Adaptation involves bolstering the resilience of people coping with global warming and preparing for impending change. Irrigation techniques and new crop varieties, for example, help farmers in marginal lands along the borders of desert regions cope with increasingly variable and erratic rainfall. In coastal areas, meanwhile, the GEF is supporting a major global coordinating effort to address threats to coral reefs – the rainforests of the sea.

An effective response to climate change means bringing locally successful strategies - and new ones under development – to a global scale. The GEF - with its 182 member nations and its partners in the international community - is directly engaged in supporting these strategies. It is also involved, with the UNFCCC, in establishing the Green Climate Fund aimed at enabling a scaled-up approach.

My vision for the organisation - and a GEF Strategy 2020 now under development - seeks to put the GEF partnership on a course towards greater impact. We must aim to engage all key actors, from local communities to national governments, the private sector, civil society organisations and indigenous

peoples in finding and implementing solutions. My vision embraces four specific roles:

The GEF is, and must remain, an innovator: It should use its resources and network to introduce innovation in the design of programmes and policies to encourage early adoption and scaling up. The GEF must always operate from a position of technical excellence and world-class experience, especially over energy, where new options for power generation and new energy efficiency technologies are already delivering significant results;

The GEF is and must remain, a champion of the Global Commons: There can be no separation between development and environment. Healthy ecosystems are essential for human health, food, energy and water, and ultimately sustainable development. I will ensure that the GEF uses its convening power to bring key players on board and create the context within which good decisions can be made to confront destructive trends and promote lasting change based on mutual trust;

The GEF is, and must remain, the partner of choice for environmental benefits: its success will depend on its ability to forge productive, trusting and catalytic partnerships with its member countries, the private sector, civil society, the scientific community, and its agencies. We must ensure that transaction costs within the GEF network do not reach a point where it is no longer attractive;

The GEF is, and must remain a catalyst, in the evolving architecture of environmental finance: Public and private sectors must identify new ways of working together to bring transformational change to the global environment In Tunisia, for example, the GEF supports a programme to establish energy services companies as vehicles for a sustainable energy efficiency market. The project has generated more than $150 million of energy-efficient investment, far exceeding its original $25 million target. It is also credited with reducing annual CO2 emissions by some 130,000 tonnes, equivalent to removing 25,400 cars from the road. This exemplifies my goal of giving the international community a seamless menu of options for identifying relevant technologies, testing and proving them, and scaling them up with large scale investments.

GEF investment in early stage renewable energy technology shows how these roles can lead to significant benefits of scale. It has supported manufacture and deployment of wind turbines, including on the world's largest international cooperative effort in clean energy, the China Renewable Energy Scale-up Program, coordinated by the World Bank.

We have established – in partnership with the Asian Development Bank (ADB) and UNEP - a pilot Asia-Pacific Climate Technology Network and Finance Centre. This unique approach eases technology transfer for both mitigation and adaptation and promotes public-private investment partnerships. The project, for example, is helping pool venture capital risk by investing in a number of different early-stage companies with new climate technologies.

ADB's Asia Sustainable Transport and Urban Development Program supports Asian cities in reducing greenhouse gas emissions and gaining local co-benefits through integrating low-carbon and climate resilient transit systems and low-carbon urban development. It is introducing sustainable transport options in Ulan Bator, Dhaka, and cities in China.

Projects we support provide us with useful examples of what can work when scaled up. We manage two funds mandated to support climate change adaptation finance in the poorest and most vulnerable countries: the Least Developed Countries Fund (LDCF) and Special Climate Change Fund (SCCF). LDCF finances adaptation actions addressing, amongst others, agriculture and food security, water resources and coastal zone management, early warning and disaster risk, health, and fragile ecosystems. SCCF supports adaptation and technology transfer in developing countries.

In Niger, where land degradation, water scarcity, and at-risk livestock pose a deadly threat to rural communities, LDCF supports climate-resilient farming through distributing seeds of drought-resilient crops and appropriate water-harvesting techniques. In Bangladesh, a combination of smart planning and coastal afforestation programmes lessen the risks of floods, droughts, cyclones, and erosion. Adaptation in such vulnerable small island states as Samoa has included installing automated weather stations and developing crop suitability maps and other tools to help increase food and water security, reduce damage from weather-related disasters, and cope with the threat of disease.

SCCF supports innovative and cost-efficient projects on water resources management, land management, agriculture, health, infrastructure development, fragile eco-systems(including mountainous ones), and integrated coastal zone management. One project is on track to become the first regional network of glacier monitoring stations in the Andes, benefiting Ecuador, Peru, and Bolivia.

We are hard at work developing and funding these projects. And we are learning from them - the key to developing strategies and projects that meet a global threat on a global scale.

The Golden Thread

KANDEH K. YUMKELLA
Director-General of the UN Industrial Development Organization and the Secretary-General's Special Representative for Sustainable Energy for All

Chad Holliday and I come from very different backgrounds: one from a poor village in Sierra Leone, trained in agricultural economics, with a career in academia, government, and the United Nations; the other from the United States, trained as an engineer, who has led two global companies, DuPont and Bank of America. It is perhaps for those very differences that Secretary-General Ban Ki-moon asked us last year to chair a High-level Group on Sustainable Energy for All – and also because we are of one mind on the importance of sustainable energy and the need for collaboration to ensure that every person on Earth has the opportunities that energy provides.

The Secretary-General has said, "Energy is the golden thread that connects economic growth, increased social equity, and an environment that allows the world to thrive." Like me, he grew up in conditions of energy poverty – in post-war Korea, the young Ban also studied by a dim and smoky kerosene lamp at night. Only when he prepared for examinations was he allowed to use a candle.

The memory of those days moved him to launch his initiative on Sustainable Energy for All in the fall of 2011, comprising three linked objectives for the world to reach by 2030:

- Ensuring universal access to energy access.
- Doubling the global rate of improvement in energy efficiency
- Doubling the share of renewable energy in the global energy mix.

These ambitious but achievable objectives will both enable billions of people to escape energy poverty and set the whole world on a path to the sustainable energy future that we need to stabilize the global climate.

This initiative can serve as a new model of beneficial public and private engagement with the UN system, drawing together leaders from business, government, and civil society as well as the UN itself. Chad Holliday's decision to stay engaged – as chair of the Executive Committee – is one indicator of that; another is the agreement of the World Bank's new President, Jim Yong Kim, to join the Secretary-General to co-chair the initiative's Advisory Board.

The political response to his vision has been gratifying in every part of the world, and 61 developing countries have volunteered to participate. Sustainable Energy for All has already received some 200 commitments to action from governments, businesses, international institutions, and civil society. Businesses and investors have committed more than USD $50 billion. Additional billions were pledged by other key stakeholders – governments, multilateral development banks, and international institutions – to catalyse action.

Much more will be needed, but this is an impressive beginning. More than one billion people will benefit from these commitments. Developing countries in particular will gain improved access to electricity and

clean cooking solutions through scaled-up renewable energy resources, increased investment, and improved energy policies. Much of the private investment will deliver increased adoption of energy efficiency and renewable energy in industrialised countries.

We can see opportunities in each of the initiative's three objectives.

New investment plans for developing countries can lead to action if national governments, development banks, leaders of business and finance, and civil society organisations take steps to enable private capital to flow. These must include new commitments by all stakeholders – new financial mechanisms to mitigate risk, revised regulatory frameworks to ensure returns on investment, and programs of education and capacity building to support thriving markets.

Leaders in government – not just at the national level, but in cities, states, and regions – have shown that efficiency standards can deliver cost-effective results for consumers: better refrigerators that cost the same but use less energy; new vehicle designs that deliver more power with less fuel; and buildings that require less energy for heating and cooling – or even send power back to the grid. Sharing and adopting these practices more widely among nations and industrial sectors can make energy cleaner, more reliable, and less expensive.

