



# OUR PLANET



The magazine of the United Nations Environment Programme - May 2007

## MELTING ICE A HOT TOPIC

Climate Change and the Cryosphere

# OUR PLANET

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 PO Box 30552  
 Nairobi, Kenya  
 Tel: (254 20)7621 234  
 Fax: (254 20)7623 927  
 e-mail: unepub@unep.org

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**Director of Publication:** Eric Falt  
**Editor:** Geoffrey Lean  
**Coordinators:** Naomi Poulton, David Simpson  
**Special Contributor:** Nick Nuttall  
**Distribution Manager:** Manyahleshal Kebede  
**Design:** Amina Darani  
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# reflections

by Achim Steiner,  
UN Under-Secretary-General  
and Executive Director of the UN  
Environment Programme

Nearly 130 years after Thomas Edison invented it, the world may be on the brink of saying 'thank you, and goodnight' to the incandescent electric light bulb. Australia has announced a ban; Cuba, Venezuela and the European Union are among those moving in the same direction. We should celebrate its demise, for the world's billions of bulbs — only five per cent efficient at converting power into light — cause massive emissions of carbon dioxide.

Of course, dealing with climate change requires governments to regulate on emission reduction targets and promote more sustainable forms of energy generation and consumption. But part of the solution also lies around the corner at the local shop or supermarket, just as much as in international conference halls. This message — that the power to act rests as much with consumers as with ministers and heads of state — is emphasized by World Environment Day, which this year is being hosted by the Government of Norway in the Arctic city of Tromsø.

Phasing out energy wasting light bulbs is just one of many opportunities. A report by UNEP's Sustainable Construction and Building Initiative, for example, shows that, even by conservative estimates, buildings worldwide could cut CO<sub>2</sub> emissions by 1.8 billion tonnes a year with the right mix of appropriate government regulation, greater use of energy saving technologies and behavioural change. A more aggressive energy efficiency policy might deliver more than 2 billion tonnes — almost three times the entire amount scheduled to be cut under the Kyoto Protocol.

As the latest reports from the Intergovernmental Panel on Climate Change (IPCC) make clear, climate change is a huge social, environmental and economic challenge. The polar regions — a central focus of World Environment Day 2007 — are especially vulnerable. In the Arctic, widespread melting of ice, subsidence damage to buildings and infrastructure as their permafrost thaws, coastal erosion, and the loss of traditional livelihoods are all set to intensify unless greenhouse gas emissions are decisively cut.

On the positive side, combating climate change also presents a significant opportunity to deliver on the many promises made by developed countries to the developing world on finance and development, and to open new ways of addressing wider environmental issues, from air pollution to deforestation. Indeed, if we are to avoid dangerous climate change and ensure the stability of Antarctica and the Arctic, let alone the rest of the world, we must marshal



our intellect and seek every solution — from energy saving, to developing cleaner and more efficient energy supplies, to managing land and vegetation more sustainably.

The absolute need is for a global regime that delivers a fair, equitable and meaningful emission reduction strategy after 2012, when the Kyoto Protocol expires. Industrialized nations must move first and furthest. The European Union's target for cutting greenhouse gas emissions by 20 per cent by 2020 should be applauded. It is time for others to pick up the gauntlet.

The rest of the industrialized world can no longer seek a reason for inaction in the myth that the rapidly developing countries are not willing to contribute to efforts to reduce CO<sub>2</sub>. Brazil, for example, is likely to bring down its greenhouse gas emissions by as much as 14 per cent by 2020; with assistance, this could rise to close to 30 per cent. It is a similar story in China and in some sectors of the Indian economy, including transport.

Reductions of 60 to 80 per cent will eventually be needed fully to stabilize the atmosphere. New technologies will be needed: if a strong, post-Kyoto regime is in place, it will doubtless drive invention. But we can already do a lot to save the polar ice caps, and the rest of the world, for the cost of a few Euros or dollars, using technologies already in the shops.

The International Energy Agency estimates that a total, global switch to compact fluorescent bulbs would deliver CO<sub>2</sub> savings of 470 million tonnes in 2010 — over half the scheduled reductions under the Kyoto Protocol. It is time to consign the incandescent light bulb to the history books. This might give us a chance to begin relegating dramatic polar melting and dangerous climate change to the same pages.

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paper, using vegetable-based inks and other  
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Cover photo © John Wilkes Studio/Corbis. Melting ice is the hot topic for this edition of Our Planet. The theme of World Environment Day 2007 emphasizes the importance of the world's cold environments, from the frozen poles to the tropical ice caps of Africa and South America, and the Himalayan glaciers that sit at the roof of the world and provide meltwater to a region that is home to nearly half the world's population. As these vital abodes of snow and ice melt, so will the hopes of averting the disastrous consequences of runaway climate change.

# people

**OKOMBI SALISSA** has been appointed Minister of Tourism and Environment of the Republic of Congo, which also makes him the new president of the African Ministerial Conference for Environment



(AMCEN). As president of AMCEN, he will guide the process for implementing the action plan for the environment initiative of the New Partnership for Africa's Development (NEPAD).

**OPRAH WINFREY**, perhaps America's most influential celebrity, hosted her own green show in honour of Earth Day, 22 April, with tips on how ordinary



families can reduce their environmental footprint and start making a difference in the world. Oprah hosted a discussion on global warming with movie star and green campaigner Leonardo DiCaprio and Dr. Michael Oppenheimer, a leading authority on climate change. During the show they discussed the consequences of dependence on fossil fuels, the contribution of landfill waste to greenhouse gases and the need for strong policy responses. They also took a tour of the 'ultimate green family home'. The issue has a prominent position Oprah's website, including a 'Global Warming 101' feature providing a clear overview of climate change and what people can do to prevent it getting out of control.

United Nations Secretary-General BAN KI-MOON, who has made the issue one of his top priorities, has named three Special Envoys for Climate Change. All three envoys are prominent in international environmental affairs. Norwegian ex-Prime Minister **GRO HARLEM BRUNDTLAND** is the former



Chair of the World Commission of Environment and Development, best known for developing the broad political concept of sustainable development and published the landmark report Our Common Future two decades ago. President **RICARDO LAGOS ESCOBAR**



of Chile founded the Foundation for Democracy and Development, while **HAN SEUNG-SOO**, the former General Assembly President, currently heads the Korea Water Forum, which works towards sustainable water management in Asia.



**JUANITA CASTAÑO** has taken up the post of Chief of the UNEP New York Office. Ms. Castaño brings to UNEP strong international relations skills having been the Plenipotentiary and Extraordinary Minister in the Permanent Mission of Colombia to the UN from 1989 to 1993. Her many responsibilities at that time included being head of the G77 during negotiations to restructure the Global Environment Facility. Ms. Castaño later



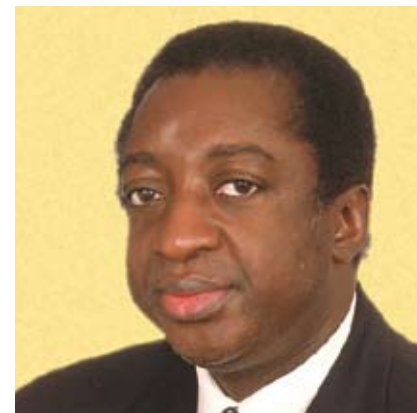
served in senior positions both regionally and nationally, rising to Deputy Minister of Foreign Affairs in 2001. In 2004, Ms. Castaño was appointed as a member of the UN Secretary-General's advisory board on water and sanitation.

The 'Sadhu Who Clicks', 79-year-old holy man **SWAMI SUNDARANAND**, has, over



50 years, taken more than 100,000 photos of the shrinking Gangotri glacier in the Indian Himalaya. He now travels India raising awareness of the Gangotri's rapid demise. "In 1949, when I first saw the glacier, I felt as if all my sins were washed away and I had truly attained rebirth," the swami says. "But now, it is impossible to experience that Ganga of the past." The Gangotri is shrinking at a rate of more than 30 metres a year. Glaciers in the Himalayas are retreating perhaps faster than in any part of the world, threatening future water security for nearly half the world's population.

**HALIFA DRAMMEH** has been appointed UNEP's Special Advisor for Africa Affairs



in the Office of the Executive Director to strengthen UNEP's presence in Africa and make it more effective. UNEP will help to add momentum to relevant Pan African processes, such as the African Union and its commission, AMCEN and the African Ministers' Council on Water, to promote regional cooperation on environmental matters, including NEPAD. Mr. Drammeh has served in numerous senior capacities within UNEP over the years, including as the Director of the Environmental Management Group and Deputy Director (Division of Policy Development and Law). Prior to joining the United Nations, he served the Government of Gambia as a Senior Officer in the Ministry of Natural Resources.

Represented by Foreign Secretary **MARGARET BECKETT**, the United Kingdom, which held the presidency of the 15-nation UN Security Council in April,



initiated the first-ever Security Council debate on the impact of climate change on security. The day-long meeting aimed to examine the relationship between energy, security and climate, and featured interventions from more than 50 delegations, representing imperilled island nations and industrialized greenhouse gas emitters alike.



# a serious challenge

## Message of HM King Harald V of Norway

Norway is honoured to have been chosen by the United Nations Environment Programme to host the international celebrations of the World Environment Day in 2007. This annual event is an important recognition of today's global interdependence and the responsibility that we all share for securing human welfare today and tomorrow.

As a Polar nation, Norway hopes that the official World Environment Day slogan *Melting Ice: a hot topic?* will inspire a range of activities and events all over the world. Man-made global warming — as illustrated by melting ice — is one of the most serious challenges shared by the world today.

The Arctic sea ice cap is declining rapidly. Science warns us that melting glaciers in the polar regions would lead to severe sea level rise. Disruption of the Polar Regions will interfere with their vital roles in regulating earth's climate, oceans cycles and the life supporting role of migratory species. It is appropriate that 2007 also marks the start of The International Polar Year, an internationally coordinated effort to promote polar research. Today, ice melting is taking place in all regions of the world. Shrinking mountain glaciers in Asia, Africa, the Americas and in Europe will affect freshwater supplies, with consequences for food production and human health.



