our planet

The magazine of the United Nations Environment Programme - February 2010

UNEP

LEE MYUNG-BAK
LOW CARBON,
GREEN GROWTH

HILDA SOLIS
GREEN JOBS

GERARD KLEISTERLEE
LIGHTING THE PATH

ANGEL GURRÍA
DOUBLE DIVIDENDS

GREEN ECONOMY

Making it work

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books

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TEEB Report for National and International Policy Makers

This report is one of a series of reports prepared by The Economics of Ecosystems and Biodiversity (TEEB) initiative hosted by UNEP. This new report states that policymakers who factor the planet's multi-trillion dollar ecosystem services into their national and international investment strategies are likely to see far higher rates of return and stronger economic growth in the twenty-first century. It calls on policymakers to accelerate, scale-up and embed investments in the management and restoration of ecosystems. It also calls for more sophisticated cost-benefit analysis before policy decisions are made.

UNEP Year Book 2010

The UNEP Year Book 2010 reports on new environmental science and recent developments in our changing environment. It looks at: progress in environmental governance; the effects of continuing degradation and loss of the world's ecosystems; impacts on the atmosphere leading to continuing climate change; harmful substances and hazardous wastes that affect human health and the environment; environment-related disasters and conflicts; and unsustainable use of resources. The purpose of the *Year Book* is to strengthen the science-policy interface. It presents recent developments and new insights of particular interest to policymakers.

A Case for Climate Neutrality: Case Studies on Moving Towards a Low Carbon Economy

The publication presents case studies from within the UNEP-led Climate Neutral Network (CN Net) that showcase initiatives undertaken by diverse actors in a variety of sectors on moving towards climate neutrality. The publication presents the wealth of experiences by national and regional governments, city authorities, businesses, UN agencies and NGOs in reducing greenhouse gas emissions and moving towards a resource efficient, low-carbon green economy of the twenty-first century.

UNEP Annual Report

Providing an overview of UNEP's activities in 2009, this report looks at a broad range of activities carried out by the organization as it follows its mandate to provide environmental leadership and promote sustainable development. Taking the theme of "Seizing the Green Opportunity", the report provides an overview of UNEP's activities in 2009 through the green economy lens. Highlights of the year include the emergence of green growth initiatives around the world, the innovative approaches to address climate change and ecosystem loss, and the renewed efforts to strengthen international environmental governance.

Climate Action 2009/2010

This third annual edition of *Climate Action* is produced to encourage and assist governments and business to lower greenhouse gas (GHG) emissions. It features a range of articles that encourage the sharing of best practice and the development of new technologies and initiatives and illustrates the opportunities for business and governments to reduce costs and increase profits while tackling climate change. The articles cover topics such as human impact, policy, business and finance, technology, energy, transport, ecosystem services, built environment and a regional focus on Canada.

Powering the Green Economy The Feed-in Tariff Handbook

Miguel Mendonça, David Jacobs and Benjamin Sovacool (Earthscan)

Renewable energy is fundamental for creating greener economies, new jobs and industries, securing energy supplies and for protecting the climate and environment. This book focuses on feed-in tariffs as one of the most effective policy measures for encouraging the movement from planet-heating fossil fuels to safe, truly renewable energy. It shares many lessons on good and bad design and implementation, as well as discussing the challenges faced by policy, and renewable energy in general.

Changing Climate, Changing Economy

Edited by Jean-Philippe Touffut (Edward Elgar Publishing)

How did climate change become an economic issue? Why is economic discourse so influential on the public policy of climate change? How can it best contribute to the scientific and public debates? In *Changing Climate, Changing Economy*, nine eminent scholars with a variety of viewpoints explain both how economics has changed environmental understanding and how the study of climate change has modified the economy.

The Three Secrets of Green Business

Gareth Kane (Earthscan)

With the subtitle, Unlocking Competitive Advantage in a Low Carbon Economy, this book encourages businesses to look at the green agenda as an opportunity rather than a threat. For those who want to introduce sustainability into their business or organization quickly and effectively, this is an accessible, practical "how-to" guide that presents a comprehensive coverage of topics about making business green and increasing profits.

reflections

ACHIM STEINER

UN Under-Secretary-General and Executive Director, UNEP

Realizing national Green Economies will be a key cornerstone of UNEP's work over the coming year as countries, companies and communities wrestle with the multiple challenges but also multiple opportunities presented in the first decade of the twentieth century.

More than two dozen governments have requested assistance and down-to-earth advice on how best to tailor a transition to a low carbon, resource efficient economy within national development strategies and economic planning.

A Green Economy Initiative for Africa has been in preparation. Following the Third African Ministerial Conference on Financing for Development in Rwanda last May, a pilot project, involving six countries including Kenya, Rwanda and Senegal, will be launched shortly.

In China, UNEP is collaborating with the Ministry of the Environment and relevant institutions to produce a series of sectoral green economy studies, which will feed into the country's five-year development plan. A further study is underway in Eastern Europe, the Caucasus and Central Asia looking at the prospects for promoting organic agriculture, while research on priority areas for green economy programmes is advancing in Azerbaijan.

And priority sectors for catalysing a green economy in West Asia have emerged following discussions in countries from Bahrain, Dubai and Jordan to Kuwait, Lebanon and Saudi Arabia. A regional environment work programme on the theme is likely to be adopted for the region in 2010.

These exciting opportunities dovetail with this year's acceleration of Technology Needs Assessments, supported by the Global Environment Facility under the framework of the UN Framework Convention on Climate Change. Up to 45 countries will be helped to prioritize technologies for mitigating and adapting to climate change, and to pinpoint and overcome legal, financial, policy and other barriers to taking them up. The first wave of 15 countries have been selected, including Cote D'Ivoire and Mali in Africa; Bangladesh, Cambodia and Indonesia in Asia; Argentina and Guatemala in Latin America; and Georgia in Europe.

How best to bring these multi-trillion dollar services of ecological infrastructures into the engine room of national and regional economies will also form an important pillar of this work. It builds on the UNEP-hosted Economics of Ecosystems and Biodiversity study that will publish its final report later this year in support of the UN's International Year of Biodiversity and the Convention on Biological Diversity's meeting in Japan in October.

Few could have imagined that the Global Green New Deal/ Green Economy Initiative launched during the unfolding financial and economic crisis of late 2008, would have gained such rapid traction. Around 15 per cent of the more than $3 trillion-worth of stimulus funds worldwide are estimated to be green — rising to around 80 per cent in the Republic of Korea. Terms like Green Economy and Green Growth have rapidly become common parlance in many capital cities and at key international gatherings, including last year's G8 and G20 summits and the ministerial session of the OECD.

The Green Economy Initiative, the logical extension of the Global Green New Deal, will also be a key feature of UNEP's annual gathering of environment ministers in Bali, Indonesia, as governments take stock of how far such a shift towards sustainable consumption and production is happening, and of the lessons learnt so far.

The urgency of the challenges facing all economies, from climate change to ecological losses become more apparent with every passing year as does the need to deliver growth, overcome poverty and generate decent employment.

Twentieth century economic models are unlikely to serve us well on a planet of 6 billion people, rising to 9 billion by 2050. The global public is looking to its leaders and policymakers for solutions.

The Green Economy Initiative represents one potent answer to this request for transformative action. Indeed it is emerging as a powerful and practical opportunity for countering persistent and emerging threats. And it is demonstrating how intelligent policy choices, combined with supportive market mechanisms, can perhaps provide a comprehensive route to sustainable development that has so far eluded humankind.

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LEE MYUNG-BAK

President of
the Republic of Korea

LOW CARBON, GREEN GROWTH

"To trigger action, there needs to be knowledge. So any discussion on climate change must encompass not only "how much" we will reduce, but "how" we will get there. All countries must find their unique strategy to achieve green growth. And because there is no clear map to follow, we must help each other as we go along."

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Without doubt the low-carbon growth strategy is emerging as the viable solution for today's global environmental challenge.

With the world's population expected to reach 9 billion by 2050 and the changing climatic system threatening our one and only habitat, it is imperative that we find a way to satisfy both economic growth and address climate change. That is why we have to make a paradigm shift. This is the choice I made when I declared "Low Carbon, Green Growth" as Korea's national vision on 15 August 2008.

For years, those who believed that addressing climate change would be a burden on the economy have dominated the debate in Korea. Most business and government leaders argued that we must delay taking action to combat it in order to "ensure global competitiveness" — as though inaction, in the long run, would be in Korea's interests.