Steadily falling costs for renewable energy technologies – ranging from wind farms to solar lighting, from giant geothermal power plants to small-scale facilities that convert food and farm waste into clean natural gas for cooking and other uses – make them increasingly economically attractive all over the world. Financing mechanisms are needed that balance their higher initial costs against the fact that their fuel is, in many cases, free forever.

Our attention now has turned to next steps – creating a structure and process that will sustain and validate this progress, build on the momentum we have generated, and move rapidly to achieve the objectives of Sustainable Energy for All. This includes:

- Supporting national governments as they design and implement country-level plans to develop local capacity, create the enabling conditions to attract private investment, and facilitate access to technical assistance and resources.
- Developing high-impact opportunities into concrete actions through constructive engagement with multi-stakeholder partnerships.
- Matchmaking public and private partners and reducing investment risk through the targeted use of public and philanthropic capital.
- Monitoring progress, sharing best practices and lessons learned, and communicating with global stakeholders on a regular basis.

"Energy is the golden thread that connects economic growth, increased social equity, and an environment that allows the world to thrive."

We have no appetite for a new institution or centralised bureaucracy to execute these assignments. Rather, we envision a distributed global network that collaborates with existing institutional structures and initiatives, taking full advantage of available delivery mechanisms and the diverse capacities of partners, including international institutions, businesses, and civil society organisations.

These actions will do much to eradicate energy poverty. They will also lead to sustainable growth, the development of new markets, the creation of new businesses and jobs, and increased global prosperity. The opportunities amount to trillion-dollar markets.

The success of the initiative will ultimately be measured by how many of the energy poor are connected to electricity and other modern energy services, and by the impact of Sustainable Energy for All on the world's energy systems and their sustainability, especially on accelerating low-emissions development and green growth. We are deeply grateful to the Secretary-General for getting us started down this road. Now let us commit ourselves to reaching the destination.

Extremes are now normal

CONNIE HEDEGAARD
EU Commissioner for Climate Action

It has been another summer full of reports of extreme weather events of unparalleled scope and severity. Among the highlights: one of the warmest years on record in the US,; record-high temperatures in Central and Eastern Europe; the wettest summer in the UK; the heaviest rainfall in Northern India and the Philippines; and some of the most severe droughts in the US and East Africa.

In short, climate change and weather extremes are not about a distant future. What used to be one-off extreme weather episodes seem now to be becoming the new normal. Indeed, weather extremes are not that extreme any more. Heat-waves, floods, droughts and wildfires are the new reality of an ever warming world.

This should not come as a surprise. Scientists have been warning for years that as the planet heats up, we will have to deal with more severe, more changeable, more unpredictable weather.

The evidence in mounting that human-caused climate change is pushing normal warming effects to extremes. Heat-waves have increased in duration and frequency. Some parts of Europe are now gripped by severe water shortages while others have suffered extreme precipitations causing floods and increased crop losses.

Although not every extreme weather event can be attributed to climate change, scientists are now much more confident about some of them. Take last year's

record warm November in the UK, the second hottest on record. Researchers say that it was at least 60 times more likely to have happened because of climate change than from natural variations in the earth's weather systems. This last summer fitted the general pattern, and scientists confirm that similarly hot summers will occur much more frequently in the years ahead.

The National Snow and Ice Data Centre released new data this autumn which confirmed that the extent of Arctic sea ice had reached a record low since satellite measurement began in 1979. More satellite data in July showed that about 97 per cent of the massive ice sheet surface covering Greenland was melting, provoking a NASA scientist to ask: "Was this real or was it due to a data error?" Unfortunately, the data were correct.

All this record-breaking news reveals that global climate breakdown is occurring more rapidly than most climate scientists had expected. Climate change is happening, and it exacerbates a whole range of other global problems, adding further instability to an already unstable world

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But, some may ask, isn't it too costly to invest in a low-carbon world? Well, yes it costs. But so does business as usual. It would be wrong to believe that to continue as we are doing is the cheap option. It is not. On the contrary, it is very expensive. To take just one example: the World Bank issued a global hunger warning earlier this month after severe droughts in the US, Russia and the Ukraine sent food prices to a record high. It pointed out that prices for maize and sorghum had increased by 113 per cent and 200 per cent respectively in some markets in Mozambique and in Sudan! This is the kind of cost that often gets ignored.

Businesses don't need to be told about the financial losses caused by weather extremes. This summer's drought in the US devastated the multibillion-dollar corn and soybean crops. US insurers may face as much as $20 billion losses this year, their biggest in agriculture. This is not exactly helping fight to the economic crisis.

It is simply incredible what big risks some people are prepared to take on behalf of future generations. Despite the facts and evidence in front of us, there are still many interests advocating doing nothing or continuing with business as usual - or just forgetting the climate crisis until we have solved the economic crisis.

While some regard the current financial turmoil as a bitter setback for international climate protection, I see intelligent climate action as a driver of new opportunities for jobs in Europe, for investments in energy-efficiency technologies, for boosting innovation and competitiveness, and for lowering energy bills.

To me, tackling the climate crisis helps, not damages, our economic security and prosperity. Both crises are interlinked and must be tackled together.

The gathering of ministers and negotiators from all over the world in Qatar for the UN climate conference faces a crucial moment to advance the international fight against climate change. We can't afford inaction. Three years ago, at the Copenhagen climate summit, leaders pledged to keep below the crucial 2°C threshold for increased temperatures. Now the time has come to show they mean it.

PETER ALTMAIER
Federal Minister for the Environment, Nature Conservation and Nuclear Safety, Germany.

Funding the future

While the concept of climate change was repeatedly and publicly challenged just a few years ago, sceptics now find themselves on shakier ground. The continuing rise in global temperature, the increased frequency of extreme weather events and the dangers they pose to people, the accelerated extinction of species – these and other impacts provide sombre confirmation that global warming is happening, with devastating consequences. The governments of developed countries are aware that such impacts can only be tackled by cooperation. Developing countries – which now demonstrate the largest rise in emission rates – must avoid the mistakes commonly made by the developed during industrialization, and should establish low-carbon economies from the very outset. In this context climate finance will play a key role in international climate negotiations.

Developed countries pledged extensive funding for climate measures in developing and industrializing ones - amounting to US $ dollars 100 billion a year from 2020 – at the 2009 Conference of the Parties (COP) of the UN Framework Convention on Climate Change in Copenhagen. In the meantime Germany will provide 1.26 billion euros in fast start finance for mitigation, adaptation and REDD+ from 2010 to 2012. The Green Climate Fund (GCF) began its work this year, following the 2011 COP in Durban: its main task is to promote and structure the paradigm shift in developing countries towards low-emission economies. As a member of its Board, Germany actively supports the GCF and is doing everything in its power to ensure that it can operate effectively as soon as possible.

Several things are needed to initiate a genuine paradigm shift in recipient countries and thus fight climate change successfully: capacity building in institutions to ensure a systematic and efficient use of funds; direct access to GCF financing; and private sector participation in mobilizing and deploying resources. In most countries the necessary institutions and structures, do not yet exist or are inadequate, as is experience in deploying the funds. Many countries have not yet nominated their National Implementing Entity for accreditation by the GCF. Comprehensive preparatory measures are needed to ensure that recipient countries gain direct access to funding, and to bring the private sector on board. The aim is to support these countries and their institutions in obtaining and managing financial resources from the GCF, optimizing their use, and establishing appropriate monitoring systems. There must also be constructive cooperation and efficient decision-making among national and international players: government, business and civil society. Professional knowledge management is also needed to derive useful lessons from this complex process.
Germany pledged 40 million euros in Durban for readiness activities to help operationalize the Fund. Half this sum will be allocated by the Federal Ministry for the Environment and Nature Conservation, and half by the Federal Ministry for Economic Cooperation and Development, in accordance with recipient countries' needs. The implementing organizations are UNEP, UNDP, Deutsche Gesellschaft für Internationale Zusammenarbeit, the KfW banking group, and the World Resources Institute and there are four key tasks:

1. Direct Access: institutional support and monitoring during the accreditation process of the National Implementing Entity nominated by developing country government.
2.Strategic planning assistance: support in developing national strategies for mitigation and adaptation measures, closely tied to sectoral and cross-sectoral policy approaches.
3. Development of project pipelines: establishing national GCF project pipelines including advisory services and capacity building in key sectors, with a special focus on involving the private sector.
4. Global experience exchange: knowledge management on GCF readiness,including an exchange of experience in methodology and best practice examples.