Climate change and environmental degradation call for solidarity with those who are particularly vulnerable to its effects. Climate change will mean different things to different people. It can mean hunger for the African farmer coping with drought. It can mean migration for the islander coping with sea level rise and stormy weather. It can mean a loss of traditional culture and lifestyles for indigenous peoples, including in the Arctic where toxic chemicals from other regions pose an additional threat to life and health.

It is Norway's hope that World Environment Day activities can be many and diverse, reflecting the whole range of steps that need to be taken over time to reverse global environmental trends. The World Environment Day should be creative and forward-looking, focusing on possible solutions, building new partnerships and alliances at home, in the workplace and in the local community. Norway hopes that the World Environment Day and the celebrations going on all over the world, will give impetus to global efforts to solve global environmental challenges securing human welfare and our common future.

I wish you good luck with World Environment Day 2007 celebrations.



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# different

# planet

by Helen Bjørnøy

The Norwegian Government is honoured to host the international World Environment Day 2007 celebrations in recognition of the hot topic of melting ice.

Ice plays a critical role in shaping our planet's environment. Ice reflects a share of the sun's heat back into space, cooling the planet. Ice holds large parts of the world's freshwater supplies, and is a vital part of the ecosystems that sustain both human life and wildlife.

Earth's ice cover is changing dramatically. Shrinking ice cover is a clear sign of global warming. Global ice melting accelerated during the 1990s, which was also the warmest decade on record. Ice is melting at sea, on land, and in the ground, with shrinking mountain glaciers and thawing permafrost. Ice melting is not limited to the polar areas, where it is melting at a dramatic pace. Ice is melting in all regions.

It is our hope that the World Environment Day will focus on all the ways in which climate change — and melting ice — affects people's lives all over the world, whether this be in the form of sea level rise, land erosion, drought, floods, storms or other threats to livelihoods and lifestyles. We need to remind ourselves that a healthy and stable environment and a rich natural resource base are essential for human welfare, development and security. We need to join forces to communicate that this is something worth defending and fighting for, as an international community and as individuals. This much we owe to ourselves and to future generations.

As a polar nation, Norway is highly aware of the Arctic's vulnerability and its important role in the global climate system. In addition, the fragile Arctic is the final dumping ground for the persistent toxic chemicals that threaten human health and nature everywhere, making toxic chemicals another global priority issue. The Polar Regions are also of global importance as breeding grounds for fish stocks and migratory species.

There is an urgent need to take action. We must change the warming trend within the next couple of decades. If we don't, we will likely see changes that make Earth a different planet than the one we know. Further global warming of 1°C defines a critical threshold. To keep within this threshold, global greenhouse gas emissions must be halved by the middle of this century. To meet global environmental challenges we need commitment not only at the political — but also at the corporate and grassroots — levels. We don't need one response; we need many responses. Norway is therefore glad to join forces with the United Nations Environment Programme in making the World Environment Day an occasion for broad mobilisation and action for life on earth, all over the world.

# verbatim



**“There is a sense of hope in this country that this United States Congress will rise to the occasion and present meaningful solutions to this crisis... This is our Thermopylae.”**

Al Gore, climate change campaigner and former vice-president of the United States of America

**“On the island where I live, it is possible to throw a stone from one side to the other. Our fears about sea level rise are very real. Our Cabinet has been exploring the possibility of buying land in a nearby country in case we become refugees of climate change.”**

Teleke Lauti, Minister for the Environment, Tuvalu

**“Unless someone like you cares a whole awful lot, Nothing is going to get better. It's not.”**

The Lorax, Dr. Seuss

**“One person flying in an airplane for one hour is responsible for the same greenhouse gas emissions as a typical Bangladeshi in a whole year.”**

Beatrice Schell, European Federation for Transport and Environment

**“We cannot let bottomless human consumption shape nature's fate. It is our fate, after all.”**

Tsetsegee Munkhbayar, 2007 Goldman Environment Prize winner from Mongolia

**“I have climbed this mountain more than 3,500 times in the past 59 years. In that time I have seen the ice reduce by half.”**

Mzee Emmanuel, climbing guide, Kilimanjaro, Tanzania

**“The danger is that global warming may become self-sustaining, if it has not done so already. The melting of the Arctic and Antarctic ice caps reduces the fraction of solar energy reflected back into space, and so increases the temperature further. Climate change may kill off the Amazon and other rain forests, and so eliminate one of the main ways in which carbon dioxide is removed from the atmosphere. The rise in sea temperature may trigger the release of large quantities of methane, trapped as hydrates on the ocean floor. Both these phenomena would increase the greenhouse effect, and so further global warming. We have to reverse global warming urgently, if we still can.”**

Professor Stephen Hawking, British theoretical physicist and author of 'A Brief History of Time'

# numbers

**2005**

The warmest year on record. Eleven of the warmest years in the past 125 years have occurred since 1990

**33**

Percentage rise in global CO<sub>2</sub> emissions since 1987

**6**

The number of greenhouse gases covered by the Kyoto Protocol: carbon dioxide, methane, nitrous oxide, sulphur hexafluoride, Perfluorocarbons (PFCs) and hydrofluorocarbons (HFCs) – UNFCCC

**5**

Target total percentage cut in greenhouse-gas emissions by Kyoto Protocol Parties from 1990 levels in the commitment period 2008–2012

**7**

The number of metres that sea level would rise if the Greenland ice sheet were to melt. If all Antarctic ice were to melt, sea level would rise by more than 60 metres

**200,000,000,000,000**

US dollar estimated economic losses due to weather-linked disasters, such as tropical storms and forest fires in 2005

**50**

Percentage of European glacier mass lost since 1850

**50,000,000**

The number of extra people at risk of hunger by 2020 if climate change continues unabated – *Intergovernmental Panel on Climate Change*

**59,000**

Amount of megawatts of electricity generated by wind power in 2005 — up from 4,800 megawatts in 1995

**35,000**

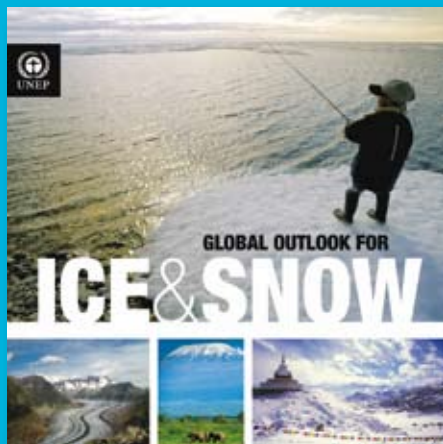
Additional number of deaths in Europe due to the 2003 heatwave

*Unless otherwise indicated, all facts are from the UNEP World Environment Day fact sheets on climate change and polar issues: [www.unep.org/wed/2007](http://www.unep.org/wed/2007)*



# books

## Global Outlook for Ice and Snow



The theme of World Environment Day 2007, 'Melting Ice - A Hot Topic?', reflects the close links between ice, snow and climate change. *Global Outlook for Ice and Snow* gives an authoritative, up-to-date assessment of the current state of the cryosphere and the global significance of changes — now and in the years to come. *Global Outlook for Ice and Snow* is the second thematic assessment report in UNEP's Global Environment Outlook series and was written by leading scientists from around the world.

## Sustainable Tourism in the Polar Regions

Tourism is a growing activity in the polar regions. In the Arctic, tourism is already an important component of the economies of the north. In the Antarctic, the number of tourists landing on continental Antarctica continues to rise sharply. There are serious concerns that tourism is promoting environmental degradation in the polar regions (especially in the Arctic) by putting extra pressures on land, wildlife, water and other basic necessities, and on transportation facilities. This publication explains issues of relevance to polar tourism and provides a selection of good practices for various stakeholders. The publication builds on UNEP-UNWTO 12 principles on sustainable tourism development. The trends and patterns of tourism in polar regions are summarized and an agenda of policy implications is identified.

## Ozzy Ozone: Defender of Our Planet

### — Ozzy Goes Polar

Ozzy Ozone and his friend Zoe arrive at the North Pole and are carried around by Tilman the Polar bear. They learn what happens to Earth's protective shield, the ozone layer, and its interlinkage with global warming. They also meet some scientists on the Tara expeditions boat, which is drifting in the Arctic sea ice for the duration of International Polar Year 2007-2008.



www.unep.org/publications

## The Economics of Climate Change; The Stern Review

Nicholas Stern (Cambridge University Press, 2007)

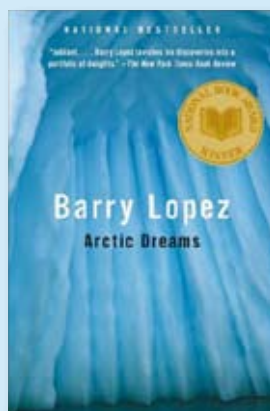
An accessible and comprehensive analysis of the economic aspects of climate change, by the head of the UK Government Economic Service and former Chief Economist of the World Bank. Topics include the nature of the economics and the science of climate change; its impact on growth and development in both North and South; the economics of cutting emissions and stabilising greenhouse gases in the atmosphere; policy on mitigation and adaptation; and the challenges of sustained international collective action.

## Arctic Dreams

Barry Lopez  
(Vintage Books USA  
2001 edition)

Still, one of the finest books written about the Arctic — as an ecosystem, a home for its indigenous people, and a place of beauty and mystery. Travelling for five years in the 1980s in the north American

Arctic between Davis Strait in the east and Bering Strait in west, prize-winning author Barry Lopez accompanied biologists, geologists, archaeologists and Inuit hunters as he explored the region's history, wildlife, traditions and future.



## Extreme Floods:

### A History in a Changing Climate

Robert Doe. (Sutton Publishing, 2006).