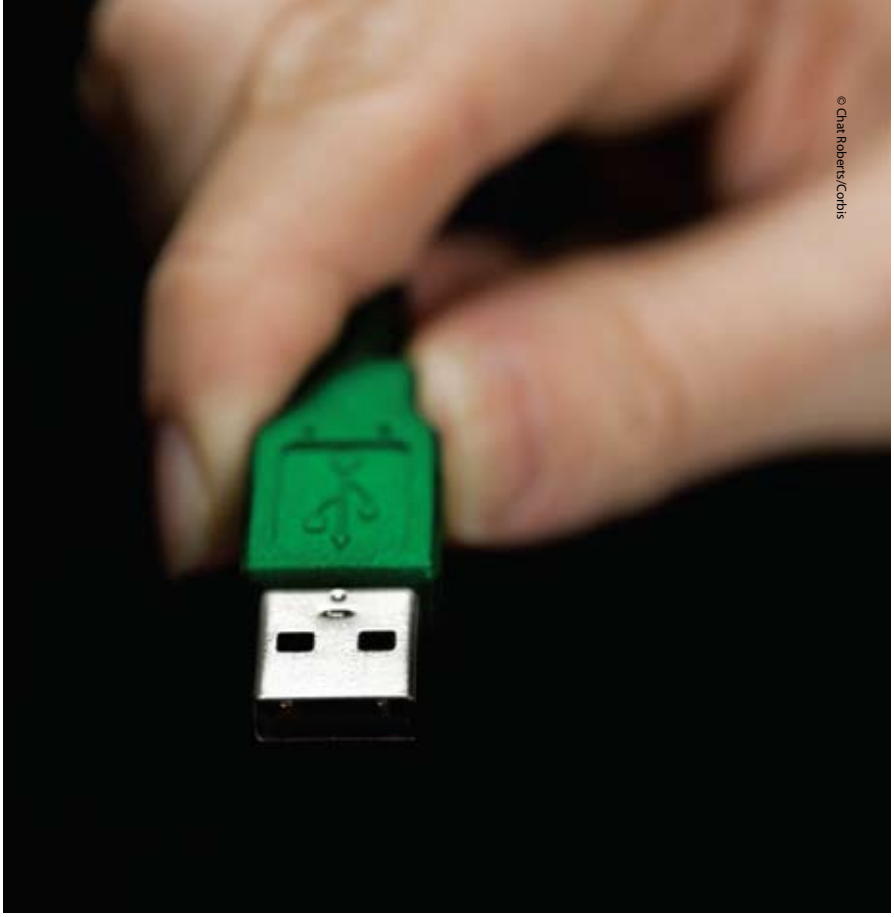
I felt a new paradigm of thinking was needed to break this deadlock. If a new road to growth was unavoidable, we should not resist it, but rather embrace it wholeheartedly. This is the philosophy behind the Low Carbon, Green Growth strategy.
Green growth is about addressing climate change in an aggressive manner while, at the same time, making the green technologies and industries needed to combat it the driver of national economic growth. But it is also much more than that. It entails a new social and civilizational paradigm shift away from the business assumptions and lifestyles of the industrial age to a new path that satisfies the need for economic growth, social and corporate responsibility, and the integrity of the environment. It is a shift in thinking that no longer pits "green" against "growth".

In order to make "green" and "growth" compatible, there are three key requirements.

First, there needs to be strong political will and leadership to make the transition to a new paradigm. In Korea, I established a presidential committee to oversee integration of the green growth vision in all sectors of society, from central to local governments to businesses to civic groups. In order to ensure that the vision has priority over all relevant policies, the National Assembly passed the Basic Act on Green Growth with cross-party support. As part of the Government's five-year green-growth plan, we are spending 2 per cent of our gross domestic product per year to push the policies forward — higher than what was recommended by UNEP.

Second, the public needs to embrace the new paradigm and discard old habits of thinking and acting. A new civic-mindedness and an institutional commitment to innovation must replace narrow self-interest and slavish adherence to the status quo. From a policy standpoint, this requires measures to raise awareness of green growth and provide proper incentives and disincentives — such as carbon pricing and taxation — to help the public make the right decisions. To that end, the Korean government is adopting stringent goals and measures to promote energy saving

"It is a shift in thinking that no longer pits green against growth."



in public buildings. The public is also becoming involved through schemes, such as the carbon-point system, where those who are willing to make the change are being financially rewarded.

Last but not least, there needs to be a technological revolution to support the first two requirements. Breakthroughs in technology are what will enable the path to green growth and allow the public truly to transform its lifestyle.
The Major Economies Forum on Energy and Climate identified 10 areas of transformational technologies to combat global climate change, where Korea is playing the leadership role for smart grid technology, identifying barriers and finding strategies to make it a reality. Korea has also identified 27 Green Technologies that will change the world. By 2020, a quarter of all government R&D spending will be spent on green technologies.

At Copenhagen, I spoke on the need to build a global partnership on how to achieve global green growth. To trigger action, there needs to be knowledge. So any discussion on climate change must encompass not only "how much" we will reduce, but "how" we will get there.

All countries must find their unique strategy to achieve green growth. And because there is no clear map to follow, we must help each other as we go along.

This is why I announced the creation of the Global Green Growth Institute to serve as a global "hub" of ideas, new technologies and policies for the green growth initiative. Drawing on our unique experience of having moved from being a beneficiary of international aid to becoming a major contributor of it, I believe Korea can play a meaningful role in helping the Institute bridge the divide between developed and developing countries on climate change.

UNEP, as the leading environmental agency in the United Nations system, has a key role as the steward for green growth. So I welcome, and continue to support, its Green Economy Initiative which has made a huge impact on encouraging countries to make the transition to a green growth paradigm.

Korea will play an active role by adopting what I have called a "me first" approach. Too often in the past, the need to mobilize global action to protect the global environment has been stymied by a reluctance of nations to act until others act first.

I believe it is time for all of us to act together in this spirit of "me first." In doing so, we recall the Confucian saying, "If one undertakes right things voluntarily, how can others not follow." We must all work together to forge the path to green growth. And I truly believe that those who take the first actions will reap the fruits of the new green world.

verbatim

Dr Dipu Moni, Bangladeshi Foreign Minister, in reference to the people of her country, one of the most vulnerable to climate change.

"Like all of us here it's an existential question."

USA President Barack Obama, announcing government support aimed at modernizing the nation's power grid.

"There's something big happening in America in terms of creating a clean-energy economy."

Dr. Tim Flannery, Chairman of the Copenhagen Climate Council.

"... I think that China is in a position where, as manufacturer to the world, if it goes down that green energy route, it will open up enormous new markets."

Lord Nicolas Stern arguing for a transition to a low-carbon sustainable economy.

"We could ... set the world on a course where we would see arguably the most dynamic period of technologically driven growth in economic history – probably bigger than the railways or electricity."

John Hay, UN Climate Change Secretariat spokesperson, referring to China's announcement on its CO_2 emissions reduction target ahead of the Copenhagen conference.

"This is a huge morale booster."

Dr. Manmohan Singh, Indian Prime Minister at a November 2009 meeting with USA President Barack Obama.

"Just as we partnered each other in the shaping of the knowledge economy, we have the opportunity today to become partners in developing the green economy of the future."

numbers

80
Percentage of Korea's economic stimulus package aimed at promoting a green economy — **Inter Press Service**

150,000,000,000
The EU's recommended annual funding to help poorer nations develop green industries and adapt to climate change — **The Globe and Mail**

99
Percentage of Iceland's electricity demand met with renewables — **The New York Times**

60
Estimated dollar value of the economic return for every $1 invested in ecosystem services — **Newsweek**

440,000,000,000
Dollars in China's 2009 stimulus package to expand its renewable energy use — **COP 15 Copenhagen News**

119
Billions of dollars in global investments in renewable energy in 2008 — **Business Times**

1/3
China's share of global solar manufacturing capacity — **The New York Times**

45
The investment in billions of dollars in protected areas across the world that could yield services worth $5 trillion annually — **UNEP**

200,000,000
The Stern Review's estimate of permanently displaced environmental refugees by 2050 – **AFP**

HILDA L. SOLIS
Secretary of Labor, USA

GREEN JOBS

© Alex Hofford/epa/Corbis

The United States of America is moving towards a clean energy economy that is both more robust and sustainable, and President Obama's commitment to this goal is part of our work at the Department of Labor. In November 2009, we announced almost $55 million in green training grants that will lead to green jobs and help communities across the nation spur economic recovery and begin the process towards gaining energy independence. But that was just the start.

In the first quarter of 2010, we will announce $750 million in additional grants to train American workers for careers in new and green industries, part of a larger initiative jump-started by our American Recovery and Reinvestment Act. These investments will help American workers succeed, while laying the foundation for our country's long-term competitiveness.

Many of our green grants will support job training aimed at workers in

under-served communities, as well as veterans, women, young people, African Americans, Latinos, persons with disabilities and Native Americans. We have also launched a series of related programmes within the Department of Labor through our Women's Bureau, the Occupational Safety and Health Administration and other agencies. We have held several seminars on how to prepare women for green jobs, and co-hosted forums on increasing access to them by persons with disabilities and on ensuring safety within the green jobs industry. And we are looking forward to building on these important steps.

"As citizens of the world, we have a responsibility to halt and undo our prior environmental damage. But, while taking important steps to do this, we also want to figure out ways to benefit our economy. Green jobs, therefore, provide the opportunity to do good while doing well."

The Department of Labor has made possible a long list of other key programmes and assistance, through our National Emergency Grants and Trade Adjustment Assistance initiatives, providing support for states so they can offer free training and other services — such as job placement and transport assistance — for workers who have lost their jobs as a result of trade or natural disasters. With their help many of these displaced workers will re-enter the workforce, and a good number of them will transition into green jobs.