The UN will play an important and responsible part in implementation: in January 2013 the GCF Investment Readiness Program, run jointly by UNEP and UNDP, will be launched in selected developing and industrializing countries, focussing on analysis, education, and building capacities in the National Implementing Entities. The primary goal is to give recipient countries direct access to the funds. Another aim is to support developing countries in setting up national investment programs and strategies for mitigation and adaptation. All experience and results must be communicated clearly. It can thus provide guidance for the future work of the Fund and highlight successful programmes and measures.

Germany would like its commitment to inspire others to provide urgently needed support for effective climate action in developing countries and draw attention to the vital role of the Green Climate Fund. Our fight against climate change can only succeed if we work together. So, alongside the task of facilitating and introducing suitable and effective climate measures, future goals will be to convince more donor countries to join the initiative and to intensify international cooperation, maximizing global commitment to climate action.

In the medium term, we must also address international transparency in the field of climate finance. There are now over 60 different international climate funds, and many recipient countries have long lost track of information about their financing conditions. Meanwhile, donor countries need a clearer overview of the climate projects already being implemented by different ministries and organizations in the recipient countries, so as to prevent overlapping projects and make the best use of synergies. A key task for the future will therefore be to compare donor country activities with the demand and ongoing projects in recipient nations. All this shows how important it is for the Green Climate Fund to begin its work without delay. Germany, for its part, will give any support it can.

Blue carbon

THE PROBLEM

'Blue carbon' ecosystems (mangroves, salt marshes and seagrass) function as efficient carbon sinks, storing vast quantities of organic carbon and providing a range of services that sustain communities, provide food security and help them adapt to changes in climate. It is clear that the provision of climate change related ecosystem services by these systems is highly amenable to management intervention and restoration, and potentially provides many countries with cost-effective adaptation and mitigation strategies.

A 2012 overview of blue carbon emissions from converted and degraded coastal wetlands, places the total global emissions at 0.15 – 1.02 billion tons released annually. These emissions are equivalent to 3 – 19 per cent from deforestation globally and equivalent to the national emissions of Venezuela at the low estimate and Japan at the high estimate. However, mangroves, salt marshes and seagrass beds continue to decline at global annual loss rates of 1-2 per cent exceeding the rates of loss of most terrestrial ecosystems. This is of considerable concern in view of the erosion of ecosystem services. Furthermore, these values are often overlooked in national management and international negotiations.

THE BLUE CARBON SOLUTION

UNEP, working with various partners (e.g. the GEF, AGEDI and GRID-Arendal), are spearheading the Blue Carbon Initiative. This seeks to value carbon and help coastal ecosystem services to use these values to create incentives for the improved management of such areas. At the same time, the project helps the global community mitigate and adapt to climate change.

The project will explore the development of appropriate methodologies, will support research and will support national project that put into practice some of the concepts of payments for ecosystem services and carbon markets in the management of coastal ecosystems, creating sustainable financing streams.

Carbon credits and ecosystem services such as shoreline protection, tourism, maintenance of water quality or provision of food from fisheries, can provide revenue if ecosystems are managed wisely and appropriate markets are developed. In some scenarios, healthy ecosystems thus become more profitable than certain types of unsustainable development (e.g. unsustainable shrimp aquaculture practices, or environmentally-unsound coastal development), and can be used to leverage appropriate financing or to make sound management decisions.

UNEP is working with partners in countries such as the UAE, Mozambique, Madagascar, Cameroon, Kenya, Ecuador and Indonesia to explore appropriate mechanisms that turn concepts and scientific research into practical solutions for coastal management and climate change, and to raise the profile of the importance of coastal carbon and ecosystem services both for local and global communities.

Blue carbon thereby provides the world another tool in its portfolio of options for mitigating climate change.

ABU DHABI

The Abu Dhabi Blue Carbon Demonstration project is an AGEDI-led project in partnership with GRID-Arendal, UNEP, Forest Trends and WCMC. It will focus on valuing Abu Dhabi's coastal ecosystems (mangroves, seagrass and sabhka) and explore the opportunities for using blue carbon to offset some of Emirate's CO2 emissions.

Given Abu Dhabi's high per-capita emissions and the high level of coastal development with consequent loss of coastal habitats, there exist opportunities for both improving coastal management whilst mitigating climate change.

Furthermore, Abu Dhabi intends on becoming a global leader in blue carbon by using its project to set and test international standards as well as to engage and train scientists from around the world.

Building Resilient Food Systems in Uganda through Ecosystem based Adaptation Approaches

THE EbA SOLUTION

UNEP, through its Climate Change Adaptation and Development Programme, helped Uganda's National Agricultural Research Organization (NARO) develop an efficient system for collecting, recording and analyzing agro-meteorological information, such as rainfall amounts and patterns, and to strengthen its knowledge about crop production uncertainty. Serving as a showcase of connecting science with policy and practice, the project characterized agro-meteorological climate risks and uncertainties regarding crop production in the country. From this, information was generated about seasonal rainfall characteristics which offer opportunities for exploiting seasonal rainfall distribution to improve/stabilize crop yield through incorporation of seasonal characteristics of onset, cessation and length of the crop growing season. Using this information EbA approaches such as conservation agriculture and integrated nutrient management in maize production, agro-forestry and establishment of woodlots as land management practices were some of the interventions used and they aimed at increasing soil fertility, soil conservation and provision of fuel wood, which would help in the conservation of natural forests, enhancing environmental health in the process. This information has helped guide crop substitution and diversification.

THE BIG PICTURE, SUSTAINABILITY AND CROSS-CUTTING THEMES

Using the EbA approach have demonstrated that productivity increased at the field level by conserving soil and water, and by using leguminous cover crops (beans) which enhanced biological nitrogen fixation. Conservation techniques also reduced planting costs by 75% and saved the farmers' time, allowing them to expand into other ventures, which has helped reduce rural poverty. Furthermore, the environment benefited from farmers using fewer chemical fertilizers and pesticides, and soil conditions improved. Local nutrition was improved through the new cropping system of alternating maize with beans, which provided more protein in the diet. In addition, the success of farmers who participated in the project has encouraged other farmers to adopt similar practices. The risk indicators developed have been incorporated into national development plans and policies, such as National Land-use Policy and the National Development Plan (NDP), and the success of this project helped NARO attract further funding from the Rockefeller Foundation for follow-up activities. Many people who used to live a "mobile life" have returned to their villages and are using the adapted farming techniques, resulting in bumper harvests. From one demonstration site alone, 80 farmers have adopted the practices showcased. By providing training and supporting the production of information about the best practices to follow to cope with climate change risks, crop yields have improved, farmers' incomes have been safeguarded, and poverty has been addressed at a grassroots level.

Courtesy Sarahemcc / Flikr

AJIT GULABCHAND
Chairman and Managing Director, of the Hindustan Construction Company Ltd

Becoming water neutral

There is a correlation, one which our company has long recognised, between business viability and the efficient use of water resources. We began to focus on water through concern about the business risks posed by two types of shortage - physical scarcity, where there is not enough water to meet demand, and economic scarcity, where communities lack the infrastructure and/or financial capacity to access the water they need. Climate change adds a new dimension to these existing challenges and is likely to worsen both types of water scarcity in India, especially in regions where water availability is already under pressure and where poor people will be the hardest hit.

We, at Hindustan Construction Company Ltd (HCC), recognise that wherever and whenever infrastructure is developed, it will have an impact on the community and the environment. Through our environmental management systems, we have embedded a wide range of sustainability measures into our core operations, aiming not just to innovate but to apply next-generation practices, while executing some of the largest infrastructure projects in India. We were the first Indian Company to endorse the United Nations Global Compact (UNGC)'s 'The CEO Water Mandate'.