The Editor-in-Chief of The International Journal of Meteorology, himself an expert in storm and flood research, describes the growing phenomenon of 'extreme floods' and provides insights into how, as the climate changes, water is becoming humanity's greatest enemy.

## Fairness in Adaptation to Climate Change

Edited by W. Neil Adger, Jouni Paavola, Saleemul Huq, and M.J.Mace (The MIT Press, 2006).

Scholars in political science, economics, law, human geography and climate science assess social justice issues in adaptation to climate change, looking at the challenges of ensuring that policy responses do not place unfair burdens on already vulnerable populations. The book outlines the philosophical underpinnings of different types of justice, current inequities and future burdens in relation to climate change, and applies them to examples of adaptation in Bangladesh, Tanzania, Botswana, Namibia and Hungary.

## From Kyoto to the Town Hall: Making International and National Climate Policy Work at the Local Level

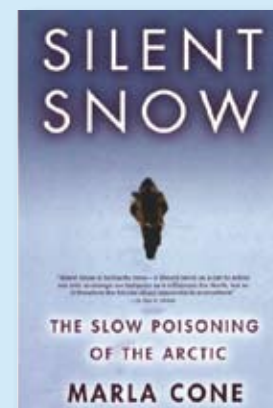
Edited by Lennart J Lundqvist and Anders Biel (Earthscan 2007)

Implementing international agreements and national policies on climate change is often derailed by a variety of barriers at the subnational, local and — perhaps most importantly — individual level. This book addresses these barriers, drawing on original research from Sweden, a world leader in effective environmental solutions. The issues include governance structures, the relationship between 'experts' and the public, political feasibility, tax measures, perceptions of 'fairness' and self-interest, and the importance of environmental values.

## Silent Snow

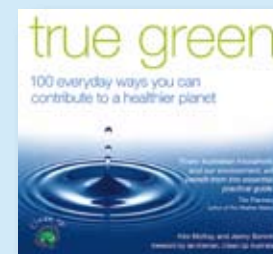
Marla Cone  
(Grove/Atlantic  
2006 edition)

Traditionally thought of as the last great unspoiled territory on Earth, the Arctic is in reality home to some of the most contaminated people and animals on the planet. Marla Cone traveled across the Arctic, from Greenland to the Aleutian Islands, to find out why the Arctic is toxic. Tons of dangerous chemicals and pesticides from the United States, Europe, and Asia are being carried to the Arctic by northbound winds and waves and amplified in the ocean's food web. As a result, Inuit women who eat seal and whale meat have far higher concentrations of PCBs and mercury in their breast milk than women who live in the most industrialized areas of the world, and they pass these poisons to their infants, leaving them susceptible to disease.



## True Green

Often the magnitude of the environmental challenges we face can leave us feeling powerless — but we're not. In 'True Green', Kim McKay and Jenny Bonnin, part of the Clean Up Australia team, suggest 100 small ways in which you can make a big difference, at home, in the garden, at work, while travelling or in your community. Put on a jumper instead of the heater to lower carbon emissions. Switch off electrical appliances at the power point — and lower your energy consumption (and bills!) Say no to plastic bags, and reduce waste. Take shorter showers, and save water. Walk or cycle to your local shops, and reduce pollution. Practical, positive and easy to use, True Green shows how making simple changes in your everyday life can contribute to a healthier planet. [www.betruegreen.com](http://www.betruegreen.com)





# agenda for action

by Roberto Dobles

Time is running out to tackle climate change. We can wait no longer. Though it is one of the greatest challenges that humanity has faced, appropriate action has not yet been taken. We have to recognize that, although its causes are specific to each country, its consequences are global and cumulative. No one can predict these with complete certainty, but we now have enough scientific evidence to understand that the benefits of strong early action clearly outweigh the great costs and risks of inaction.

Climate change, however, is not just about costs. A complex group of interlinked catastrophes (environmental, economic, human, social, ethical and political—and concerning health, equity and justice, among other factors) also lie at the centre of the problem, as does the relationship between developing and developed countries. The world is in danger and important steps have to be taken soon to change course. As greenhouse gas emissions have a long lead-time in affecting the climate, our actions (or inaction) during

the next two decades will have a profound impact in the second half of this century and beyond.

Policies must be modified, both nationally and globally. We cannot expect to reverse current trends with the same policies and mechanisms that created them in the first place. To get different results, we have to stop resorting to the same ways. Business as usual is not an alternative. We need to devise creative and innovative means of addressing the problem.

Our efforts should commit developed and developing economies to stronger actions consistent with the principle of common but differentiated responsibilities. However, defining an equitable set of responsibilities, linking strategies and developing an effective system of global governance are key parts of the puzzle that have yet to be defined. This must be done urgently. And we must learn how to align our countries' priorities with global action,



harmonizing national strategies with the development of a new and more effective global governance system.

For its part, Costa Rica has decided to act immediately, unilaterally declaring its goal to become carbon neutral. We are designing an integrated climate change strategy to achieve this in such a way that this complex goal can be replicated in other countries with similar characteristics.

This process is bringing the climate to the top of the government agenda. The Administration that was elected last year included it as a priority in its National Development Plan. Important segments of the private sector and the media have already shown enthusiastic support, and society is beginning to share the vision that a carbon-neutral economy is also a competitive one.

The strategy, clearly orientated to action, was defined around five strategic components:

**Measurement:** This will develop an accurate, reliable and verifiable system with built in mechanisms for monitoring.

**Mitigation:** This is focused on becoming a carbon neutral country with a vision integrating complex environmental, health, economic, human, social, ethical, economic, moral, cultural, educational and political issues with the national competitiveness strategy. Promoting carbon neutral companies, regions and communities — and other stakeholders — will provide both incentives for action and an additional differentiation element for competitiveness.

Action will include these main elements: reducing emissions at source; enhancing carbon sinks through reforestation and natural forest regeneration; and developing carbon markets at production and local and international product level. Our avoided deforestation program (which includes our participation in the Coalition for Rainforest Nations) and a new tree planting campaign, which will be also linked to Wangari Maathai's Billion Tree Campaign, are part of our planned climate change actions. The relationship of climate change to the country's competitiveness strategy is an important part of our design. We are creating the conditions to induce responsible and competitive behaviour.

The international business community — as the Carbon Disclosure Project companies recognise — accepts that major economic, financial and competitive climate change risks are associated with exposure to:

- \* Competitive risks, from the shift in future consumers' from high intensity carbon to low carbon or carbon neutral services and products.
- \* Reputational risks, from consumers' perceiving inaction by companies.
- \* Regulatory risks, from exposure to potential local and international regulations.
- \* Economic and financial risks, from impacts on assets and infrastructure caused by extreme climate events.

Against these risks, there are also major opportunities associated with innovation, consumers' perceptions, investors' preferences and rapid technological change in existing sectors of the economy — and with developing new ones related to climate change issues.

**Adaptation:** Water resources, health, agriculture, infrastructure, coastal areas, forest ecosystems and land and marine biodiversity are among the key components of the adaptation strategy, as are risk management and preparation for disasters.

**Education, culture and public awareness:** The country wants its people to be involved, engaged and committed in combating climate change, and to build a societal system of decision making for implementing the strategy. Individual habits, consumer preferences and patterns of consumption must be made compatible with climate change imperatives.

We want informed citizens with the awareness and knowledge to enable them to participate more actively and effectively in climate change issues. This will, in turn, increase their capacity to influence the decision making processes to take the action needed to make a difference.

**Capacity building:** If we are to implement a comprehensive national strategy, we must build capabilities at all levels of society to respond to climate change, to measure and mitigate its causes and to learn — and communicate — how to adapt to its consequences.


Global governance and its mechanisms will be put to the test as they try to solve one of the greatest challenges in the history of mankind: the ones which allowed the current climate change crisis to develop must be revised. We will not obtain different results doing the same things and relying on previous ways. Developing new technologies to move to a low-carbon or carbon-constrained economy — and to stabilize carbon dioxide in the atmosphere — is a priority, one which must be integrated into the puzzle.

Some sort of agreement will be needed among different countries, especially the major emitters. If the current stalemate is to be broken, countries must show leadership in building a new international climate regime with the necessary targets and time frames to take us into the future safely and intelligently. Defining new and additional commitments and breaking the atmosphere of suspicion between countries will ensure a true and global solution.

The post-2012 climate framework must consider the both the experiences of the Kyoto Protocol and other new and complementary sector and policy approaches. A wider framework is needed to reverse present trends. Combining broad and specific commitments would encourage developing countries better to integrate climate concerns into development planning. This would allow policies to be tailored to national circumstances, and at the same time give countries the international recognition that will increase their competitiveness in attracting direct foreign investment.

Critical aspects of the Kyoto Protocol include the use of the 'cap and trade' approach of binding targets for Annex I parties, the flexible mechanisms (emissions trading and joint implementation), and the Clean Development Mechanism (CDM), which allows developing countries to create tradable credits on a project-by-project basis. Continuing the CDM post 2012 is critical for encouraging investments in a vital part of the market. But it only allows credits for discrete projects, so different programmatic crediting approaches are needed to achieve deeper and broader emissions reductions in developing countries. So are stronger incentives and new mechanisms,

The scope of CDM investment should also be expanded to cover sectoral and policy-based activities — setting emission reduction targets for sectors or whole economies from estimated baselines approved by international accredited bodies — in such a way that a whole sector would become eligible for trading allowances and certified emission reductions.

Thus action on climate change action is the responsibility of all countries, not just major ones. Action must be consistent with the principle of common but differentiated responsibilities. Costa Rica is pursuing a strategy which is consistent with its local, regional and global ones. 

# new





# dynamics

by Yvo de Boer

The warming of the earth's climate system is unequivocal. According to the Fourth Assessment report of the Intergovernmental Panel on Climate Change (IPCC), most of the observed increase in global averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations. Rising temperatures in the Arctic have caused a decline of 2.7 percent of sea ice since 1978. Elsewhere, mountain glaciers and snow cover are retreating. A third of the glacier surface in Bolivia and Peru, for example, has disappeared since the seventies. Climate change is one of the most critical global challenges of our time: its effects range from agricultural impacts and endangered water and food security to sea-level rise and the spread of vector-borne diseases.