As citizens of the world, we have a responsibility to halt and undo our prior environmental damage. But, while taking important steps to do this, we also want to figure out ways to benefit our economy. Green jobs, therefore, provide the opportunity to do good while doing well. I recognized this when, serving as a United States Member of Congress, I made focusing on ways to prepare green jobs one of my legislative priorities, and am proud to have authored the Green Jobs Act, which authorized millions of dollars in training. It was signed into law by former President Bush and is now being implemented by President Obama.

Our country was founded by immigrants with varied backgrounds and skills and Americans are hard working and deserve the best opportunities our system can possibly provide. A prepared workforce for new green jobs is a win-win situation. Providing our workers with new and innovative skills, enables them to re-enter our workforce upon completing their training.

Strong partnerships are essential to our success in strengthening our training programmes, our employers and our industries. So the training initiatives we support at the Department of Labor frequently involve partnerships with community colleges, local businesses, and workforce development boards. This is one way we ensure that everyone is on board, figuring out strategic solutions to keep our economy strong.

These partnerships help prepare our young people, and our displaced — and even elderly — workers for the economy of tomorrow, training them for jobs in green occupations including, weatherization specialists, solar panel installers, energy auditors and hybrid automobile experts. In short, they are making good jobs — safe, secure, green and paying family-supporting wages — a reality for more and more Americans. And, in the process, they are helping us meet the goal of a clean energy future that works for all humankind.

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GERARD KLEISTERLEE

President/Chief Executive Officer of Philips

Lighting the path

The global financial crisis, I personally believe, makes acting decisively to solve our climate challenge even more urgent. Taking it as an opportunity — addressing the energy and climate crises in the right way — will contribute to overcoming the economic downturn and create opportunities for green growth. Tackling these challenges requires a broad concerted effort both in communicating the solutions for climate change and in meeting the massive challenge of implementing them speedily.

At Philips, we support an ambitious road map for the battle against climate change. Significant progress can start to be made immediately with existing knowledge and technology, allowing us to accommodate global economic growth while buying time to let renewable energy solutions come to full maturity. Indeed, several McKinsey studies show that the quickest and most cost-effective way of reducing carbon emissions is to invest in energy efficiency measures, as in buildings, transport and lighting.

Energy-efficient lighting solutions can play an important role in this, as they offer an immediate and

"Significant progress can start to be made immediately with existing knowledge and technology, allowing us to accommodate global economic growth while buying time to let renewable energy solutions come to full maturity."

actionable win. Lighting accounts roughly for 19 per cent of the world's electricity use, and about 75 per cent of it is based on old, energy-inefficient solutions. On average 40 per cent of the electricity could be saved by switching existing lighting, based on old technology, to the modern, energy-efficient lighting now available. This is equivalent to saving €120 billion on electricity bills — and to the output of 600 power plants or 1,800 million oil barrels every year.

Through such solutions, we can offer a triple-win approach: saving people, businesses and government money; reducing greenhouse gas emissions; and creating new "green collar jobs" for a green economic recovery.

But this means we have to start thinking differently. More expensive and less available energy may lead to different business choices. Perhaps cheap labour will be replaced by cheap energy as a driver in emerging markets, leading to much more regional supply chains and perhaps even production. Access to energy may become the single most important urban development planning criterion, since more than half of the world's people now live in cities and are responsible for 70 per cent of global energy consumption.

It is amazing how much there is to gain just from using available technology better. That is why we are teaming up with many partners around the world, such as the World Green Building Council, committing to make cities 40 per cent more energy efficient in the next 10 years. Action should particularly be focused on renovating buildings, and on new construction, in developed countries — and on creating twenty-first century energy-efficient cities in emerging and developing ones, where refusing to copy fossil fuel-intensive twentieth century city blueprints will be especially beneficial.

But new technological paradigms also require business models specifically designed for them. Most successful innovations take shape not by inventing a new technology but by integrating an enabling one into a system paradigm shift. So we are looking not just at product innovations but also, and more importantly, at more systemic innovations that help to reduce energy consumption and improve people's well-being by taking the effects of lighting controls, lighting architecture and planning into account.

These facts and figures have a commercial flavour, but I believe that we need them, and best practices, to enable us to act on these unprecedented global threats, while boosting our economic competitiveness.

Only radical and coordinated global action will enable us really to have an impact. Business can deliver technologies and financial solutions and improve awareness, but governments have to provide economic stimulus and appropriate policies and regulations. So we have been calling for policy measures to spur energy efficiency through ambitious performance and efficiency standards. Introducing "target setting" and "financial instruments", both internationally and nationally, is the key factor for success in implementing energy efficiency legislation.

There also needs to be broad recognition that we need to address the emotional drivers — as well as the rational and legal ones — creating understanding of, and buy-in for, a sustainable future. Citizens and consumers do not have a concrete view of what a sustainable society would look like — and there is also a lack of understanding about why awareness of its benefits is so important, through leveraging public support and societal pressure. It is even more vital that business, governments and non-governmental organizations work together to make citizens and consumers aware that their own personal contribution, however little it might seem to each of them, becomes substantial when multiplied among manifold people making a difference.

Nobody can solve these crises alone — not scientists, nor public or private stakeholders. So we welcome further collaboration in new types of partnerships to accelerate actions and concrete initiatives, bringing us further down the path towards a more sustainable, innovative and competitive society.

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PAVAN SUKHDEV

Special Adviser and
Head of UNEP's
Green Economy Initiative

Natural capital underlies everything

Over 800 experts in many fields met recently in Dubai to prepare for the World Economic Forum's annual meeting at Davos. No less than 75 major global problem areas or domains were identified, and each was assigned to a Global Agenda Council of a dozen experts to brainstorm and distill into broad lessons for global cooperation. I was asked to chair a council on the loss of ecosystems and biodiversity — or natural capital — but as we began deliberating we soon found that the problems of our domain were shared by — or, indeed, caused problems in — no less than 40 of the others.

Councils evaluating global risks (freshwater scarcity, food scarcity, nutrition, pandemics, catastrophic events, and illicit trade), for example, all saw ecosystem and biodiversity losses as key underlying drivers. The council on migration found that its biggest problem arose from the dying tropical coral reefs and fisheries — potentially producing 200 million migrants. Security concerns (fragile states, human rights) were connected to the availability of the goods and services of nature to poor people. All regional councils — from Australia to Latin America — had big issues rooted in misused natural capital. Climate change — through ecosystem-based mitigation and adaptation and ocean governance — through questions over the survival of ocean fisheries were also inextricably linked with ecosystems and biodiversity.

When I mentioned this to a friend from another council, he raised his eyebrows, and said, "Well, I am not surprised. All the other councils live inside yours!" That says a lot: that the Earth is our only home, and that its ecosystems and biodiversity — the physical and living fabric of the planet — provide us with air, food, water, fuel, fibre, and a host of ecosystem services that make the planet habitable for humanity.

Natural Capital — ecosystems and biodiversity providing benefits for humankind — clearly underlies everything. Yet, the annual loss of land-based Natural Capital — in terms of lost human welfare benefits from forest loss alone — has reached $2 trillion to $4.5 trillion. Why have such significant capital losses escaped public scrutiny and adequate policy responses? I believe it is largely because of the economic invisibility of Natural Capital, as most of its goods and services are "public goods", delivered free directly to the beneficiaries, and also are mostly unmeasured and unmanaged.

It is, for example, not reflected in national accounts. As we know them, these date back to World War II and the Marshall Plan when economists Richard Stone and James Meade with support from J.M. Keynes designed them as a way of keeping track of economic activity. Given the circumstances, their framework was necessarily "industrial" in its essence: there was no space in it

for environmental degradation and sociodemographic developments. After the War, the same framework carried on and was adapted to create the GDP measurement now used around the world.

The creators of GDP realized its limitations. "The three pillars on which analysis of society ought to rest are studies of economic, sociodemographic and environmental phenomena," said Richard Stone in his 1984 Nobel Memorial Lecture. He added that his work had focused mostly on economic accounting and that he had not been able to spend much time on its environmental equivalent even though he understood that "environmental issues, such as pollution, land use and non-renewable resources offer plenty of scope for accounting".

Thus the creators of the current system of calculating GDP thought of it as work-in-progress, and admitted as much 25 years ago. Unfortunately, the world has continued to focus much of its energy on maximizing this incomplete and out-of-date paradigm.

Our economic compass is faulty and must be updated, better to reflect the roles of human capital and natural capital. We must ensure that the costs and benefits of conserving nature are calculated as best possible, are recognized by leaders, businesses and citizens alike, are included in society's accounts, and are managed so as to be distributed more fairly across communities and sustainable for generations to come.

"We need a "Green Economy", which harnesses the productive potential of nature to increase Earth's biocapacity, and thus to ensure greater human well-being and its equitable distribution."

Presenting solutions to the economic invisibility of natural capital and describing ways in which the flows from it can be recognized and rewarded is the main purpose of TEEB, our project on The Economics of Ecosystems and Biodiversity — now part of UNEP's Green Economy initiative — which will present its results to the Convention of Biological Diversity in October. TEEB reports and the *Green Economy Report* both address modern capitalism and its discontents, and recommend many ways in which to reform policy and organize markets to produce greater wealth, more decent jobs, and less poverty. Natural Capital, its values, and better use, are both at the heart of TEEB, and an important component of the future Green Economy.