HCC has achieved a 37 per cent reduction of water use across its construction project sites through adopting a rigorous, company-wide framework for improving water resource management. We take a '4 R' (reduce, reuse, recycle, recharge) approach to water interventions at construction sites - where we are typically on the ground for two to six years - as well as in longer-term BOT (build, operate, transfer) projects.

We have set an overall goal of achieving water neutrality through location-specific strategies, and identify and implement conservation interventions through a dedicated team responsible for carrying out the company's water management commitments. Water experts and practitioners at our headquarters in Mumbai work with a 'water champion' - a designated point person at each project site to: assess water impact, conduct technical, social, and cost analysis of feasible water interventions, agree on measures to be implemented, and monitor and evaluate progress. Our company also conducts public consultations to collect primary data, inputs, and perspectives from local communities, sometimes in collaboration with local civil society groups.

The Delhi-Faridabad Elevated Expressway and the 'strategic oil storage cavern project' in Visakhapatnam - featured in the recent UNEP and UNGC report, *'Business & Climate Change Adaptation: Toward Resilient Companies & Communities'* which highlight HCC's efforts towards water neutrality - illustrate how our company has put its water stewardship commitments into practice. Conservation measures undertaken at both projects demonstrate the significance of implementing the UN Water Mandate at HCC and its commitments towards water resources management.

Rainwater harvesting along the Delhi Faridabad Elevated Expressway is helping us to manage storm water, and to exceed our goal of water neutrality for the project, by conserving more water than is consumed during construction. It also makes an important contribution to long-term water security for communities in the surrounding area. The quantitative impact of this innovation is being measured through flow meters installed at the rainwater harvesting system sites. We believe it has high potential for replicability in other road and highway infrastructure projects across India, and can help facilitate climate change adaptation, especially in water-stressed areas. We would like to see the government build this type of water intervention as a requirement into the tendering process, thus creating a level playing field for companies seeking to be both climate-resilient and competitive.

"Water is a profoundly cross-cutting issue – and has environmental, social, developmental and political ramifications."

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Similarly - though installing treatment plant for removing total suspended solids at the Vizag Cavern Project is a matter of regulatory compliance – we uniquely also produce water for process consumption from a specifically designed effluent treatment plant. Applying wastewater treatment technology has enabled our company to reduce dependency on external sources, ensure access to water and continuity of operations, address the challenge of wastewater disposal effectively, - and save money. It also significantly reduced the potentially adverse impact of the project on scarce local freshwater resources in the community. And it influenced government policy: based on HCC's experience, the Indian Strategic Petroleum Reserve Limited - the government body that awards contracts for such projects - has made installing a water treatment and recycling plant a requirement for all future tenders.

Other water intervention initiatives have also been implemented at HCC projects sites across India and abroad: details of them, can be found in our 2009, 2010, and 2011 Communications on Progress.

Water is a profoundly cross-cutting issue – and has environmental, social, developmental and political ramifications. We will continue to engage in practices which enhance our ability to become a water efficient - and ultimately a water neutral - company as part of our efforts to develop responsible infrastructure. And we will continue to contribute in public policy and collective actions at all levels, as well as engaging with our supply / value chain for watershed development and water resources management.

JEAN PALUTIKOF
NCCARF, Griffith University, Gold Coast, Australia

Now Australia soon the world

Australia's climate - which has been described as "boom or bust" - is one of the most variable in the developed world. Multi-year droughts are interspersed with periods of high rainfall, leading to widespread flooding. In Eastern Australia, particularly Queensland, such fluctuations are a response to variations in the El Nino-Southern Oscillation effect.

Australians are well used to dealing with such troublesome impacts in climate-responsive industries like agriculture, and to managing weather-related disasters. Up to a point, managing the impacts of climate change through adaptation is simply an extension of dealing with inter-annual variability.

In at least one region, the effects of climate change are already being felt and are, necessarily, managed. Rainfall in south-west Australia has been well below average for some 30 years, presenting real challenges in delivering a safe and secure drinking water supply (see Figure). This has been addressed by shifting the emphasis from surface reservoirs to more climate-independent sources of supply – desalination plants, deep aquifers and recycling. Perth, a city of 1.7 million people, currently receives around 30 per cent of its water supply from desalinating sea water, and this will rise to 45 per cent in the next six months when new plant comes on-line. However, this is not cheap – the first desalination plant cost around $900 million for 15 per cent of the water demand, and the second - delivering a further 15 per cent - $700 million. Desalination also raises environmental concerns as it requires large amounts of energy - which are only partially met from renewable resources, - and produces highly saline brine. Elsewhere in the south-west, tankering and emergency pipelines are both in use for small communities, whose needs have yet to be met with sustainable long-term solutions.

The citizens of Perth have been slow to modify their water use in response to falling supplies. Summer domestic water use is double that in winter, implying that something like half of it is used outdoors, primarily in watering gardens. In a sense, water resource managers in Perth have been the victims of their own success – their customers still perceive their supply as climate independent and therefore unlimited, and continue to maintain the high consumption patterns associated with green lawns, swimming pools and clean cars. Across the country in SW Queensland, by contrast – where supplies are still delivered primarily from surface storage - real reductions in consumption have been achieved and maintained by a population convinced of the necessity of

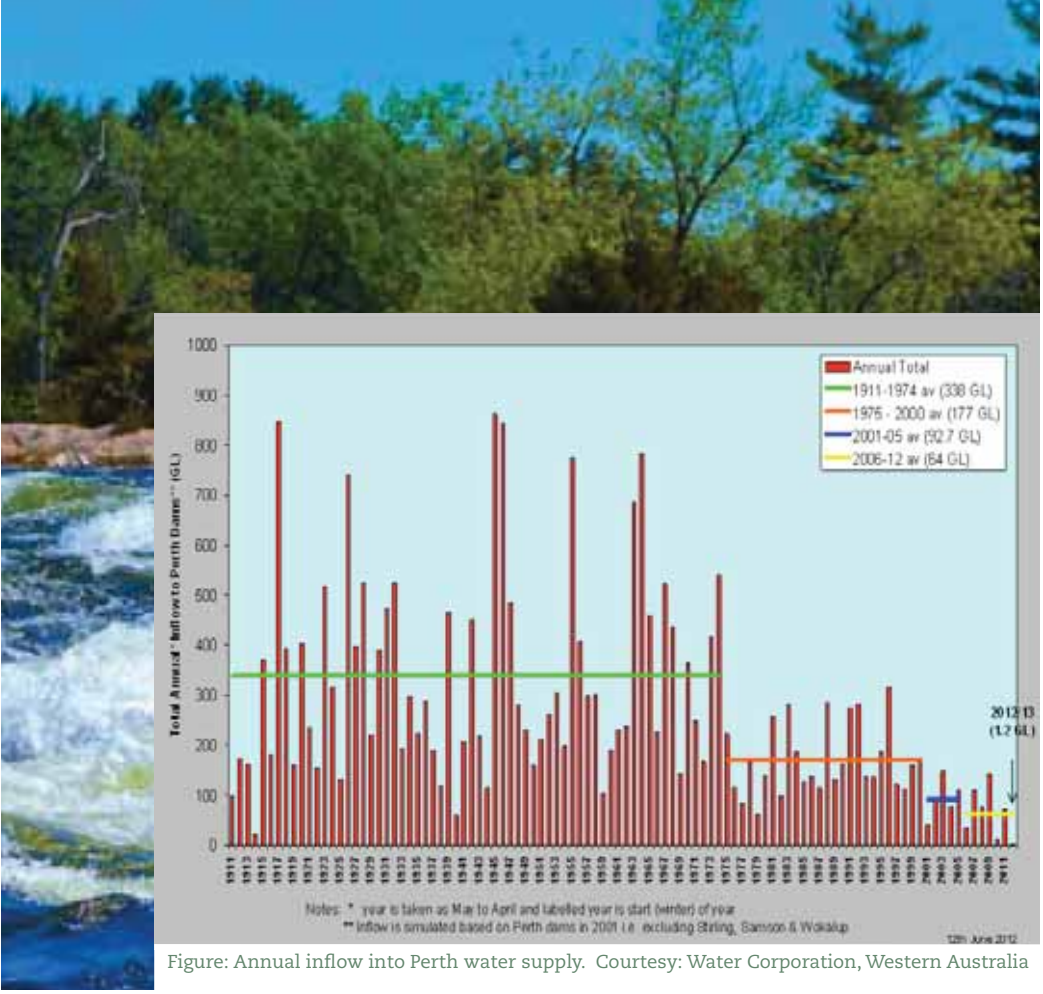

Figure: Annual inflow into Perth water supply. Courtesy: Water Corporation, Western Australia

conservation by the sight of low water levels in the reservoirs.