While the ice continues to melt, the United Nations Framework Convention on Climate Change (UNFCCC) is facing significant difficulties on agreeing on what needs to be done once the first commitment period of the Kyoto Protocol expires after 2012. International discussions to build a long-term climate regime are constrained by a fundamental disagreement on how to move forward. It is difficult to generalize the position of different groups of Parties, as national circumstances relating to global warming vary widely. In essence, developing countries suffer most of the negative climate-related impacts but fear that emission limitations could compromise their economic development. On the other hand, industrialized countries, driven by competitiveness concerns, are reluctant to agree to taking on new emission reduction commitments without any move from developing ones.

Climate change is a global problem and, as such, needs a global response which embraces the interests and needs of all countries. In its absence, individual actions face the risk of fragmentation and limited effectiveness. The international community needs a common and long-term agreement to address climate change, and a consensus on the direction that such a framework should take. The need for such a multilateral response is the main reason why the climate change debate within the United Nations must be revived.

More than ten years of diplomacy have delivered a mature process and have put in place the carbon market, which is one of the most powerful tools for international environmental policy. Negotiations on a future climate regime need to be reinvigorated during 2007, with a view to avoiding any gaps in the action to combat climate change, and in order to provide the carbon market with political certainty. The international community should seek the involvement of economic and financial decision makers, since emerging concerns with energy security and economic growth are closely linked to actions to combat global warming. To build confidence, Parties could set boundaries of their deliberations by agreeing on important elements of consensus in the form of principles. These could include:


- \* The need for a long-term global response in line with the latest scientific findings and compatible with private sector long-term investment planning strategies;
- \* The importance of industrialized countries continuing to take the lead by substantially reducing their emissions, given their historic responsibility and their economic power and capabilities;

- \* Further engagement of developing countries, in particular major emitters;
- \* The requirement that developing countries get incentives to limit their emissions and assistance to adapt to the impacts of climate change, so as to safeguard socio-economic development and poverty eradication; and
- \* Full flexibility in the carbon market to ensure the most cost-effective implementation and to mobilize the resources needed to provide incentives to developing countries.

It is time to change the dynamics of the UNFCCC process and to turn December's Conference of the Parties in Bali into the beginning of a new phase in the politics of climate change. The debate on whether or not to embark on new negotiations needs to be replaced by a substantial discussion on how Parties envisage the Convention in the longer term.

The first and most important task is to bring together the discussions that will shape a future climate regime. These include, primarily, negotiations on further commitments for industrialized countries (currently the responsibility of an ad hoc working group under the Kyoto Protocol) and a broader discussion on long-term cooperative action to address climate change, taking place in the form of a dialogue under the UNFCCC. This non-binding and open dialogue has enabled Parties to take a broader look at the Convention by considering four thematic areas: advancing development goals in a sustainable way; addressing action on adaptation; realizing the full potential of technologies; and realising the full potential of market-based opportunities.

This broader perspective has provided the opportunity for countries to identify the essential building blocks for a future regime. Technology, for example, lies at the core of any response to climate change as it provides the physical means to address it. The Convention could, for example, strengthen its activities on technology deployment and transfer, and look into establishing agreements and partnerships for technology research and development. Then, adaptation must be seen as a priority since it is not feasible entirely to prevent the impacts of climate change. It is, therefore, essential to generate mechanisms to support and strengthen the processes of assessment of vulnerability and adaptation — and of mainstreaming adaptation into development planning. Valuable knowledge for this task has been already produced under the Nairobi Work Programme on Impacts, Vulnerability and Adaptation. Finally, the implementation of the Convention relies upon sustainable, sufficient and predictable financial resources. Parties will embark on a comprehensive assessment of financial flows required to address all aspects of climate change, with an aim of making such resources available.

What happens during 2007 at the political level is crucial for the future. As time passes, additional initiatives to address specific aspects of global warming are likely to join those in place. It is the international community's responsibility to lead these initiatives into common action and to avoid their fragmentation. Governments ought to devote substantial efforts to move international politics towards this end. The politics of climate change must heat up if the world's ice is to remain frozen. 



# a human issue

by Sheila Watt-Cloutier

Climate change is no theory to the Arctic's inhabitants: it is stark and dangerous reality. Human induced climate change is undermining the ecosystem upon which we Inuit depend for our physical and cultural survival.

Discussion of global warming all too often tends to focus on political, economic and technical issues rather than on human impacts and consequences. But Inuit and other northerners are already directly experiencing its impact and we face dramatic problems with possible social and cultural dislocation in the coming years.

We have closely observed the environment for many generations, accurately predicting the weather to enable us to travel safely on the sea ice to hunt marine mammals, walrus and polar bears. Nowhere else does ice and snow represent mobility as it does for us. They are our highways that lead us to our supermarkets — the environment — and link us to other communities.

Among the harm we have suffered from melting sea ice and thawing permafrost are: damage to houses, roads, airports, and pipelines; eroded landscape, unstable slopes, and landslides; contaminated drinking water; coastal losses to erosion of up to one hundred feet per year; melting natural ice cellars for food storage; melting permafrost causing beach slumping and increased erosion; increased snowfall; longer sea ice-free seasons; the arrival of new species of birds, fish and insects; unpredictable sea ice conditions; and melting glaciers, creating torrents in place of streams. These monumental changes threaten the memory of where we were, who we are and all that we wish to become.

The Arctic is the early warning, the health barometer for the planet. Whatever happens in the world occurs here first. If you wish to see how healthy the planet is, come here to take its pulse. Science has recently caught up with the changes our hunters — scientists in their own right — have been observing for decades. In 2004, the Arctic Climate Impact Assessment (ACIA) released the world's most comprehensive detailed regional assessment of climate change, prepared by close to 300 scientists from 15 countries and chaired by the United States. The Inuit Circumpolar Conference (ICC) and other indigenous organizations of the north





Sheila Watt-Cloutier, environmental campaigner and International Chair of the Inuit Circumpolar Conference 2002–2006, was named by UNEP as a 2005 UNEP Champion of the Earth. The award is given annually to seven outstanding environmental leaders who have significantly influenced the protection and sustainable management of the planet's environment.

Each issue of Our Planet features the views of one of UNEP's Champions. For more information on the UNEP Champions of the Earth award see <http://www.unep.org/champions/>.



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ensured that it included traditional knowledge, that it would be more than a piece of science, and that policy recommendations should be attached to it.

Among its key conclusions were:

- I. Marine species dependent on sea ice, including polar bears, ice-living seals, walrus, and some marine birds are very likely to decline, with some facing extinction.
- II. For Inuit, warming is likely to disrupt or even destroy their hunting and food-sharing culture as reduced sea ice causes populations to decline or become extinct.

More recently the Intergovernmental Panel on Climate Change, involving over 2,000 scientists, came to much the same conclusion. This is a good sign: the world now finally appears to be singing from the same song sheet.

Climate change in the Arctic is not just an environmental issue with unwelcome economic consequences. It is a matter of livelihood, a matter of food and a matter of individual and cultural survival. It is a human issue affecting our children, our families, our communities. The Arctic is not 'wilderness' or a 'frontier'. It is our home and homeland.

Despite the ACIA's compelling science we continued to have challenges with the global community over this urgent issue. At the time, as Chair of ICC, I looked at international human rights regimes in place to protect peoples from cultural extinction — just what we Inuit could be facing with climate change. The question before us was how to bring some clarity of purpose and focus to a debate that always seems to be caught up only in technical arguments and competing short term economic ideologies. I believed strongly, and still do, that it would be internationally significant if global climate change were debated and examined in the arena of human rights — one that many governments, particularly in the developed world, take seriously.

After two years of preparations, I and 62 other Inuit from Canada and Alaska filed a legal complaint last December. We believe that the 1948 American Declaration on the Rights and Duties of Man, supported by the Inter American Commission on Human Rights, may provide an effective means for us to defend our culture and way of life. We are not asking the United States and the world to take a backward economic step. What we are saying is that governments must develop their economies using appropriate technologies that significantly limit greenhouse gas emissions. Inuit and other northerners are at peril because some are taking a short-term view favored by some businesses.


My purpose is to educate and encourage the global community to join to combat global threats. Through our work, we have put the human face front and central. We have changed the international discourse from dry technical discussions to debates about human values and human rights, and have given United Nations conferences a heartbeat, a renewed sense of urgency. We did this by reminding people far away that the Inuit hunters falling through the thinning ice are connected to the cars they drive, the industries they support and the policies they chose to make and enforce.

Our work has not been aggressive or confrontational. We are reaching out, not striking out. The Inuit message is a 'gift', an act of generosity from an ancient culture, still deeply tied to the natural environment, to an urban, industrial and modern world that has largely lost its connection with it.

Initially the Commission chose not to "proceed at present" with our petition. When we insisted, it decided to hold a hearing on the legal aspects of climate change and human rights. This was truly a historical moment for us and the world.

We Inuit have lived in the Arctic for millennia. Our culture and economy reflect the land and all that it gives. We are connected to the land and our understanding of who we are — our age old knowledge and wisdom — comes from it. Our struggle to thrive in the harshest environment has given us the outlook we need to survive in the modern world. That outlook — a respectful human one that sees connections to everything — should inform the debate on climate change. Is it not because people worldwide have lost the connection between themselves and their neighbours, between their actions and the environment, that we find ourselves having to come to grips with climate change?

We will adapt as best we can. But I strongly believe, as do many others well versed in this issue, that there is a window of opportunity in the next 10 to 15 years to make effective changes in how we live as the global community. There is still time to prevent from fully unfolding ACIA's stark predictions that our hunting culture will be lost in my grandson's lifetime.

We must come together as a global community and understand our shared humanity — so as to take responsibility and immediate action to address this defining issue of our time. 