For capitalism to work, capital itself must be recognized in all its dimensions — physical (financial assets, other human-made assets), human (education, health), social (communal harmony, human relationships, etc.) and natural (rivers, wetlands, forests, coral reefs, etc. and their resident biodiversity). This thought is not new: it goes back to Adam Smith's basic economic resources "land, labour and capital". But in Smith's day, land and labour were plenteous — and colonization expanded their supply. Energy was not even a major factor of production. The scarce resource was financial capital. How times have changed!

We now need a "three-dimensional" capitalism, including natural and human capital. We need a "Green Economy", which harnesses the productive potential of nature to increase Earth's biocapacity, and thus to ensure greater human well-being and its equitable distribution. We need to think of natural capital not as a subordinate asset class — a source of "stuff" for our production engines — but as a complex and valuable ecological infrastructure that simultaneously provides us goods (food, fuel, fibre, etc.), services (air cleansing, freshwater regulation, climate regulation, etc.) and ideas (bio-mimicry applications which can radically transform production as we know it). We need a combined policy and business focus on rebuilding Natural Capital, so that its largely free contributions to human welfare can continue to benefit not just us and our children, but generations as yet unborn.

awards and events

SEED AWARDS 2009

Grassroots environmental projects in Zimbabwe, Bangladesh, Colombia, Southern Africa, India and Niger are winners of the 2009 SEED Gold Awards. The SEED Awards are presented annually by the SEED Initiative, whose mission is supporting entrepreneurs for sustainable development. The prize recognizes promising, locally driven start-up enterprises that work in developing countries to improve livelihoods, tackle poverty and manage natural resources sustainably. The winners will receive individually tailored business and partnership support services, worth $35,000 to help them become established and increase their impact.

www.seedinit.org

SEED Initiative

GREEN AWARDS FOR CREATIVITY AND SUSTAINABILITY

The Green Awards highlight the best examples of green marketing and sustainability communications that have made a real difference in the fight against global warming. The Green Awards recognize excellence in 16 categories from Best Green International Campaign, for global entrants, to Best Green Campaigner, for individuals and small groups championing sustainability. The 2009 winners, announced in November, covered a range of media and topics including sustainable transport, sustainable eating, waste reduction, energy efficiency, animal welfare and corporate social responsibility.

www.greenawards.co.uk/home

THE ELIZABETH HAUB PRIZE

Professor Laurence Boisson de Chazournes received the 2008 Elizabeth Haub Prize for Environmental Law on 22 October 2009 in Stockholm. Professor Boisson de Chazournes was honoured for her exceptional contributions to the development of international environmental law through her scholarship and teaching, as well as her practical work at organizations such as the World Bank, the World Trade Organization, the United Nations Compensation Commission and the International Court of Justice. Sponsored by the International Council of Environmental Law and Stockholm University, the Prize is considered the most prestigious international distinction to be conferred upon an environmental lawyer.

http://www.kssf.de/EHF/

WORLD WATER DAY

World Water Day
2010
Clean Water for a Healthy World

Every year on 22 March, World Water Day aims to raise awareness of the importance of water and to promote its sustainable use. The theme for 2010 is "water quality", and key events and activities will spread messages about sustaining healthy ecosystems and human well-being by addressing water quality challenges. Around the world a variety of activities have been planned including a global conference on water quality, campaigns for action on pollution prevention, clean up and restoration, international policy discussions, plus publications and assorted outreach activities.

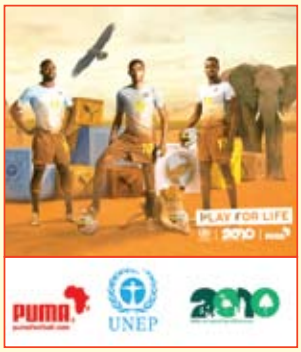
www.unwater.org/worldwaterday

CITES COP 15

From 13–25 March 2010, Doha, Qatar, will play host to the Conference of Parties (COP) for CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The convention aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. The 175 countries that are signatories to this convention will come together for 2 weeks to review the implementation of the Convention with the aim of improving its effectiveness.

www.cites.org

PLAY FOR LIFE



The 2010 International Year of Biodiversity, kicked off in January with the launch of the "Play for Life" campaign, a joint project of UNEP and the sportswear company PUMA. The project will raise awareness about habitat and species conservation among football fans and the general public during worldwide football events, including the Cup of African Nations in Angola and international friendly games, leading up to the FIFA World Cup 2010 in South Africa. It will also raise funds for biodiversity conservation projects in Africa.

www.unep.org

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Double dividends

ANGEL GURRÍA

Secretary-General of the Organisation for Economic Co-operation and Development (OECD)

Multilateral cooperation and coordination were important in fighting the financial crisis. They are equally essential now as we set out to tackle other global challenges. First and foremost is climate change. Few issues loom larger than the need to achieve growth that is balanced and sustainable both in environmental and social terms. At the OECD, we believe it is possible to tackle climate change, grow the economy and create good jobs at the same time.

The Copenhagen Accord, thrashed out in tough discussions, is still far from perfect. But with most countries likely to sign, it is a breakthrough towards collective international action to limit global emissions and help build cleaner, more resilient economies. In the coming year, the OECD will contribute to international efforts to take things forward.

We will also focus on the green economy and helping governments to take advantage of it. At last June's OECD Ministerial Council meeting, we were tasked with developing a green-growth strategy. This will require a whole-of-government perspective using labour and social policies to promote the transition to a low-carbon economy, while at the same time providing support for those whose jobs and livelihoods are threatened.

Some policies can pay a "double dividend" by contributing both to employment and green growth. Many of the fiscal packages that OECD countries have introduced to sustain growth include investments in environment-related projects. These often have an important jobs dimension.

Yet the labour market impact of the transition to a low-carbon economy will be more complex than simply adding so-called

© Gilles Mingasson/Getty Images

"green jobs". As of now, we do not exactly know how the transition to green growth will impact upon jobs and workers. While green jobs will provide new opportunities for many workers, some existing jobs will be eliminated and others will be transformed as skill sets and working methods adjust to the needs of a greener economy. Further in-depth work is needed to guide policymaking in this area.

What is clear already is that two broad policy areas will be particularly important for successful labour market adjustment to greener growth.

- Policies aimed at reconciling high labour mobility with income security, such as by combining adequate unemployment benefits with effective activation measures, will be key to achieving quick and smooth redeployment of workers to support the transition to green growth. Such policies are also needed to ensure that the inevitable costs of the transition are not unjustly concentrated on a minority of unlucky workers — which is, in turn, a precondition of building and sustaining political support for green growth.

- Strengthening national education and training systems is essential for the shift towards a low-carbon economy. Green jobs — including pre-existing jobs which will need to be re-engineered — will require new skills, and governments have an important role to play in helping workers to obtain them. Public training programmes can help people — particularly those moving between jobs — to acquire "green skills". But they cannot do it alone. Governments, employers and vocational and tertiary education institutions will need to work together to anticipate shifts in demand for labour and to prevent skill mismatches that could slow the transition to greener growth.

In parallel, we are also investigating mechanisms for innovative international finance, to help governments find ways for their domestic policy frameworks to set the right price for carbon and send the right signal to encourage private investment to support a low-carbon society. According to OECD analysis, if the proper mix of policies and instruments to price carbon is put in place to reduce emissions by 20 per cent in developed countries by 2020, this could raise the equivalent of 2.5 per cent of their GDP. While there will be many competing demands for using these revenues, a fraction of that amount would be enough to supply the public money that developed countries agreed to provide in the Copenhagen Accord.

Much of our focus will be on ways to assist developing countries to best manage the risks and make their development resilient to the impacts of climate change. We are advancing policy options to stimulate innovation, from the early stages of technology development through to diffusion and transfer. Easy and rapid access to low-carbon technologies and technologies that can support adaptation will be critical to ensuring timely and effective action in developing countries. We are also looking at ways to better inform consumer and industry choices and working with sub-national governments to identify and disseminate good local-level policy practices to reduce emissions.

The crisis has provided an opportunity to take a decisive turn toward greener growth. Our bottom line is that green and growth are compatible. We can and must have them together.

people

ELINOR OSTROM

On 12 October 2009, Elinor Ostrom, an American political scientist became the first woman to be awarded the Nobel Prize in Economics. Ostrom specializes in common pool resources – how people manage natural resources as common property. Her work has focused on how natural resources such as forests, fish stocks, lakes and pastures can be managed as common properties. She has found that when local community members have access to, and control of, their resources, they often create and enforce rules that lead to successful and sustainable economic governance models. Ostrom's groundbreaking work has expanded the parameters of traditional economic theory to include non-market institutions and the local communities that drive them. In emphasizing how humans interact with ecosystems to maintain long-term sustainable resource yields, she has brought more attention to the field of sustainable resource development.