Decision-makers in SW Australia face many challenges as they seek to respond to dwindling water resources. How can the natural environment be protected to maintain biodiversity? Is the current population of the region sustainable? What is going to happen to dryland agriculture? How should the government foster transformational change? Though these are questions that SW Australia faces today, it is only a matter of time before they are posed to the rest of Australia and the world.

Outside SW Australia, the signal of climate change has not clearly emerged. Eastern Australia has just emerged from a two-year La Nina event that, - although causing widespread damage and loss of life through flooding - has left the dams full. The impacts of climate variability are seen in heat waves and bushfires, and - as we move from a La Nina to an El Nino pattern - the re-emergence of drought. But, whereas in SW Australia there is widespread recognition that climate change is how happening, the same is not true elsewhere: extremes of climate are seen as 'normal', even though the Bureau of Meteorology regularly produces graphs that show a warming of the atmosphere in line with global warming, and sea temperatures that are increasing more rapidly than global rates.

The federal government has spent much time and effort in the last two years putting in place a price on carbon, currently fixed at $23 a tonne and due to float after three years. Latterly, it has come to recognise the need for adaptive responses to climate change, especially in the light of the slow pace of international negotiations. A report on "Barriers to Effective Adaptation to Climate Change" has been commissioned, with a mandate to explore the role of market forces and government in adaptation. Is there a need for government actively to promote adaptation through legislation, regulation and incentives? To what extent will market forces deliver a well-adapted Australia? Where does the potential for market failure lie? This report's public release in early 2013 is eagerly awaited.

What might Australia look like under climate change in the future? How might Australians live? As present-day heatwaves become the 'average', as intense bushfires become an ever-present risk, and as rainfall-dependent water resources become inadequate, it is likely that the already highly urbanised population will be even more concentrated in coastal cities where desalinated water can be provided with relative ease, and people protected from bushfire. Agriculture will be a matter of fly-in fly-out, and the depopulation of rural settlements will be well underway. Large amounts of energy will be required– to pump water, cool houses and power public transport systems - if comfortable living standards are to be achieved. How will that energy be generated? Will it be solar? Will it be nuclear? Australia has abundant solar power but existing distribution systems are not designed to deliver from the distributed power systems implied by solar energy. Marine, terrestrial and freshwater biodiversity will be different from today and, without public awareness and pressure, are likely to be severely degraded.

Australia manages a highly variable climate and is adapting to the first signs of climate change. The lessons being learned carry messages for the whole world. Effective adaptation to climate change that delivers high-quality and sustainable livelihoods and landscapes requires political will and public commitment to clearly defined and agreed goals.

CHRISTIANA FIGUERES
Executive Secretary, UN Framework Convention on Climate Change

Closing the gaps

In the past 20 years, climate change has evolved from a dark environmental threat on the horizon to being recognized as the amplifier and multiplier of every major crisis humanity faces: population growth, energy insecurity, and the strain on water, food and other resources. In those two decades, we have gone from a weak and disconnected international response to a position where international, national and business policies and strategies are now increasingly strengthening each other and converging into the low-carbon future that is the only long-term solution

In the past few years, governments under the UN climate change negotiations have decided on a comprehensive pathway to meet the full challenge of climate change. They have set course for this low carbon future, agreeing that it is imperative to keep the average global temperature rise below two degrees centigrade. Global pledges from developed and developing countries to cut and limit greenhouse gas output are at their highest ever, but there remains a shortfall of around 40 per cent from what science says is required to stay on track below the two degree rise.

That is why governments have constructed their response to address these gaps in ambition, from emission cuts to adaptation, and are launching a new global infrastructure to support developing nations to build their own sustainable, clean energy futures.

The COP18 UN Climate Change Conference, in Doha will be another important step on this road. Its location is a timely reminder that the answers to climate change do not merely avoid a great danger but offer humanity its greatest opportunity to achieve a truly sustainable future for all. Few regions are quite so threatened by the perils of climate change as the Middle East, where rising temperatures would have a devastating effect on all aspects of sustainability. At the same time, the region has a huge renewable energy potential and it is heartening to see some fundamental changes in strategic planning being made by countries in the region. Saudi Arabia, for example, is mulling a domestic energy future driven 100 per cent by renewable energy, while Qatar is working on plans to develop its own solar energy capacity and solar cell production. These plans need to be delivered but a very new trend is emerging. On the global scale, countries, regions, cities and corporations have begun seriously to invest in low-carbon technology. One trillion dollars were invested in renewables by the end of 2011. No less than

118 governments had developed renewable energy targets or policies by the end of last year, more than double the number only eight years ago.

This combination of mutually reinforcing top-down and bottom-up action must accelerate so as to guarantee greater climate stability. That means filling in current gaps that could impede that progress. Recognizing this, governments this year set an objective to close three key gaps in international climate change action.

First, there is the regulatory gap between the first and second commitment period of the Kyoto Protocol which needs to be closed so that countries can ensure a seamless continuity of the treaty, and safeguard the basic principle that industrialized countries must lead the global effort to reduce emissions. The amendment to the Kyoto Protocol to be adopted at Doha would also ensure that the important accounting and implementation elements of the world's only present binding climate agreement can be maintained.

The second gap is that of financial support to the developing world between 2012 and 2020. As part of work to finalize the negotiation stage under the Convention, there needs to be common understanding of how long-term support of 100 billion USD per year can be ramped up by 2020.

The third gap to be addressed in Doha is the one in the ambition of governments to curb their greenhouse emissions before and after 2020. Governments agreed last year to adopt by 2015 a universal climate agreement, covering all emitters, to enter into force from 2020. They can capture and continue the progress they have made this year in launching work under this new Durban Platform negotiation. At the same time, governments need to develop a growing understanding of how they intend to raise their collective level of ambition before 2020 in order to keep below the two degree limit.

The climate change process is also launching a whole new set of global institutions to get finance, technology and other support to the poor and vulnerable – the Green Climate Fund, the Technology Mechanism, The Adaptation Committee. For the United Nations, acting together, these offer a tremendous opportunity to leverage our existing expertise and skills in poverty eradication and development onto a whole new stage of coordinated effort.

UNEP has been particularly active in supporting the international climate change progress. Its regular studies on related impacts have delivered landmark messages. Its in-depth analysis of solutions and their timing through technology and policy tools have provided important foundations for discussion.

To prove further the extent to which momentum for change is building at all levels of society, the UNFCCC Secretariat is showcasing "lighthouse activities" in Doha. These are prime examples of public-private climate initiatives in developing countries which have already improved the lives of the urban poor, and which can inspire governments and businesses alike to do more. If you are in Doha and reading this, please join us. Time is precious but we can get this job done, together.

"The second gap is that of financial support to the developing world between 2012 and 2020."

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People

Kenyan long-distance runner **Patrick Makau**, also known as Patrick Musyoki, recently became a UNEP Clean Air Patron.

Patrick, 27, a world marathon record, was born in Eastern Province, Kenya and as a life long runner has always appreciated the importance of fresh air.