Climate change is not just an environmental concern, but also a major development issue. The magnitude of the major climate and environmental changes related to global warming over the past century has gone beyond the range of natural variability and now poses a major threat to the survival of humankind and sustainable social and economic development. It has become an imminent challenge to everyone in the world.

It has also had severe impacts on China's climate and environment and has brought challenges to its development. A proper response to climate change is thus part and parcel of national efforts for achieving harmony between men and nature and for building a harmonious society.

The latest findings in the Intergovernmental Panel on Climate Change's Working Group I contribution to its Fourth Assessment Report show a marked increase in global average surface temperature, continuous sea level rise and steady shrinking of snow cover in most areas of the Northern Hemisphere — all of which indicate a trend of global warming. From 1906 to 2005 the mean global surface temperature increased by 0.74°C (within a range of 0.56°C to 0.92°C). The average temperatures in the northern hemisphere during the second half of the 20th century were very likely higher than during any 50 year period in the last 500 years, and likely the highest in at least the past 1,300 years.

In the context of global warming, the climate and environment in China have also undergone significant and profound changes. China, like other parts of the globe, will witness a continuous rise in temperature in the future. There will also be changes in the pattern of precipitation.

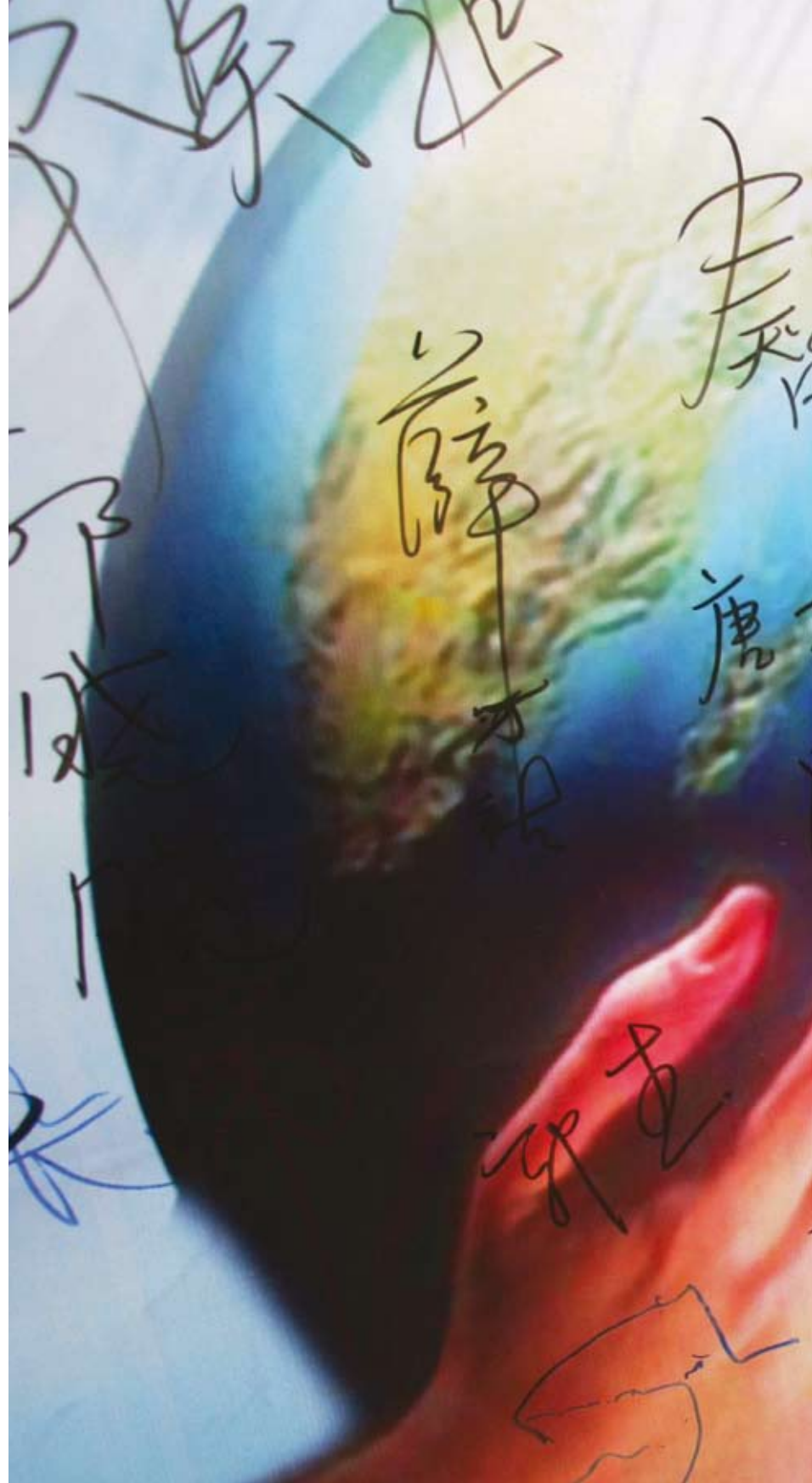
Over the recent 100 years, China's annual average surface temperature has increased significantly by about 0.5°C to 0.8°C. 2006 had the highest annual average temperature across the country since 1951, and the average winter temperature was the second highest in the same period, after 1998.

Projections of future climate change suggest that China's surface temperature is likely to increase noticeably under different emission scenarios over the next twenty to a hundred years. Precipitation also shows an increasing trend, though this varies remarkably in both time and space. Northern China will witness more days with precipitation, while there will more heavy rain in the south of the country. Some areas may suffer more excessively heavy precipitation.

Over the past five decades China has also experienced a dramatic change in both the frequency and the intensity of extreme weather and climate events, which are increasing in both number and strength. In 2006, it registered a good number of record extreme weather events, such as: the high temperature and drought scorching Chongqing and Sichuan; Typhoon "Saomai", the strongest since 1951, hitting Zhejiang Province; severe drought plaguing northern China; and a fallout of 330,000 tons of dust on Beijing in just one night. Climate warming also brings a higher forest fire risk in dry and arid regions, and last year accounted for the most severe ones in northeast China since 1987.

China's daily maximum and minimum temperatures will rise in future. The number of extremely cold days is likely to fall, but the hot summer period is likely to get longer, and extreme high temperatures, heat waves and droughts will occur more frequently.

Climate change increases the volatility of agricultural production and losses of crops and livestock caused by meteorological disasters. Failure to take adaptation measures might reduce China's total crop production by 5–10 per cent by 2030 in general. Wheat, rice and corn would be particularly affected.



It is also leading to an increasingly serious shortage of water resources in China. The measured runoff of the top six rivers since the 1950s suggests a decline. In northern China some rivers experienced drying up and some areas are suffering a drastic drop in groundwater. In the future there would be a further imbalance between water supply and demand, particularly in dry years and in north and northwest China. Climate change could have a heavy impact on major projects, posing increasingly higher risks to their safe operation. It may, for example, increase precipitation in the upper reaches of the Yangtze River basin, likely leading to such geological disasters as mud-rock flows and landslides in the Three Gorges Reservoir catchment. The expected






# china

## climate change and development

by Qin Dahe

warmer temperature of the Qinghai-Tibet Plateau might further degenerate the permafrost along its railway, likely destabilizing segments of the rail link.

The impacts of climate change on China's natural and ecological systems—and on its economy and society—are also reflected in a number of other facets. Such as the shrinking acreage of lakes, falling water levels, reduced wetland, degraded grassland, expanding desertification, damaged biodiversity, and degraded marine ecosystems, including mangroves and coral reefs. Climate change is posing a grim and real threat to China's economy and its society, a threat that is likely to continue, turning from bad to worse.

The Chinese government attaches great importance to climate protection and has taken various measures to address this issue. In a period prone to contingent, extreme and protracted catastrophes, prevention and mitigation are becoming more imperative. It is necessary to actively respond to it, and to combat extreme climate disasters, with a robust emergency response system and an improved climatic, ecological and environmental protection, to enable due contributions to be made towards implementing the "Scientific Development Concept", towards creating a harmonious society, towards better and faster economic development and towards sustainable socio-economic development in China. 



# snow, ice and life

South America's rivers make available 35 per cent of the world's surface water resources. Yet snow and ice still represent an important additional water supply, providing it to mountain valleys and adjacent arid and semiarid regions. Mountain glaciers in the Andes and the Patagonia ice shelf supply water for river flow, lakes and reservoirs. The rivers flowing to the Pacific Ocean have a remarkable seasonal regime, fed by snow and ice melt in late spring and summer time. The dry, desert-like Pacific coastal landscape extending from the equator to central Chile, and the high plateau of Peru and Bolivia, both depend, in large measure, on snowmelt water.

At the southernmost tip of South America from 29° south, the dry, arid conditions are on the eastern side of the Andes, south of the rivers Negro and Colorado. Low precipitation makes its rivers dependent on the melting of glaciers and of the important ice shelf between 48° south and 52° south. Although precipitation is higher there, snowmelt also contributes to the flow of northern Patagonia's rivers. The economically wealthy regions of Cuyo, in central western Argentina, and central Chile — home to large urban populations and important agriculture, fruit growing (mainly vineyards), hydroelectricity and industry — also fundamentally depend on the melting of snow and ice. Indeed the ancient inhabitant of the region, the Huarpes, called it Cuyum, meaning 'Hell's Desert'. Human activity there only became feasible when European migrants introduced irrigation, starting the region's development.

The more advanced pre-Columbian civilizations of the Andean inter-tropical region, managed their water resources remarkably successfully. The most developed pre-Inca cultures both complemented reduced and sporadic rainfall water and improved supplies through wise engineering works, such as by the measured distribution of irrigation water and by connecting the Atlantic and Pacific watersheds — building a 74 kilometre-long channel for water transfer some 3,000 metres up in Cumbemayo.