IAN REDMOND OBE

Among his many notable services to wildlife conservation, Ian Redmond OBE was the United Nations Ambassador for the Year of the Gorilla in 2009. Redmond is a tropical field biologist and conservationist, renowned for his work with great apes and elephants. For more than 30 years he has been associated with mountain gorillas through research, filming, tourism and conservation work. He is a consultant and advisor for many high-profile international wildlife conservation organizations and is currently the Chief Consultant for GRASP, the UNEP/UNESCO Great Apes Survival Project, which he helped launch in 2001. Highlights from Redmond's extensive work on documentary films include introducing Sir David Attenborough to the gorillas in 1978, for BBC's famous *Life on Earth* series, and teaching Sigourney Weaver to grunt like a gorilla in 1987, in her award-winning role in the film *Gorillas in the Mist*.

GEORGE SOROS

"The one thing I have is the ability to put money to work," said George Soros, one of the world's wealthiest individuals, in reference to combating climate change. In the lead up to last year's conference in Copenhagen, Soros pledged to invest more than $1 billion in clean energy technology that makes a contribution to solving the problem of climate change. He also announced the establishment of the Climate Policy Initiative – part advisory service, part policy developer and part watchdog – the goal of which is to look after the public interest as policies and programmes are created to address climate change. Over the next decade Mr. Soros will donate $10 million annually the Initiative.

ANDY SCHROETER

Andy Schroeter is the leading light behind a company that is bringing renewable, affordable energy to hundreds of remote communities in Lao PDR. Since 2002 Sunlabob Rural Energy Limited, based in the Lao capital, Vientiane, has installed over 5,600 systems in over 450 villages and locations all over Lao PDR. Sunlabob installs solar home energy systems and rents solar lanterns to families. The cost of renting is lower than the cost of kerosene, providing families with a real incentive to switch to cleaner, healthier and more sustainable energy. The company has already begun expanding into Cambodia and Indonesia, and further expansion plans are on the drawing board. Among numerous other awards, Sunlabob is a previous winner of UNEP's Sasakawa Award.

BHARRAT JAGDEO

For several years Guyanese President Bharrat Jagdeo has been working on a business proposal that will ensure forests are more valuable standing than cut. All too aware that deforestation accounts for more than 20 per cent of human-generated greenhouse gases, President Jagdeo, an economist and former Finance Minister, is encouraging investors to pay for the increasingly tangible benefits of keeping Guyana's 16 million hectares of rainforest intact. And his plans are bearing fruit: in November last year, Guyana signed the Forest-Climate Pact with Norway. Under this agreement Norway will invest up to $250 million in protecting Guyana's forests to avoid the climate change impacts of deforestation. The agreement is one of the first carbon offset agreements to be signed under a the initiative known as REDD – Reduced Emissions from Deforestation and Forest Degradation.

FAIZA HAJJI

Grassroots environmentalist and photographer, Faiza Hajji's work in sustainable development showcases what ordinary citizens of Africa are doing to tackle climate change. Hajji runs a project called IFASSEN ("hands" in Berber) aimed at both decreasing the number of plastic bags in the environment and helping her Moroccan countrywomen receive a fair income. The project employs 21 craftswomen who collect discarded plastic bags littering their community, then clean, dry and weave them together into bags and baskets. Hajji's photo essay, *Caring Hands*, which showcases the work of IFASSEN, won the 2009 inaugural United Nations Development Porgramme photography contest "Picture This: Caring for the Earth".

DIPAL CHANDRA BARUA

Dipal Chandra Barua is a visionary whose efforts are bringing renewable energy to millions of rural people in Bangladesh. Barua is the founding Managing Director of Grameen Shakti, an organization that aims to rescue rural people from energy poverty by combining renewable energy technology and microcredit. Under Barua's leadership, Grameen Shakti has installed more than 200,000 solar power systems and developed a number of other innovative initiatives, including biogas technology that converts cow and poultry waste into gas for cooking and lighting. Grameen Shakti has installed more than 6,000 biogas plants and plans to construct 500,000 more by 2012. Through a highly successful microcredit programme, Grameen Shakti has trained rural women to be solar technicians, giving them a future as green entrepreneurs. Barua was the first winner of the Zayed Future Energy Prize and is a former contributor to *Our Planet*.

ANGELIQUE KIDJO

The Grammy Award-winning West African singer-songwriter, Angelique Kidjo, has long been a voice for the environment. In the lead up to the climate change negotiations in Copenhagen she recorded a new music video for the UN-led *Seal the Deal!* campaign featuring her hit single, Agolo (Please), which she wrote in 1994 when she was contemplating her own consumption and how she could make a difference as an individual. Kidjo also performed at the UNICEF event in Copenhagen to launch the Climate Summit. She has been a UNICEF Goodwill Ambassador since 2002, has supported initiatives such as the Poverty-Environment Partnership, is one of the Live Earth Ambassadors for the 2010 Run for Water event, and is a former contributor to *Our Planet*.

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ARMANDO MONTEIRO NETO

President of the National Confederation of Industry, Brazil

Uncoupling = sustainability

© Paulo Fridman/Corbis

"...the way to uncouple economic growth from increasing emissions is through technology and efficient consumption patterns."

The unprecedented attendance in Copenhagen of more than a hundred heads of state provides evidence that billions of the planet's inhabitants want the changes that will lead us to climate stability. On the positive side, the conference demonstrated that, on the scale of global desires, climate stability is on par with combating poverty and maintaining peace. Yet the snow that fell on the Danish capital chillingly proclaimed the bad news: in spite of negotiators' work and pleas, the proposals put forward by developed countries were modest and did not lead to the expected ambitious agreement. Everything was left to the next conference in Mexico City in December.

While emerging economies announced quantified emissions commitments before the start of the conference, strengthening the Bali Plan, developed countries opted for an escapist rhetoric packed in weak targets full of conditions. These targets were also shown to be incompatible with protecting island countries, providing predictable financing for clean growth in developing nations, or obtaining guarantees that in 2020 developed economies would emit at most 75 per cent of 1990 levels.

The developed country leaders' general attitude contradicted their decision, at last summer's L'Aquila summit, to stabilize the planet's average temperature increase at 2° C by the end of this century. Practical steps to ensure that economies remain compatible with this would include implementing a new framework of global, domestic, private and public financing. This should ensure that emerging economies can create the conditions required to reduce emissions in the medium term while preserving their legitimate right to economic growth.

European economies, particularly Germany and Denmark, show that the way to uncouple economic growth from increasing emissions is through technology and efficient consumption patterns. Brazilian industry, for its part, supports such uncoupling — since it is consistent with industrialization geared to sustainability — to generate green jobs and maintain the already clean Brazilian energy supply mix.

Brazil's commitment to the widespread use of ethanol, its use of renewable energy for 46 per cent of its supplies, and recent incentives for increasing wind energy projects all demonstrate that it has reaffirmed its leadership in clean industrial initiatives. But we need to do more. The burden on low-carbon investments must be reduced, and people trained for innovation, to ensure our competitiveness and avoid "commodification" of the economy.

Brazilian industry is not just interested in, but also advocates, this industrialization path, bringing together sustainability and knowledge without giving up the right to development. Nevertheless, we must all respect market rationale and the text of the Climate Convention which states that developed countries "shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations". Before Mexico comes around, we must all re-read this — and adopt it as a basic principle.

© Amid/Shutterstock

GUNTER PAULI

Founder of ZERI
(Zero Emissions Research and Initiatives)
and author of the
forthcoming book *The Blue Economy*

The BLUE Economy

© George Steinmetz/Corbis

© Frans Lanting/Corbis

Who would doubt that the world needs a new economic model? We need to find a way of meeting the basic needs of the planet and all its inhabitants with what the Earth produces. Many grand steps have been taken in the sustainability and green movement, yet we have to search for solutions that will allow us to make a quantum leap forward.

The economic models of the past have collapsed and the Green Economy has been the only serious response. Yet — while it has had an impact on specific products in niche markets, as through fair trade on coffee and tea — it has yet to shape our entire system. The main challenge is that it requires companies to invest, and consumers to pay, more. This is valid and justified when the world economy is expanding and unemployment is decreasing, or when the main actors on the market are flush with financial resources. But it is tough when demand drops and consumer confidence dwindles and even tougher when people realize that their jobs are at risk.

The time has come to embrace a broad portfolio of innovations that build on what we have achieved and benchmarked around the world. For decades we have been copying the genius in nature's design — like the Velcro that imitates the adhesion technique of cocklebur seeds, or the self-cleansing of the lotus flower. Societies must now move from a romance with species to pragmatic inspiration from ecosystems.

All too often in the current sustainable movement, the substitution of one product or process by another has had unintended consequences. The use of corn as feedstock for both biofuels and bioplastics has increased the cost of grain, putting food security for millions at risk, and stimulated industry to embrace genetic controls to master standardized and predictable output. The use of palm oil for biodegradable soaps has destroyed huge tracts of rainforest and the habitat of the orangutan. The appetite for shiitake mushrooms — a delicious and fine substitute for animal protein — has increased the felling of oak trees to provide the logs on which they grow.

We, too, must evolve in our quest to become sustainable, and develop a more entrepreneurial and innovative Blue Economy. We must go beyond substituting one product or one process with another, and instead improve the system, opening up possibilities for a new generation

of entrepreneurs who use what is available sustainably to address the needs of the Earth and all its citizens.

Ecosystems provide pragmatic design principles for the new economy. The first of these is based on the observation that all matter and energy cascades from one species to another. Such cascading of nutrients involves partaking of locally available resources, employing all contributors, and using the waste for one as the resource for another.