"Runners around the world, both professionals and amateurs, young and old, depend on clean air to train and perform at their best. Millions of people find peace and quiet every day going for a run or walk. But few have the luxury of doing so surrounded by clean air that is free of pollutants from industry and cars," he explained. "Clean air should not be the privilege of a few, but should be the right of all city dwellers – both in developed and developing countries."

The region that Patrick grew up in is well established as a training ground for Kenyan athletes such as the former Bank of America Chicago Marathon champion, Patrick Ivuti. The 2005 Rotterdam champion, Jimmy Muindi, also grew up in the region and incidentally was responsible for 'discovering' Patrick's talent in 2004 during a school running competition.

Patrick, through the recognition of his fellow country men's achievements, identified long distance running as the most viable means of escaping poverty and building a future for himself and his family,

"I've seen how success has helped (their) families. I used to hear (their) names on the radio and read about them in the newspapers—I wanted to be like them," he said.

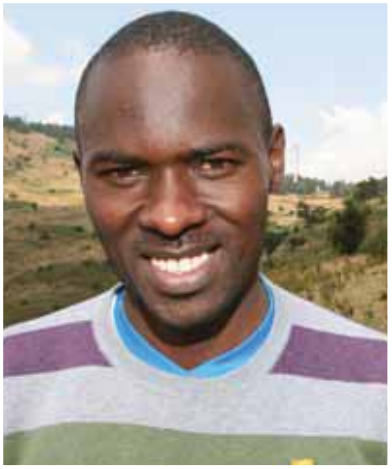
Patrick's admiration for his fellow professional Kenyan runners is epitomized by his ambition of matching the success of Paul Tergat; and the pair now regularly train together on the Ngong Hills bordering Nairobi.

"I live in a small village called Ngong, just outside of Nairobi, Kenya's capital. It is very green and I train in the green hills of Ngong every day. I could not live in the city of Nairobi because the air in the city is too polluted for my training needs. From a distance I can often see the smog that is covering Nairobi like a big blanket. But not everyone is lucky enough to live in a place like Ngong, so I am promoting cleaner air through cleaner transport on their behalf. Everyone has the right to clean air – especially the poor, elderly, and children who are more vulnerable to illness from pollution."

Patrick Makau's professional career began in earnest in July 2005 when he claimed victory in a 25 km event in Tanzania. Growing success at the national level led to his first European race the following year. Other major claims to victory were the Vattenfall Berlin Half Marathons in 2007 and 2008.

2010 was a defining year for Makau whose achievements included a time of 59:52 during the City-Pier-City Loop marathon. His victories during the year culminated in the recognition of his performance when he won the highly coveted AIMS World Athlete of the Year award.

Patrick also set the current world record in 2011 at the Berlin Marathon where he clocked a time of 2:03:38.



"Whether you choose to stay healthy through running or other activities, you need clean air to do your best every day and to stay healthy in the long term. Most people in developing countries do not have this fundamental requirement of a good life – the right to breathe air that is not heavily polluted with car exhaust."

© Shutterstock

Pavan Sukhdev

Indian banker and long-standing environmental economist Pavan Sukhdev has become UNEP's newest Goodwill Ambassador and pledged to use his influence and world standing to enhance the organisation's standing.

Mr. Sukhdev, who has a long association with UNEP, joins other such luminaries as French photographer Yann Arthus-Bertrand, Brazilian supermodel Gisele Bündchen and American actor Don Cheadle in raising awareness of and support for environmental causes.

Mr. Sukhdev, who spent over 20 years working at ANZ Bank and Deutsche Bank, now heads GIST, an organisation that helps governments and corporations to understand and better manage their impacts on natural and human capital. He also served as the study leader for the UNEP-hosted Economics of Ecosystems and Biodiversity Report - a major international partnership to draw attention to the economic benefits of biodiversity.

"It is an honour to take up this role of championing UNEP's work," said Mr. Sukhdev. "Governments and business need to understand that our ecosystems, biodiversity and natural resources are the backbone of our economies and their value should be integrated into decision making."

"As Goodwill Ambassador, I will continue to bring this message home as we strive to transit from 'business as usual' to a sustainable, resource-efficient Green Economy," he added.

Mr. Sukhdev and UNEP are at the forefront of a movement that points out that the world's fixation on economic growth ignores a rapid and largely irreversible depletion of natural resources that will seriously harm future generations. Biodiversity in particular provides major economic benefits that are sometimes overlooked.

As well as taking the message to governments, Mr. Sukhdev will target the corporate sector to show that long-term profitability is ultimately dependent on sustainable use of the earth's resources.

"With over 30 years of experience in banking, markets and the growing field of valuing natural capital, Mr. Sukhdev is strongly positioned to generate considerable support and awareness in business and finance for UNEP's work on the Green Economy," said UN Under-Secretary General and UNEP Executive Director Achim Steiner.

"He is a shining example of the growing trend that has seen the private sector begin to incorporate sustainability concerns into their operational models."

"Governments and business need to understand that our ecosystems, biodiversity and natural resources are the backbone of our economies and their value should be integrated into decision making."

People

Ofir Drori, the founder of LAGA (The Last Great Ape Organisation) and one of wildlife conservation's heroes, has just been awarded this year's prestigious Duke of Edinburgh Conservation Medal.

An Israeli activist and writer, Ofir, created LAGA more than eight years ago as an enforcement Non-Governmental Organisation to fight corruption in order to bring about the arrests and prosecutions of major wildlife criminals dealing in endangered animal species.

LAGA's award winning model, which began in Cameroon, has been replicated in the Republic of Congo and Gabon.

The Duke of Edinburgh presented the award last month for outstanding services to conservation and wildlife law enforcement at Buckingham Palace. Previous recipients of the award include the late Sir Peter Scott and the eminent field biologist Dr George B. Schaller.

This highly coveted and prestigious award coincided with the release of a new short documentary film by Sean Stone. Sean, filmmaker son of legendary Hollywood director, Oliver Stone, worked undercover with Ofir in Cameroon to profile LAGA's efforts to address the plight of Africa's great apes and expose the illegal and brutal bushmeat trade.

LAGA is dedicated to working with the governments of Central and West Africa to infiltrate and bring to justice the criminal gangs responsible for the rampant illegal wildlife trade. LAGA focuses on threatened species and criminal rings of wildlife dealers primarily responsible for the illegal bushmeat business, the ivory trade and the smuggling of wild live wild animals for the exotic 'pet' industry.

Ofir said, "Before LAGA's arrival, Cameroon had stood on a decade old baseline of zero prosecutions under the wildlife law, a situation shared by almost all of Central and West Africa, while organized wildlife crime flourished with virtual impunity throughout Africa's forests."

Today LAGA is respected by conservationists worldwide and has an impressive conviction rate, securing the prosecution of a major wildlife trafficker every week. With an unprecedented success rate, many illicit dealers now behind bars, this effort is helping protect great apes, other primates, elephants and many more species where they belong – in the wild.

Sean Stone's graphic documentary is a unique insight into LAGA's work and follows Ofir though the Cameroonian markets of Douala and Yaounde, gaining first-hand experience of the dangers and difficulties of his work.

A recent study showed that five tonnes of bushmeat (including meat from chimpanzees) arrives in Europe every week, much of it from West Africa and the Born Free Foundation is deeply concerned not only at the threat to biodiversity but the risks to human health this represents.

Ofir declared: "I hope this award highlights our message that the war against wildlife crime demands activism and a hands-on fight against corruption, if conservation is to win over greed. I have nothing but admiration and the greatest appreciation for all the activists that make the LAGA family and those who support what we do."

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numbers

25%

The USA contributes 25 per cent of emissions into the atmosphere even though the US only makes up 5 per cent of the world's population.

The global warming overview.