Climate change is already beginning to have a critical effect on the living conditions of Andes indigenous communities, on water dependent human activities, and on natural ecosystems. The availability of meltwater will increasingly diminish, damaging sustainable development. Recent studies show that the Peruvian glaciers may disappear altogether in the coming decades.

The rapid retreat of the inter-tropical Andean glaciers brings further dangers to local people, and particularly to the indigenous communities of the high plateaus of Bolivia, Ecuador and Peru, from avalanches and glacier lake outburst floods. Peru's 19 glaciated mountain ranges contain more than a half the world's tropical glaciers, mostly in the Cordillera Blanca. This danger is much less great further south, in the Patagonian Andes, where the retreat is taking much longer; though the shrinking of the glaciers is still important there, it does not bring similar hazards and risks.

The best possible use of the resources and potential energy in the large amount of water still enclosed in the southernmost glaciers would be



to enable the relocation of productive systems to the more than a half million square kilometres of the semiarid Patagonian plateau. This would call for conserving the valuable biological diversity of the region and developing appropriate technology, and for the wise and rational use of the large quantities of both surface and underground water resulting from the glaciers' retreat. It can draw on the experience of the agro-industrial use of the upper basin of the Rio Negro, which, starting in the 1930s, made possible its transformation to the remarkable exporter of fruit and wines that it is today. Grain crops, which will suffer decreases in yields in



# by Susana Bischoff, Graciela Canziani and Patricia Centurión



Argentina's northern agricultural fields, could be relocated, with planned adaptation, to the Rio Negro's lower basin and to irrigated lands in other Patagonian sub-regions. The Institute for the Development of the Lower Basin of the Rio Negro is already developing the necessary feasibility studies. The energy for such an undertaking may be provided by local hydroelectric plants and by the steady westerly winds, already under initial exploitation.

El Niño events will bring important snow mass to the Andes below 29° south. So there must be planned use of meltwater, a selection of plant species better

adapted to the new Patagonia climate, development based on integrated water management and appropriate soil studies and farming techniques to make the best use of the potential of this remote region of the world.


All this must be complemented with action based on the new climate conditions that will prevail in the Southern Ocean and the Antarctic. Both are also subject to the effects of climate change, with critical implications for the natural ecosystems on which the future of many species depends. Environmental changes are already evident and will have severe implications on the food chain, based on phytoplankton.

The abundance of krill depends on sea temperature and the availability of phytoplankton. Global warming may reduce krill production, cutting food supplies for fish, marine mammals, sea birds and other marine species. The fisheries of the Southern Ocean form an important part of global food production, so specific research programmes and appropriate capacity building are urgently required, as are adequate regulations to protect life in the seas.

As the Intergovernmental Panel on Climate Change stresses, it is urgent both to mitigate the continuous increase in the greenhouse concentration in the atmosphere and to develop adaptation strategies to cope with the effects of climate change. Every possible action must be planned and developed to protect the Earth's natural ecosystems. South America's glaciers present the need for governments and private enterprises to take immediate action. The hazards and risks to the populations still depending on snowmelt — and currently suffering the effects of the rapid retreat of their mountain glaciers — must be urgently mitigated. At the same time, it will be convenient to take advantage of the favourable water availability which, for a century or more, would benefit the Patagonian plateau.

Swift action is urgently needed to protect the life and goods of those already exposed to the disastrous effects of avalanches and glacier lake outbursts, and to plan for the use of glacier water resources before they eventually disappear in the south of the continent. This, in turn, calls for developing appropriate national plans for assessing local climate conditions, now and in the future, for using land and water and for programming the relocation of species worst affected by the warming in their present habitats.

Adaptation presents the most immediate challenge for governments and private enterprises planning for Argentina and Chile's sustainable development. Well-planned, it would enable the best possible use of this century's most critical resource — water — safeguarding food production by wisely analyzing snow/ice meltwater productivity. Scientists may be able to foresee such new environmental scenarios, but decision makers must bring them into implementation.

World Environment Day's goal must be not merely to describe the difficulties arising from the Earth's warming and the consequent loss of its ice and snow. It must also draw up the lines for future action on a planet travelling to a new global climate system. 



# mountain tsuna

by Basanta Shrestha

The glaciers of the Himalayas, stretching 4,000 kilometres from Afghanistan in the west to China and Myanmar in the east, are a source of life for hundreds of millions of people living in the mountainous region and its adjoining plains. The world's loftiest mountain chain — its name is a combination of two Sanskrit words 'hima' (snow) and 'alaya' (abode) — boasts more than 30 peaks above 7,600 metres and has the largest concentration of glaciers outside the poles. Nature's renewable storehouse of fresh water, they provide the headwaters for major river systems throughout Asia. Like other glaciers around the world, they also provide a unique medium for scientific exploration and for studies of the complex climate system.

Glaciers worldwide are retreating in the face of accelerating global warming, as human activities cause steadily increasing concentrations of greenhouse gases in the atmosphere: their melting is an important indicator of climate change. By one forecast, up to a quarter of the global mountain glacier mass could disappear by 2050, and up to half could be lost by 2100. Changes in temperature are more pronounced at higher altitudes, and several studies have revealed that the Himalayan glaciers have been melting at an unprecedented rate in recent decades. This will cause major changes in freshwater flow regimes and thus have dramatic impacts on drinking water supply, biodiversity, hydropower, industry, agriculture and livelihoods.


Important baseline information on the Himalayan glaciers has been documented by a study for the global change research programme by the International Centre on Integrated Mountain Development (ICIMOD) in partnership with UNEP and the Asia Pacific Network, and in close collaboration with national partner organisations. This identified some 15,000 glaciers covering a total area of 33,340 square kilometres in Bhutan, Nepal and Pakistan and selected river basins in China and India. Observations of individual glaciers indicate that, in some cases, rates of retreat have doubled since the early 1970s, though they vary from basin to basin. The release of studies on Bhutan and Nepal in 2001 significantly raised the global community's awareness about what is taking place and the resulting impacts.

A long-term Chinese Academy of Sciences study 'The Chinese Glacier Inventory' reported a 5.5 per cent shrinkage in the volume of the country's 46,928 glaciers over the last 24 years — equivalent to losing more than 3,000 square kilometres of ice. It predicted that, two-thirds would disappear by 2050, and almost all would be gone by 2100 if the climate continues to change at the present rate. Meanwhile an ICIMOD study found that the area

of glaciers in the Poiqu basin of Tibet Autonomous Region had decreased by over 5 per cent between 1988 and 2000: in some cases they retreated by over 50 metres a year. Similarly, the Gangotri Glacier snout in the Indian Himalaya moved about two kilometres uphill between 1780 to 2001 and its retreat is continuing at an alarming rate. And in Bhutan, comparing 66 glaciers on a 1963 map with a 1993 satellite image revealed that they had shrunk by 8.1 per cent, with some small ones disappearing completely.

As glaciers retreat, lakes form behind their newly exposed terminal moraines. Most of the glacial lakes in the Himalayas have appeared within the last five decades. They can grow startlingly quickly: the Imja Tsho and Tsho Rolpa glacial lakes in Nepal are respectively expanding by about 41 metres and 66 metres a year. Such a rapid accumulation of water can lead to sudden breaching of their unstable natural dams. Huge amounts of water and debris are then released, in what are known as a Glacial Lake Outburst Floods (GLOFs). Some of these have already been reported in the region; in 1985, one from the Dig Tsho Lake in the Everest National Park in Nepal killed several people and destroyed trails, bridges, houses, arable land and a nearly completed hydropower plant. Future floods could have even more catastrophic effects, becoming 'mountain tsunamis' that put millions of people downstream at risk.

Monitoring Himalayan glaciers using conventional methods is difficult and challenging because of their inaccessibility, the high rugged terrain and the harsh climatic conditions. The size and remoteness of most mountain glaciers ensures that monitoring and assessing them relies heavily on satellite techniques. Concerted efforts are needed continuously to monitor glaciers, to mitigate the dangers from them, and to provide an early warning system of potential GLOFs. As GLOF disasters often cross boundaries, regional cooperation is needed to formulate a coordinated strategy to deal effectively both with them and with water management issues.

Himalayan glaciers are an inherent part of the region's life support system and their retreat provides compelling evidence of the need to act urgently on the pressing issues of global climate change. It may be difficult to predict exactly how they will melt in future, but it is clear that it is time to get our act together to avoid the most damaging consequences. Immediate action is needed by the international community to safeguard the precious natural resources of this relatively unexplored — yet one of the most spectacular — regions of the world. 



# mis

# action works

by Linda Fisher

A recent article published by a team of atmospheric scientists showed that actions resulting from the 1987 Montreal Protocol treaty have had a significant impact on protecting the earth's climate as well as protecting the ozone layer. The scientists conclude that reductions in ozone-depleting emissions, such as chlorofluorocarbon compounds (CFCs), has offset 10 years of carbon dioxide emissions.


This is good news for several reasons. First it shows that the international community did the right thing when it took action on CFCs. But even more importantly, it demonstrates that we can take concrete action on climate change, and that action works.

The challenge of global warming today is every bit as serious, but far more complex, than the ozone issue that confronted the framers of the Montreal Protocol. The need for concrete global action is also just as imperative — perhaps more so because we now know that action works. We need to work together to develop a meaningful and coordinated global approach. We strongly believe in the principles outlined by the Global Roundtable on Climate Change and the U.S. Climate Action Partnership, two coalitions that have recently outlined policy frameworks to address climate change. We encourage other organizations to support these efforts to advance global action.

DuPont has been acting to reduce greenhouse gas emissions at its operations around the world for nearly 20 years. It has reduced greenhouse gas emissions more than 70 per cent since 1991, realizing more than US\$3 billion in avoided energy costs. Now we have established our own ambitious sustainability goals that focus on further global greenhouse gas emission reductions as well as delivering new, efficient technologies and products

to the marketplace. With them, we have broadened our sustainability commitments beyond our own environmental footprint reduction to include market-driven targets for both product revenue and research and development investment that are tied directly to business growth — specifically to the development of safer and environmentally improved products for global markets.