Professor Jorge Alberto Vieira Costa's work in Porto Alegre, Brazil, demonstrates how an excessive or unbalanced by-product can be converted from pollutant to a resource. It redirects CO_2 emitted from the local coal-fired power station to nourish spirulina algae and so produce protein-rich food supplements and sustainably harvested biofuels. The additional investment costs are low since the infrastructure required is already available in the station's warm water retention basin.

In other models, waste biomass becomes the growing medium for desirable mushrooms; this spent substrate becomes protein-rich feed for livestock; the animals' manure, inoculated with bacteria, generates biogas in a digester; the slurry released from the digester becomes the nutrient source for algae farming; and the residual water promotes prolific growth of benthos, phyto- and zooplankton that become fish food.

The second principle is based on another observation: that ecosystems rely first and foremost on the laws of physics and only secondarily on chemistry. Physics is predictable, as in the law of gravity. Following this principle allows us to reduce or eliminate mined metals, smelted ore and processed chemicals from consumption. Physics-based mechanisms developed by zebras and termites display more mastery of air and humidity control than any of our current mechanical and electronic systems solutions.

We see this in the Laggarberg School in Sweden, designed by Anders Nyquist, or the field hospital in Colombian Vichada, designed by the team of Las Gaviotas, where air is continuously and naturally refreshed without costly pumps and heaters or coolers. These buildings demonstrate that inspirations from nature can cut capital costs merely by exploiting pressure and temperature differentials. Reliance on chemically based insulation is complemented, or even replaced, by a deeper understanding of the laws of physics eliminating the unsustainable use of materials and energy in the process.

The same logic can be applied to generating electricity. Each year industrialized societies throw some 40 billion batteries into toxic land-fills. Yet every ecosystem generates small, yet appropriate, electric currents based on differentials in pressure, acidity and temperature. Such micro-currents may be too small to replace a coal-fired power station in the foreseeable future, but they are sufficient to provide a perfectly feasible substitute for these billions of disposable batteries. This has been demonstrated by Germany's Fraunhofer Institute, which has successfully prototyped a cell phone that generates electricity from the temperature difference between the phone and the user's body, and converts the pressure from the voice into a piezo-electric source providing the power to project it.

Achim Steiner, Executive Director of UNEP and Ashok Khosla, President of IUCN, write, in their foreword to the latest Report to the Club of Rome: "We can find ways of utilizing physics, chemistry, and biology just as ecosystems do with renewable materials and sustainable practices. This is no longer the realm of science-fiction: it is actually happening here and now. With appropriate policies to support research and development, and promotional strategies that accomplish their delivery through market mechanisms, such materials and methods offer abundant opportunities for accelerating their adaptation to address pressing global issues."

"We must go beyond substituting one product or one process with another, and instead improve the system, opening up possibilities for a new generation of entrepreneurs who use what is available sustainably to address the needs of the Earth and all its citizens."

This will require the changes proposed in the policy framework of UNEP's Green Economy Initiative. Combined with the Blue Economy — inspiring entrepreneurs to change the economic framework through bottom-up shifts in business models — this provides hope and inspiration.

products

Energy-generating speed humps

Many brilliant innovative ideas have passed through *Our Planet's* "Products" page, and the MotionPower Energy Harvester is no exception. This marvelous device generates electricity from cars as they pass over a speed hump. The hump is constructed from a metal sheet, under which are a series of long thin pedals. A car moving over the hump pushes it down, turning the pedals which in turn spin gears that generate around 2,000 Watt of electricity per car! The Energy Harvester is still in a testing phase and the developers are working on how best to store the energy. Once this has been perfected the speed bumps could be used to power street lamps or even feed power directly to the grid.
www.inhabitat.com

The fairground of the future?

Unlike conventional fairground rides that rely on diesel fuel, the Star Wheel, a mobile Ferris wheel, is powered entirely by the passengers themselves. The Star Wheel is a contraption with three seats, each of which has a set of pedals that propel the passengers around in a circle inside the wheel between the hub and the rim. This movement also makes the whole wheel roll along. The more effort that is put into pedaling, the more thrilling the ride – vigorous pedaling results in the seat flipping around on its own axis – a loop within a loop! The fun of the fairground is going green.
www.origin.popularmechanics.com

Solar power after dark

Can a solar power station generate electricity in the darkness? Yes! A new commercial-scale solar plant currently under construction in Spain, GEMASOLAR, will be the first to use new technology that allows it to continue generating electricity after the sun goes down. The plant is thermo-solar, which means it collects the sun's heat and uses it to make steam, which in turn powers electrical generators. Thousands of mirrors reflect sunlight to a central tower where the heat is collected. One of the innovative aspects of this plant is a system that uses molten salt to store excess high-temperature heat during daylight hours for use after sunset. GEMASOLAR will be capable of providing 25,000 households with safe, clean energy, and reducing CO_2 emissions by over 30,000 tons per year.
www.torresolenergy.com/

YoGen

Here's a smart, eco-friendly way to recharge all your personal electrical devices. YoGen is a pocket-sized hand-powered electric charger that can be used anywhere at any time to recharge the batteries on your mobile phone, MP3 player, game system, organizer, GPS, laptop or other personal electronic gadgets. Repeated pulling on the T-handle keeps an internal alternator spinning continuously and this generates power to recharge batteries. The efficiency of this system allows for extended charging effort with minimal operator fatigue.
www.easy-energy.biz

Solar-cell e-book reader

E-books can store the contents of thousands of books in an easy-to-carry device. LG has extended this convenience even further with the development of a solar-powered e-book prototype. A 10 cm by 10 cm thin-film solar cell – less than the thickness of a credit card and the weight of a fountain pen – has been developed to fit the company's current 6 inch e-book model. Four to 5 hours exposure to sunlight would extend the running time of the e-book's battery by a day. Ideal for picnics or sitting in the park.
www.lgdisplay.com

Be green, run clean

If you exercise on a treadmill at your local gym, the chances are that you're burning up power as well as calories. This is because the treadmill motors on most conventional treadmills are driven by electricity. But here is a treadmill that actually generates electricity as you are exercising. In a completely self-contained system, the user pushes the jogging surface around, generating electricity that is stored in a battery. The battery in turn powers the display and elevation systems. Now gym treadmill users can get fit in an eco-friendly way.
www.woodway.com

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NEVA R. GOODWIN

Co-director of the Global Development
And Environment Institute at
Tufts University, Massachusetts

GOOD BUSINESS

Corporations have critical roles in the transition to a low-carbon economy. This is not likely to be achieved unless they spend resources on behaviour that is not expected to enhance, and may even hurt, their profits and refrain from activities that create costs borne by others, as when factory emissions harm neighbours or workers. But the economic systems and institutions around corporations provide insufficient reason for their goals to include long-run social and environmental health and well-being.

Neither of the two popular types of prescriptions for bringing corporate behavior in line with sustainability is sufficient. Economists like to say that the problem will be solved if we can bring home a cost (or benefit) that had been suffered (or enjoyed) by others to the business that creates it. This requires very intelligent regulatory action. It can solve some problems, but has not yet addressed larger, long-range issues.

Alternatively, theorists of corporate behaviour increasingly note the value of reputation in attracting customers, workers and investors; the risks of failing to anticipate future government regulations; and the real cost savings from conserving resources and avoiding pollution. These are all valid reasons for businesses to take socially desirable actions that do not obviously contribute to their bottom line. And as the Economist Intelligence Unit has noted: "leaders in this area are more likely to outperform their peers financially."

Both approaches stay within the profit-driven mode, but neither induces corporations to think in a long enough time frame. A related, less well-known, concern has to do with the impacts of the economic system, as a whole, on the social and ecological environment in which it is embedded — and on whose health the continuing health and vitality of the economy depends. Economists have long called the costs and benefits companies bring to others "externalities". Some are now dubbing these wider effects "meta-externalities".

Negative meta-externalities include, for example, the toxins and non-biodegradable wastes building up in huge quantities throughout the Earth's ecosystems. No single corporation has major responsibility for these; they come from the whole

system. A less tangible example is the development, through advertisement-led media, of a culture that is good at encouraging people to want to consume, but not at promoting the responsibility, frugality, and other values that will be needed in the difficult times of the twenty-first century. There are also important positive meta-externalities, such as the rise in literacy that has generally accompanied industrialization, or the green concerns that (if belatedly) follow an environmentally destructive economic system.

Much contemporary corporate behaviour creates meta-externalities corrosive of the economic regimes that will face them and other businesses in the future. Contributions to climate change are especially obvious: resource shortages, including drought and famine; serious health threats; armed conflicts; and migrations — all will create economic regimes in which few businesses will thrive.

Two and a half centuries of growth in labour productivity — for long a great positive meta-externality — have now in some ways become dangerous to the system. This is because people with money can hardly absorb the output directed at them, while the needs of those with very little are hardly factored into calculations of production and sales promotions.