18%

Livestock farming accounts for around 18 per cent of our global greenhouse gas emissions - more than the global transport sector — **FAO**

1/3

Added heat stress, shifting monsoons, and drier soils may reduce yields by as much as a third in the tropics and subtropics, where crops are already near their maximum heat tolerance — **UNEP**

90%

About 90 per cent of the sun's heat is absorbed by greenhouse gases and radiated back toward the surface, which is warmed to a life-supporting average — **NASA**

30%

Around 30 per cent of the sun's energy that reaches the Earth is reflected back into space.

Environmental Defense Fund

1750

Since 1750, the average amount of energy coming from the Sun either remained constant or increased slightly — **NASA**

Our diets account for up to twice as many greenhouse emissions as driving.

New Scientist

25 & 298

Methane and nitrous oxide are 25 times and 298 times more potent than carbon dioxide respectively in terms of their potential to intensify global warming.**Intergovernmental Panel on Climate Change**

50 years

The surface temperature of the earth would rise by 2° F to 9° F within the next 50 years due to global warming.

The Global Warming Overview.

34 million

34 million acres of trees are cut and burned each year resulting in 25 per cent of all carbon dioxide release entering the atmosphere — **NASA**

Glaciers around the world could melt, causing sea levels to rise while creating water shortages in regions dependent on runoff for fresh water.

National Geographic News

1 million+

More than a million species face extinction from disappearing habitat, changing ecosystems, and acidifying oceans.

National Geographic News

The ocean's circulation system could be permanently altered, causing a mini-ice age in Western Europe and other rapid changes.

WWW COP 18: Doha 2012 United Nations Climate Change Conference useful links

This page contains links to websites to help you research issues related to Climate Change. Our Planet magazine, however, does not endorse the viewpoints of any if 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 opinion and perspectives.

RAW the true cost of factory farming
http://www.raw.info/impacts/climate-change?gclid=CPms0-igprMCFQzKtAodd3QAtg
RAW is brought to you by Compassion in World Farming. The organisation was founded over 40 years ago by a British farmer who became horrified by the development of modern, intensive factory farming.

The U.S. Global Change Research Program (USGCRP)
http://www.globalchange.gov/
The U.S. Global Change Research Program (USGCRP) coordinates and integrates federal research on changes in the global environment and their implications for society. The USGCRP began as a presidential initiative in 1989 and was mandated by Congress in the Global Change Research Act of 1990.

Union of Concerned Scientists
http://www.ucsusa.org/
The Union of Concerned Scientists is the leading science-based nonprofit working for a healthy environment and a safer world. UCS combines independent scientific research and citizen action to develop innovative, practical solutions and to secure responsible changes in government policy, corporate practices, and consumer choices.

New scientists.
http://www.newscientist.com/topic/climate-change
New Scientist magazine was launched in 1956 "for all those men and women who are interested in scientific discovery, and in its industrial, commercial and social consequences". New Scientist reports, explores and interprets the results of human endeavour set in the context of society and culture.

Natural resources defense council.
http://www.nrdc.org/globalwarming/
NRDC is the most effective environmental action group, combining the grassroots power of 1.3 million members and online activists with the courtroom clout and expertise of more than 350 lawyers, scientists and other professionals.

National Geographic
http://news.nationalgeographic.com/news
Inspiring people to care about the planet since 1888.

CLIMATE CHANGE
http://climatechange.ws/facts/
The resources compiled on this site are designed to help answer critical questions about climate change.

Global warming.com
http://globalwarming.com/
Globalwarming.com has two primary objectives. The first objective is to be a valued source of information for people seeking to learn more about global warming and climate change.

Eco Bridge
www.ecobridge.org
The mission of Eco Bridge is to inform the reader of the science and the impacts of climate change and available solutions. Eco Bridge depends on the use of studies, the expertise of scientists, researchers, climatologists, men and women who are specialists in the study of climate change.

http://www.guardian.co.uk/environment/series/the-ultimate-climate-change-faq
http://www.pbs.org/wgbh/warming/stories

innovation

vertical farm

The dense metropolis of Singapore is now home to the world's first commercial vertical farm! Built by Sky Greens Farms, the rising steel structure will help the city grow more food locally, reducing dependence on imported produce. The new farm is able to produce 1 ton of fresh veggies every other day, which are sold in local supermarkets.

The world's first commercial vertical farm will provide a fresh new source of sustainable produce for Singaporeans. The tiny country currently produces only 7% of its vegetables locally, driving a need to buy from other countries. But thanks to the new vertical farm, citizens can eat locally produced goodies – available exclusively at the FairPrice Finest supermarket.

Rukus Bluetooth Solar-Powered Speaker

Get your jam on basically anywhere you want with Eton's new, heavy-duty, portable Bluetooth speaker, the Rukus. The device is powered by an enhanced monocrystal solar panel, and the speaker can wirelessly stream music from any Bluetooth-capable device. It also has a built in handle that makes transporting easy, and can charge almost any mobile device.

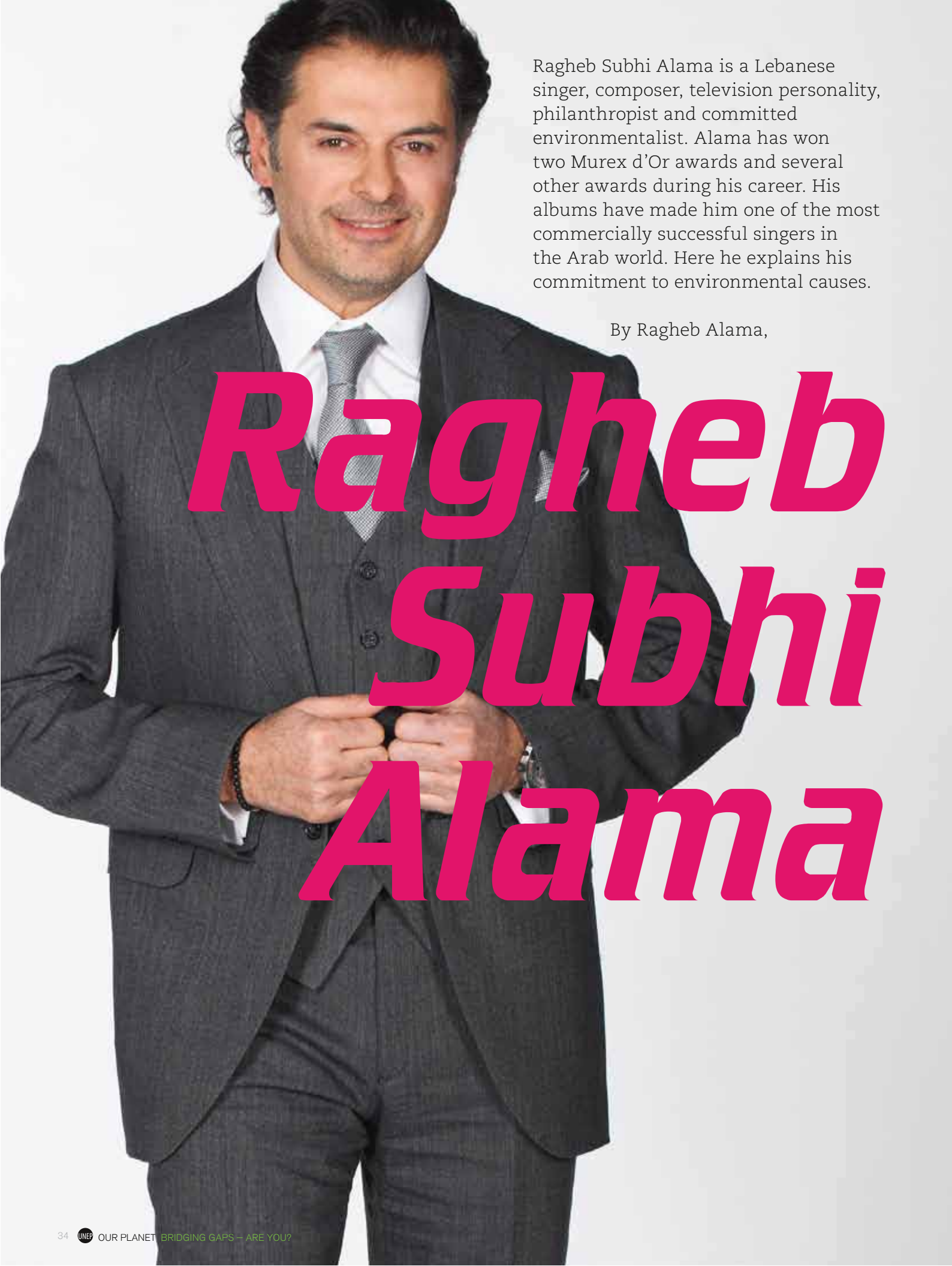
www.inhabitat.com

green farms

The farm itself is made up of 120 aluminum towers that stretch thirty feet tall. Looking like giant greenhouses, the rows of plants produce about a half ton of veggies per day. Only three kinds of vegetables are grown there, but locals hope to expand the farm to include other varieties. The farm is currently seeking investors to help build 300 additional towers, which would produce two tons of vegetables per day. Although the $21 million dollar price tag is hefty, it could mean agricultural independence for the area.