We are developing advanced, high-performance fuels and other bio-based energy alternatives to expand fuel options for consumers, and we already provide high-performance materials for photovoltaic solar panels and fuel cells. We are working on refrigerant alternatives with lower global warming potential, and last year we announced the development of a new car air conditioning refrigerant to meet the new European Union regulations. We recently launched the first breathable roofing membrane which, used together with another of our products, forms an envelope surrounding the entire home, saving up to 20 percent of energy costs.

We are keenly aware that the kinds of concrete action we are taking can also be taken by suppliers, customers and consumers throughout the value chains in which we operate. We all need to take action on climate change in ways specific to our businesses, work, and lifestyles. We encourage dialogue among companies, the scientific community, governments and environmental groups — and we urge action by everyone. DuPont is committed to a global climate policy that is both environmentally effective and economically sustainable. While specific policy actions will still be discussed, what should not be debated is whether action is necessary. On that point the debate should rest, because the early results are in and they confirm what we expected: action works. 









# awards and events

This year's global **World Environment Day** celebrations take place in Norway — in Oslo and Tromsø. Highlights of the celebrations in Tromsø include an Ecumenical Service led by Archbishop Desmond Tutu in the Arctic Cathedral with representatives of various faiths; the award ceremony for the International Children's Painting Competition; and a televised debate on the topic of melting ice and climate change. On 5 June the celebrations will move to Oslo with the award ceremony for the Sophie Prize, which will be given on this occasion to Former Prime Minister of Sweden Goran Persson. In the afternoon an art exhibit on climate change organized by UNEP and the Natural World Museum will take place at the Nobel Peace Centre. <http://www.wed.npolar.no/world-environment-day-2007/>

## world environment day

### MELTING ICE - A HOT TOPIC?



ask...



WORLD ENVIRONMENT DAY • 5 June 2007  
UNEP

## climate change



**World Environment Day (WED)** was established by the United Nations General Assembly in 1972 to mark the opening of the Stockholm Conference on the Human Environment. Another resolution, adopted by the General Assembly the same day, led to the creation of UNEP. Commemorated each year on 5 June, WED is one of the principal vehicles through which the United Nations stimulates worldwide awareness of the environment and enhances political attention and action. The World Environment Day slogan selected for 2007 is 'Melting Ice: a Hot Topic?' In support of International Polar Year, the WED theme selected for 2007 focuses on the effects that climate change is having on polar ecosystems and communities, and the ensuing consequences around the world. <http://www.unep.org/wed/2007/english/>

March 2007 saw the start of **International Polar Year 2007–2008**, a worldwide effort to increase understanding of how the Earth's remote polar regions affect global climate systems. Organized through the International Council for Science (ICSU) and the World Meteorological Organization (WMO), IPY 2007-8 will involve more than 200 projects, with thousands of scientists from over 60 nations examining a wide range of physical, biological and social research topics. As part of IPY, UNEP is supporting the ambitious Arctic Drift project in which the polar schooner Tara will drift for two years trapped in the Arctic ice, providing an unprecedented platform for scientific observations and research on how the Arctic environment is changing, and relaying its findings to scientists, policy makers and the general public. Tara's progress can be followed on the expeditions pages of the UNEP website [www.unep.org](http://www.unep.org).

## The Goldman Environmental Prize



## international polar year

**The Goldman Environmental Prize** is the world's largest prize honoring grassroots environmentalists, annually awarding US \$125,000 to recipients from each of the world's six inhabited continental regions.

The 2007 Goldman Environmental Prize winners, announced on 22 April, are:

- \* North America: Sophia Rabliauskas, 47, Manitoba, Canada, for securing interim protection for the boreal forest of Manitoba.
- \* Africa: Hammerskjöld Simwinga, 45, Zambia, for creating an innovative community development programme that restored wildlife populations.
- \* Asia: Tsetsegee Munkhbayar, 40, Mongolia: Munkhbayar, for working with government and grassroots organizations to shut down destructive mining operations along Mongolia's scarce waterways.
- \* South & Central America: Julio Cusurichi, 36, Peru, for securing a national reserve in the remote Peruvian Amazon to protect sensitive rain forest ecosystems and the rights of indigenous peoples.
- \* Europe: Willie Corduff, 53, Ireland, for halting construction of an illegally-approved pipeline through their land.
- \* Islands & Island Nations: Orri Vigfússon, 64, Iceland, for brokering international fishing rights buyouts with governments and corporations in the North Atlantic to stop destructive commercial salmon fishing.

<http://www.goldmanprize.org/>



## energy globe awards

After helping more than 100,000 people in 18,000 Indian households finance clean energy from their PV solar electric home systems, UNEP's Indian Solar Loan Programme, represented by project manager Jyoti Prasad Painuly, won an **Energy Globe** award. The Energy Globe is bestowed annually on projects from around the world "which make careful and economical use of resources and employ alternative energy sources". The four-year Indian Solar Loan Programme, launched in 2003 with support from the UN Foundation and the Shell Foundation, is a partnership between UNEP, the UNEP Risoe Centre on Energy, Climate and Sustainable Development, and two of India's largest banking groups to establish a consumer credit market for financing solar home systems (SHS) in Southern India, where the conventional electricity grid is absent or unreliable. From a small, cash-only business in 2003, the solar home sector market now sees more than 50% of sales financed by banks, with 20 banks with networks of more than 2,000 branches now offering solar home financing. UNEP has used the success of the Indian Solar Loan Programme to expand into other areas, including solar water heating loan programmes in Morocco and Tunisia and others in development for Algeria, Indonesia, Mexico and Chile. <http://www.unep.org/energy/act/fin/india/>

With an estimated 35 million volunteers from more than 100 countries, the

**Clean Up the World** campaign is UNEP's major partner in promoting global awareness and action on the environment. Each year the campaign, which peaks in September during Clean Up the World weekend, is linked to the theme of World Environment Day, providing its members with factsheets on the issues and website links to UNEP. Clean Up the World members participate in World Environment Day activities on all continents and, this year, are being encouraged to contribute to the Billion Tree Campaign [www.unep.org/billiontreecampaign](http://www.unep.org/billiontreecampaign).

## clean up the world







## Climate Change: Useful Links

This page contains links to websites from governments, international organizations, non-governmental organizations, businesses, media, and other groups from around the world to help you research the complex phenomenon of climate change. 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.

### know the facts

[www.ipcc.ch/](http://www.ipcc.ch/)

The Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organisation (WMO) and UNEP to assess scientific, technical and socio-economic information relevant for the understanding of climate change, its potential impacts and options for adaptation and mitigation.

[www.grida.no/climate/vital/](http://www.grida.no/climate/vital/)

Vital climate graphics, produced by UNEP GRID-Arendal, provides clear and easy to understand graphic information on climate change, based on IPCC assessment reports, for use by scientists, policy makers, educators and the public.

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

The United Nations Framework Convention on Climate Change and its Kyoto Protocol provide the foundation for global efforts to reverse global warming by reducing or offsetting greenhouse gas emissions.

[www.unep.org/themes/climatechange/index.asp](http://www.unep.org/themes/climatechange/index.asp)

UNEP's climate change site provides information on UNEP's climate change work and links to UNEP's partners.



### french language

[www.greenfacts.org/en/climate-change-ar4/index.htm](http://www.greenfacts.org/en/climate-change-ar4/index.htm)

This site offers a summary of the 2007 report of the Working Group I of the Intergovernmental Panel on Climate Change. The site allows readers to choose the level of detail that best suits their needs.

[www.ecologie.gouv.fr/rubrique.php?id\\_rubrique=960](http://www.ecologie.gouv.fr/rubrique.php?id_rubrique=960)

The French Ministry of Environment and Sustainable Development website offers in-depth information on climate change-related issues.

[www.changement-climatique.fr](http://www.changement-climatique.fr)

Created by the Economic and Social Council, the site offers a blog for scientists, experts and the public to exchange ideas and debate climate change.

[mineco.fgov.be/energy/climate\\_change/home\\_fr.htm](http://mineco.fgov.be/energy/climate_change/home_fr.htm)

The site contains documents that strive to explain the economics and science of climate change. A section for teachers offers an educational quiz on climate change.

[www.ec.gc.ca/default.asp?lang=En&n=6EE576BE-1](http://www.ec.gc.ca/default.asp?lang=En&n=6EE576BE-1)

Environnement Canada, the website of Canada's environmental bodies offers an in-depth overview of Canada's multi-pronged approach to combating climate change.

[ec.europa.eu/environment/climat/campaign](http://ec.europa.eu/environment/climat/campaign)

The European Commission's You Control Climate Change campaign is helping individuals contribute to the fight against climate change.

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

**Google Earth puts UNEP offices on the Map** - Ever wondered what UNEP headquarters in Nairobi looks like? Or where UNEP's new offices in Panama City or Paris are? What about UNEP in Japan? Thanks to Google Earth and Google Maps technology, UNEP has now made it easier to find any UNEP office anywhere in the world. Internet surfers with Google Earth will soon be able to go on virtual missions to any UNEP regional office, outposted office, collaborating centre or secretariat, by simply downloading a small file from [www.unep.org](http://www.unep.org). UNEP logos will appear on their virtual globe and clicking on any one will take them to the office at that location, and show them the address and background and contact information for the office. Depending on the detail of satellite images available, users may even be able to zoom in to the exact building where the office is located.

[www.unep.org/wed/2007](http://www.unep.org/wed/2007)

Information about the 2007 World Environment Day theme 'Melting Ice: A Hot Topic', plus details about how to plan or become involved in World Environment Day activities around the world.

### be part of the solution

[www.stopglobalwarming.org/](http://www.stopglobalwarming.org/)

"There is no more important cause than the call to action to save our planet. This is a movement about change, as individuals, as a country, and as a global community. We are all contributors to global warming and we all need to be part of the solution."