Regulations are being proposed that would internalize some short-run negative externalities, and there is increasing investor and consumer pressure for companies to take account of the regulatory and reputation risks for major emitters of carbon dioxide. "Universal investors" such as large pension funds are making some attempts to steer the entire economy toward sustainable economic regimes. But major actors believe that corporate

"The big push that may then be required is to review the social contracts of business through the sustainability lens."

survival requires continual growth in sales, a belief supported by investors, who want to see their stocks increase in value, and by managers whose social standing grows with their company's size. Yet the dangers of entertaining "too big to fail" corporations is painfully clear and many of the more realistic scenarios for sustainable human development around the world emphasize smaller, more local-scale economic activities. Moreover, formal laws regulating business can only work well in the presence of such intangibles as an appropriate work ethic and a culture of honesty and trust.

What is needed? The answer may lie in the early history of the corporate form. Corporations were originally entities chartered by monarchs to carry out specific acts. States and nations then adopted the right to give charters (also called articles of incorporation) to individuals or groups that wished to undertake large commercial enterprises. While patronage and bribery often played a part, the formal idea was that charters were bestowed to enable enterprises to carry out functions for the social good. When the stated goal had been achieved — or if the corporation seemed unlikely to achieve it, or was doing more harm than good — the charter could be, and (in the nineteenth century in the US, for example) quite often was, revoked.

During the course of the twentieth century in the US, corporate charters came to be a matter of course, with the "social purpose" increasingly forgotten as states scrambled in the race to get most of the lucrative business of handling them. Now as the global environment — and the social systems and economic regimes operating within it — faces severe threats from business-as-usual, it is time to revive the notion that corporations must answer to a higher power than their managers, their board of directors, or even their shareholders.

The profit-driven model can be softened with notions of climate and reputation risk, or stiffened by regulations. Some investors are struggling to impress a longer view upon some managers. It is possible that shifts in the overall culture will help to bring corporate goals into better alignment with the social good — but all of these forces together may still not be sufficient to focus corporations on their needed contributions to true sustainability. The big push that may then be required is to review the social contracts of business through the sustainability lens — for example reviving a legal structure within which charters, or local certificates of authority to do business, can be withheld, or revoked, from corporations that are not contributing adequately towards a green economy.

WWW

The green economy: useful links

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

www.unep.org

Green Economy Initiative (GEI)
www.unep.org/greeneconomy/
The GEI has three key elements: the Green Economy Report that provides an overview, analysis and synthesis of how public policy can help markets accelerate the transition towards a green economy; the Economics of Ecosystems and Biodiversity (TEEB), a partnership project focusing on valuation issues; and the Green Jobs Report, that looks at green employment trends.

Green Jobs Initiative
www.unep.org/labour_environment/features/greenjobs-initiative.asp
The Green Jobs Initiative was launched by UNEP in 2007 in partnership with the International Labour Organization (ILO), the International Employers Organisation (IEO) and the International Trade Union Confederation (ITUC). The initiative supports coherent and concerted policies to build a green economy with green jobs and decent work for all.

Labour and Environment Initiative
www.unep.org/labour_environment/index.asp
This initiative aims at strengthening the role of international labour communities in areas related to environmental development and sustainable development.

Urban Environment Unit
www.unep.org/urban_environment
The Urban Environment Unit aims to integrate the urban dimension in UNEP's work, including areas such as air pollution, coastal areas, waste, biodiversity and climate change.

UNEP Sustainable Energy Finance Initiative
www.sefi.unep.org/
The mission of this team is to pave the way for a global scale-up of investment in energy efficiency and renewable energy.

Discussion and debate

The Green Economy Initiative
http://www.greeneconomyinitiative.com/
This comprehensive website tracks investment in the green economy, green jobs and clean technologies. It seeks to raise interest in the green economy, while examining the impact of emerging trends in climate change, technology, economics and leadership on investment in clean energy and technologies.

The Green Economy
www.thegreeneconomy.com/
A magazine aimed at corporate executives, with news, ideas, and articles on a sustainable market economy.

The Energy Blog
www.energyblogs.com
A site where users engage in dynamic conversations on the global power industry.

GreenTechnoLog
http://www.greentechnolog.com/
A website with the latest news, insights, and information on green technology concepts and capabilities, for people interested in learning about science and technology for sustainability and a greener world.

GreenBiz.com
www.greenbiz.com
This site, the "business voice of the green economy", provides news, opinion, best practices and other resources on the greening of mainstream business.

Ideas for Development
www.ideas4development.org
An international blog aiming to stimulate debate on development issues. It brings together a range of leaders on development and sustainability, from organizations such as the Intergovernmental Panel on Climate Change, the World Trade Organization, and UNEP.

Green Growth

European Green Cities Network
http://www.europeangreencities.com/
This is a network that disseminates knowledge and experiences regarding sustainable urban housing technologies in order to stimulate market development and to help speed up innovation.

The UN-Energy website
http://esa.un.org/un-energy/
UN-Energy promotes UN system-wide collaboration in the area of energy with a coherent and consistent approach.

A force for good
www.forceforgood.com
This online community aims to drive business sustainably as a force for good. It covers a range of issues including the green economy, climate change, the low-carbon economy, the economics of ecosystems and biodiversity (TEEB), and corporate social responsibility.

Climate Works
www.climate-works.co.uk/about/about.html
Climate Works helps organizations reduce their energy demand, cut their emissions of carbon dioxide and plan for and adapt to climate change. It works to develop better and more effective policies on energy and climate change, low- and zero-carbon buildings, and more energy-efficient and carbon-efficient ways of working.

European Environment Agency
www.eea.europa.eu
The EEA is an agency of the European Union whose task is to provide sound, independent information on the environment.

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COPENHAGEN
first carbon-neutral capital

Arriving at Copenhagen Airport, travellers will notice wind turbines curving the waters. When they get to the city, they may be impressed by the astonishing number of bikers — not to mention the bike lanes.

Less visibly, beneath the streets, run miles and miles of district heating pipes. Combined heat and power is widely used in the Copenhagen area, saving both money and fossil fuels, while incinerating solid waste is an integral part of the city's energy system.

In spite of all this progress, emissions of greenhouse gases from Copenhagen still total 2.5 million tons a year. That may not be much compared to most other capitals of the world. But it's far too much compared to the goal decided by the City Council on 27 August last year — for Copenhagen to become the world's first ever carbon-neutral capital city by 2025.

EBBE SØNDERRIIS

Environment reporter and science writer based in Copenhagen

To reach this goal, the Municipality has put forward specific initiatives to avoid half a million tons of emissions in the next ten years — followed by even steeper reductions. Results will be monitored and reported year by year and new measures will be taken if intermediate targets are not reached.

Energy savings, energy efficiency, more renewable energy sources, greener transport, low-energy buildings and life style changes will all be required. However, like any other city, Copenhagen is part of the surrounding society, subject to commuting and dependent on government decisions and general development trends. Making it not possible to achieve full carbon neutrality just within its borders. So the City Council has pledged to engage in external projects like establishing new wind turbine farms to neutralize the remaining carbon emissions.

"I always strived for a better environment with less pollution in Copenhagen," says Chief

Mayor, Ritt Bjerregaard, former Environment Commissioner of the European Union.

She acknowledges that other cities also have ambitions climate plans adding: "Whether Copenhagen will be the first and only carbon neutral city remains to be seen. We will only be too happy to compete with others if they try to catch up or even to take the lead."

Most of the target is to be met by changing the energy supply system and reducing energy use.

Engineering and Environment Mayor, Klaus Bondam, points out that Copenhagen already has some of the world's most efficient combined power and heat plants. Nevertheless, and in spite of its use of wind power, biomass and waste incineration, 73 per cent of the electricity used in Copenhagen still comes from fossil fuels especially coal and natural gas. So, an important part of the plan is to convert existing power stations to using wood chips instead of coal, to build new combined heat and power stations based on renewable sources of energy and to raise more wind turbines in the Copenhagen Area. Citizens will be given the possibility of investing their savings in these real green energy sources on a shared basis with the Municipality.

The present incremental use of geothermal energy (hot water pumped from 2.6 kilometres beneath the ground) will be increased six-fold. And district heating pipes and waste incineration facilities are to be renovated to avoid energy losses.

An important obstacle when using large amounts of renewable energy is that wind and solar energy are variable and so do not always match consumer needs. The Copenhagen Climate Plan intends to solve this problem by installing energy storage systems such as water reservoirs with heat pumps. Other attractive possibilities are electric car batteries and producing hydrogen for fuel cells in vehicles and stationary facilities.

Increasing green mobility — such as biking and walking — accounts for 10 per cent of the plan's reduction targets. Copenhagen is already widely known as 'the biking city', and has inspired cities like Melbourne and New York to make 'Copenhagen-style bike lanes'.

Now, more money is being invested in upgrading the lanes and constructing new routes and bridges solely for bikers and walkers. Bicycle parking is being improved, especially at public transportation hubs, and a system of cycling commuting routes is planned.