vertical farm veggies

The vertical farm veggies have become a big hit with the locals too. Although the produce costs 10 to 20 cents more than other veggies at the supermarket, consumers seemed eager to buy the freshest food possible – often buying out the market's stock of vertical farm foods. This innovative vertical farm could help change the way the world eats, giving dense cities an opportunity to grow food in their own back yard.



Ragheb Subhi Alama is a Lebanese singer, composer, television personality, philanthropist and committed environmentalist. Alama has won two Murex d'Or awards and several other awards during his career. His albums have made him one of the most commercially successful singers in the Arab world. Here he explains his commitment to environmental causes.

By Ragheb Alama,

Ragheb Subhi Alama

As an artist without political authority, but with a big influence on the public opinion, I am dedicated to raise public awareness and encourage people, in particular, youth in schools and universities to take care of our unique planet.

Environmental challenges should be on the top of the global agenda

I use my position as a celebrity, who fans listen to, to bring people together to support efforts to protect the environment and participate in environmental campaigns.

In my opinion regional high level negotiations and discussions should always take account of the economic and social life of people affected by policy decisions. For instance, the deterioration of ecosystems hinders poverty alleviation programmes which are one of the main themes of the Millennium Development Goals (MDGs).

I am on a mission to remind people that the environment is important to ensure human well-being and livelihoods. By taking positive action towards the protecting this unique environment and being accountable for our planet's natural resources, individuals and communities protect their health and avoid the diseases resulting from climate change and other environmental related issues.

The West Asian region is today facing many challenges due to the deterioration of the quality of the air, water and ecosystems. Environmental, social, and economic issues, both current and emerging, are a big burden. Hence, the action should be taken at individual level as well as at political and business levels.

In my last Album, I sent a message in line with UNEP's mission, to all my fans, calling them to become environment advocates with the aim to improve their quality of life without compromising that of future generations.

I try to raise public awareness by talking about environmental challenges in most of my interviews with the media. I believe I have to use my position as a celebrity, to mobilize politicians and communities to participate in the environmental forums and conferences.

In the run-up to COP18, I invite decision-makers to set a clear vision that encompasses strategies for the implementation of solutions in light of the Multilateral Environment Agreements and according to the Rio+20 outcomes.

My positive attitude and position vis-a-vis the environment is clear. I was honored to support the UNEP climate change campaign in 2009. This led

I use my position as a celebrity, who fans listen to, to bring people together to support efforts to protect the environment and participate in environmental campaigns.

to a successful result by gathering a big number of signatures in the region that supported the environmental action and UNEP's mission. About 300 media outlets in the region, highlighted this event within UNEP's work.

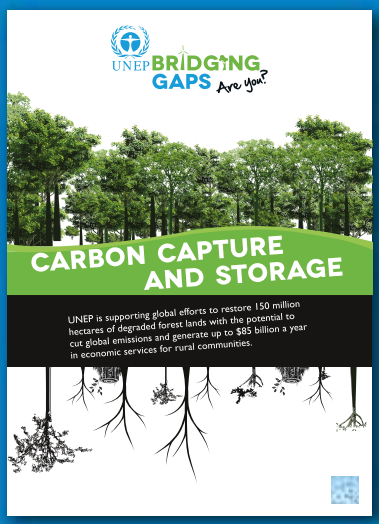
I am also delighted to accept a request from the UN, for the second time, to take part in the UN Climate Change Conference to perform during the ceremony which will take place in Doha Qatar on 4 December 2012. It is an honor to be selected by the United Nations to raise the environmental voice on behalf of the Arab region.

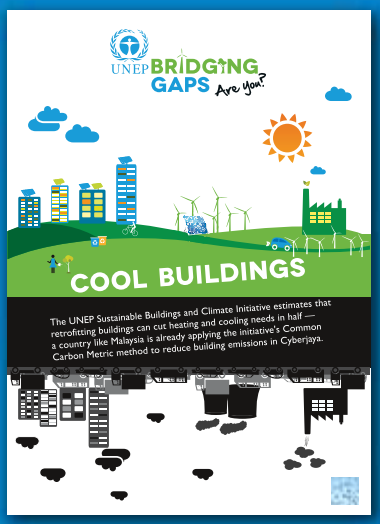
Each day, climate change becomes more and more of a threat to our lives. Water scarcity, desertification and other challenges are increasing at a terrifying pace.

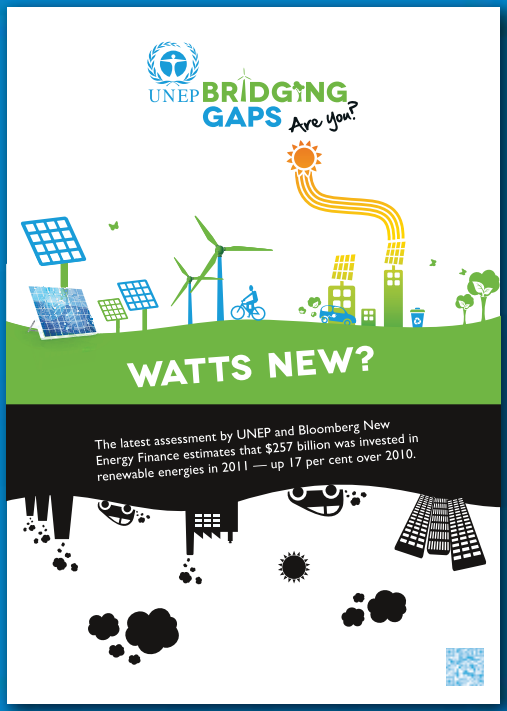
My mission is to contribute to the change in the mindset and behavior of politicians and individuals. We are still adopting the traditional technologies in different sectors such as the transportation, industry, etc. which cause groundwater pollution and diseases.

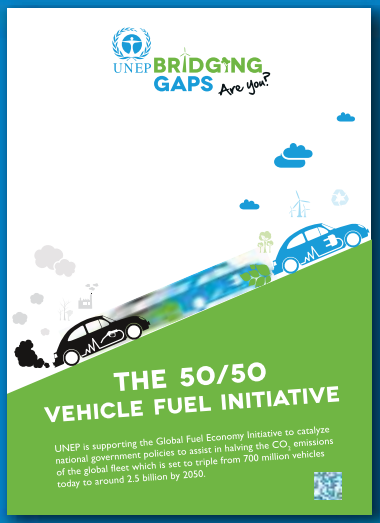
My objective is to communicate with environmental NGOs and participate in conferences in order to raise the voice of the environment and urge the politicians to take the relevant decisions and actions.

My vision for the future is to enhance the partnership between all stakeholders, in particular the ministries of Environment, Health and Information to conduct awareness-raising campaigns among the communities about the danger, threats and diseases caused by the climate change and other environmental challenges.









www.unep.org/ourplanet

www.unep.org/40thAnniversary

www.unep.org/climatechange