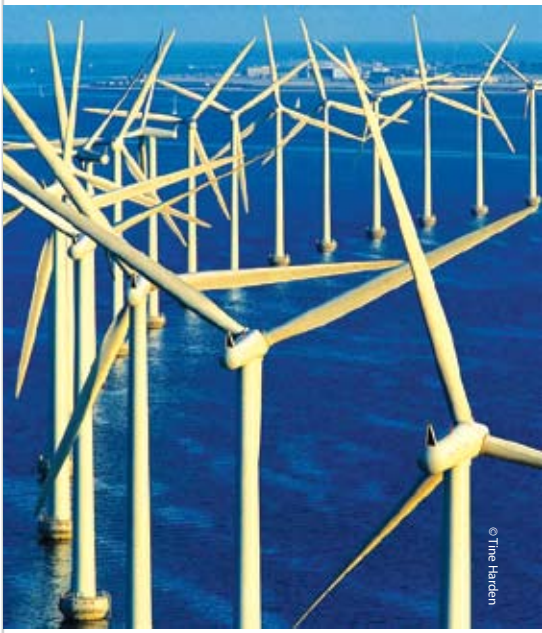
Public transport is being upgraded, aiming at better comfort, reliability and shorter travel times. Bus companies are being required to reduce their carbon emissions by 25 per cent, and the city is lobbying the government to approve road pricing and environmental zones in dense downtown areas.

In a few years the Municipality's own vehicle fleet will be converted into electric or hydrogen-powered cars, while refueling stations with free parking for electric cars and plug-in hybrids will be provided.

Big reductions in emissions reductions can be made by improving building standards and renovating existing structures. The Council has decided to maximize energy savings when renovating schools, institutions and other municipal buildings, earmarking the savings in energy bills to finance new projects. New buildings must adhere to strict energy standards and energy conservation criteria.

Energy expenses in municipal buildings are expected to drop by more than $5 million a year. And like other diets, energy saving not only reduces over-consumption but also improves life — providing a better indoor climate and lighting in schools, institutions, sports centres and other buildings. So the plan expects further gains as a result of improved health conditions and reduced absenteeism.

The target, however, will not be met if all the progress made in all these fields is outweighed by growing consumption and unviable lifestyles. So information campaigns, consulting and training are included as part of the plan. This will include comprising Internet-based networking, promoting business partnerships and creating a new think tank.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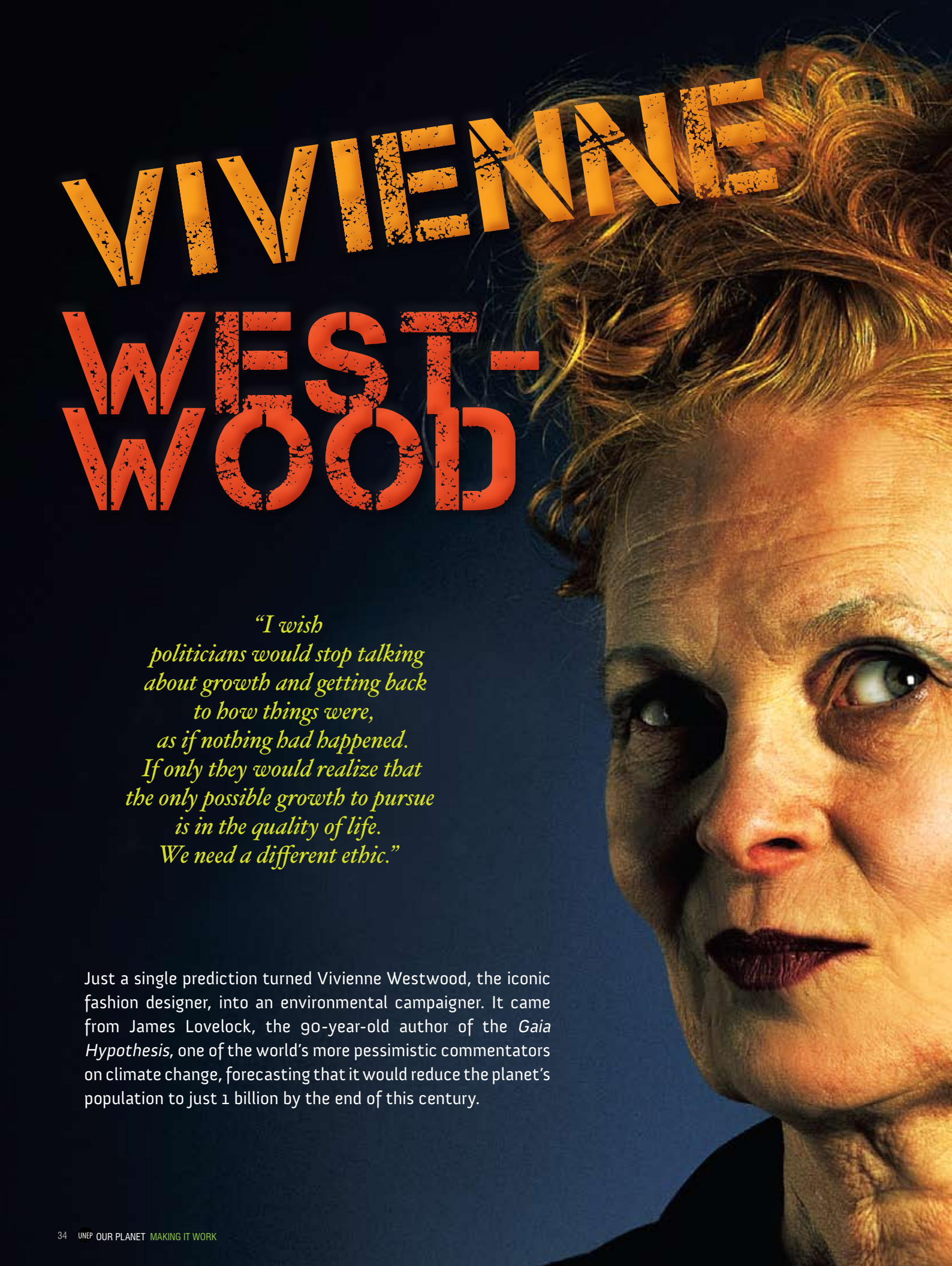
Special attention is to be given to new generations of Copenhageners. "Kids and youngsters consume huge amounts of energy, but are also trouble-shooters," says Child and Youth Mayor, Bo Asmus Kjeldgaard. "Once they are taught better habits, they pass them on to their parents. Kids are excellent climate ambassadors." And it is they, after all, who will inherit the new carbon-neutral capital.

VIVIENNE WESTWOOD



"I wish politicians would stop talking about growth and getting back to how things were, as if nothing had happened. If only they would realize that the only possible growth to pursue is in the quality of life. We need a different ethic."

Just a single prediction turned Vivienne Westwood, the iconic fashion designer, into an environmental campaigner. It came from James Lovelock, the 90-year-old author of the *Gaia Hypothesis*, one of the world's more pessimistic commentators on climate change, forecasting that it would reduce the planet's population to just 1 billion by the end of this century.

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"I was just shocked by this one fact," she told *Our Planet* in her Copenhagen hotel room during December's climate summit. "I had started off like everyone. I was concerned about the rainforest. I knew that climate change was an important threat, but I had not realized how big it was. I am now really impressed by the urgency of it all.

"Soon afterwards I was on the London underground with my husband Andreas (Kronthaler) when we saw three little boys, triplets. Andreas said to me: 'What those little boys are going to have to go through! The idea of it!'

"I got up with it each day. I could not sleep at night. I was actually making myself ill. I just thought: 'What can one person do?' And being a person with a voice, I felt a special responsibility to try to communicate the problem as much as I could. I speak up about it at every fashion show, saying 'I can't talk about fashion at all. I can only talk about climate change...'"

Born Vivienne Isabel Swire in the little village of Tintwistle in the English Peak District, the daughter of a dressmaker, there was little exceptional about her early life. Indeed, at the age of 25, she was married to an air steward, living in the nondescript North London suburb of Willesden and teaching in the local primary school. But she then met, and lived with, Malcolm McLaren, and they opened a shop in Chelsea's Kings Road, where she began to sell her designs, often made on their kitchen table.

McLaren then became the manager of the 1970s punk band, the Sex Pistols, and Westwood made their clothes, pioneering punk style, bringing it into the mainstream, and revolutionizing fashion in the process. She has twice been voted British Fashion Designer of the Year, and in 2006 became a Dame of the British Empire (the female equivalent of a knighthood) – an honour she said at the time she hoped would give her a bigger platform to campaign for human rights. "We can only take democracy for granted," she believes, "if we insist on our liberty".

She is now equally passionate about the environment, and equates "the ecological crisis" with the financial one for its "global effects". And she adds: "I wish politicians would stop talking about growth and getting back to how things were, as if nothing had happened. If only they would realize that the only possible growth to pursue is in the quality of life. We need a different ethic."

She was in Copenhagen to launch a limited-edition T-shirt, made from three recycled bottles, that she had designed to support the efforts of rainforest nations for REDD+ (Reducing Emissions from Deforestation and Forest Degradation). She had lost her luggage on the way but was carrying on undaunted.

"I am so glad to have had the opportunity to do this tiny, tiny thing design — a T-shirt," she said. "Every little bit helps.

"We have to stop climate change; once it gets to a certain point, it will run away with itself. The scientists are giving us all the information, but it is not getting through to the public. The majority of people don't feel they can do anything. The most important thing I can do is to try wherever possible to engage the public in this. Whatever we can do today is so much better than what we do tomorrow."

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