[www.avaaz.org/en/climate\\_action\\_g8/](http://www.avaaz.org/en/climate_action_g8/)

"People around the world taking action on pressing global issues." Avaaz presented the first 100,000 signatures of a climate change petition to a G8 Environment Ministers meeting in March, and is collecting further signatures for the June G8 leaders summit, where German Chancellor and G8 President Angela Merkel has made climate change a priority issue.

[www.carbonfund.org](http://www.carbonfund.org)

"Reduce what you can, offset what you can not." The Carbon Fund's mission is a zero carbon world. It works to reduce the threat of climate change by making it easy and affordable for any individual or business to reduce their carbon footprint and support climate-friendly projects.

[www.myclimate.org](http://www.myclimate.org)

The Climate Protection Partnership is based on the concept of voluntary and innovative solutions for climate protection and the promotion of renewable energy and energy efficiency. The site contains a reference section on organizations and event organizers who are already offsetting CO2 emissions with myclimate.org.

[www.carbonneutral.com](http://www.carbonneutral.com)

The CarbonNeutral Company claims to be one of the world's leading carbon offset and climate consulting businesses, helping thousands of people and hundreds of major companies around the world to measure, reduce and offset their CO2 emissions. The site contains links for business, carbon buyers, carbon projects and climate friendly products.

[www.carbonfootprint.com](http://www.carbonfootprint.com)

Carbon Footprint is a measure of the impact human activities have on the environment in terms of the amount of greenhouse gases produced, measured in units of CO2. This website encourages users to take three simple steps: 1. calculate your carbon footprint, 2. reduce your carbon footprint, and 3. off-set your carbon footprint.

### enviro-cool

[www.global-cool.com](http://www.global-cool.com)

Backed by celebrities, musicians, politicians and business leaders this new global movement aims to reverse the effects of global warming by asking one billion people to reduce their carbon emissions by just one tonne a year, for the next decade through doing simple things such as unplugging your I-Pod or mobile phone charger when it's not in use.

[www.ecorazzi.com](http://www.ecorazzi.com)

"The latest in green gossip." Ecorazzi exists as "a conduit to report on the latest celebrity gossip as it pertains to activism and inspiring change... We also highlight humanitarian efforts, beneficial campaigns, fundraisers and acts of good."

[www.treehugger.com](http://www.treehugger.com)

TreeHugger describes itself as "the leading media outlet dedicated to driving sustainability mainstream. Partial to a modern aesthetic, we strive to be a one-stop shop for green news, solutions, and product information."

# products

## Changing The Present

"Changing the World, One Gift at a Time," <http://ChangingThePresent.org> allows you to protect an acre of the rainforest, invest in a sanitation programme or promote environmental education. You can invest in environmental research, fund a lawyer defending land rights or help fight climate change. And that's just on the environment. ChangingThePresent offers something for virtually any cause.

[ChangingThePresent.org](http://ChangingThePresent.org)



## Eco Kettle

According to the UK Department of Environment, Food and Rural Affairs (DEFRA): "If everyone boiled only the water they needed to make a cup of tea instead of 'filling' the kettle every time, we could save enough electricity to run practically all the street lighting in the U.K." The Eco Kettle has a patented dual reservoir, one of which holds 1.5 litres of water, along with a measuring button which allows any quantity — from a single cupful to full capacity — to be released into a separate boiling chamber, saving consumers up to 30 per cent of energy compared with a normal kettle. The kettle has a 3 kilowatt stainless steel concealed element, a washable limescale filter, and a locking lid.

[www.ecokettle.com](http://www.ecokettle.com)



## Smile



The Sustainable Model in Lighting for Everyone (SMILE) project, spearheaded by Royal Philips Electronics, aims to provide affordable, high-quality, energy-efficient lighting where it is most needed. Two lighting solutions are the heart of SMILE: a rechargeable portable lantern, and a hand-cranked LED flashlight. In partnership with UNEP Sasakawa Environment Prize winner Development Alternatives, Development of Humane Action Foundation and MART Rural Solutions, Philips is developing a business model that will allow families to light their homes without creating indoor air pollution or risking fire. Currently available in four Indian States, the programme will soon be rolled out to eight more. The products also benefit shopkeepers, night fishermen, and children studying at home.

[www.philips.com/About/sustainability/Section-15220/article-16680.html](http://www.philips.com/About/sustainability/Section-15220/article-16680.html)

## TracElite



Illegal logging is both big business and a major contributor to climate change. Developed by the Tropical Forest Trust, TracElite is a global computerized system that tracks wood from stump to store aiding the battle against illegal logging and helping consumers choose sustainable products. Under the system, which has been tested in Indonesia, a tree destined for legal felling is given a unique barcode identifying its type and location, which it carries all through the process from forest to furniture. When the barcode is scanned, a server in London verifies the information. Because the system functions via the Internet, it is always on. Wholesalers and retailers can act immediately to identify problems before products containing wood of unknown origin are manufactured, packaged and shipped.

[www.tracelite.com](http://www.tracelite.com)

## Plantic



"Changing the nature of plastics" is the slogan of Plantic, an Australian based biodegradable materials technology company. Plantic Technologies has developed an entirely biodegradable, water soluble and organic alternative to conventional plastics based on non-genetically modified corn. One its latest uses was on So Organic Easter Eggs from Sainsbury. According to an article in The London Times, Sainsbury's use of this new bioresponsible packaging could save seven tonnes in landfill waste.

[www.plantic.com.au](http://www.plantic.com.au)

## Hybrid school bus

One of the United States most enduring symbols — the school bus — is getting a makeover thanks to IC Corporation, USA's largest school bus manufacturer, and Enova Systems, a leading provider of hybrid drive systems. As a result of an initiative called the Plug-In Hybrid Electric School Bus Project, 19 hybrid buses have been awarded to states around the country by Advanced Energy, a non-profit corporation that initiated a buyer's consortium of school districts, state energy agencies and student transportation providers. The new hybrid school bus technology could reduce emissions by 90 per cent. An added benefit: as school buses are generally not air conditioned, their windows are commonly open in warm weather. Children are therefore exposed to diesel exhaust during pickup and drop-off. The hybrid system promises reduced exposure diesel particulate matter.

[www.enovasystems.com/](http://www.enovasystems.com/)



## Light relief



Australian Environment Minister Malcolm Turnbull made global headlines in February 2007 when he announced that Australia would phase out incandescent light bulbs in a bid to curb greenhouse gas emissions. Yellow incandescent bulbs, which have been in use virtually unchanged since their invention in the 19th century, will be replaced by more efficient compact fluorescent bulbs by 2009. Approximately 95 per cent of the power consumed by an incandescent light bulb is emitted as heat, rather than as visible light. With less than 5 per cent efficiency, an incandescent light bulb is about one quarter as efficient as a fluorescent lamp, which is about 20 per cent efficient. Banning incandescent bulbs could cut 800,000 tonnes of carbon from Australia's current emissions by 2012 and lower household lighting costs by 66 per cent.

<http://www.environment.gov.au/minister/env/2007/pubs/mr23apr07.pdf>



Climate change is “the ultimate wake-up call” says Peter Garrett — and he should know, having sounded quite a few alarms in his time. As the whirling dervish lead singer of the aggressive hard rock/punk band Midnight Oil he helped shake up the music industry. As an environmental and human rights activist he has long campaigned on issues ranging from uranium mining to indigenous people’s rights, from homeless young people to tropical rainforests. And now, as a politician, he is devoting much of his time to global warming.

Born 54 years ago in Wahroonga, on the outskirts of Sydney, he grew up playing in, and exploring, the bush around his home — and beat asthma partly by taking up surfing. He told *Our Planet*: “I think these experiences awakened in me a love of the natural environment.”

In his late teens he helped form a progressive rock group, which evolved into Midnight Oil in 1976. Originally closely associated with the Sydney surfing community — and described by *Rolling Stone Magazine* as “one of the most significant bands ever to come out of Australia” — it became as noted for its fiercely independent stance and campaigning as for its sound. “We were always interested in what was unfolding around us,” he says, “and as writers and musicians we travelled a lot and came to see that deterioration of the environment was happening all around us.”

Their songs and albums picked up their campaigning themes, but they became particularly

known for protest and benefit shows. In 1990 they performed on a truck in front of the Exxon building in New York under a banner reading “Midnight Oil makes you dance, Exxon Oil makes us sick” in protest at the Exxon Valdez oil spill in Alaska. They staged similar protests at the Jubiluka uranium mine in Arnhem Land; at Clayquot, on Canada’s Vancouver Island, scene of an epic battle over the future of temperate rainforest; and against air pollution in São Paulo, Brazil.

Garrett points out that many other artists took up environmental causes, but acknowledges: “I think we were part of the change in attitudes to the environment that came to the fore in the early 90s, so maybe in some ways our music simply became a soundtrack for that period.”

But perhaps Midnight Oil’s most effective coup came at the closing ceremony of the 2000 Sydney Olympics when the band walked onstage in clothes bearing the word “Sorry”, in apology to the ‘stolen generation’ of aboriginal children taken from their parents by Government agencies and religious missions in the first seven decades of the 20th century. As he points out: “There is a very important linkage between the state of the environment and the capacity of indigenous people to have productive livelihoods and a strong say over what happens in their community.”

He served two terms as President of the Australian Conservation Foundation, during which it grew strongly in capacity and influence, built partnerships with other conservation groups, farmers and business — and won important campaigns, not least over protecting Antarctica and conserving Queensland rainforest. In 1984 he ran for the Australian Senate as a candidate of the Nuclear Disarmament Party, which he helped to found, but finally entered parliament in 2004 as a Labour member. He is now Shadow Minister for Climate Change, Environment and Heritage and Shadow Minister for the Arts.

“Climate change, with its pervasive scope and likely consequences, has arrived as the ultimate wake up call for us all,” he says. “It is a once in a generation opportunity to harness our human endeavours, and build a low carbon economy where the prospects for future generations are good.”

# Peter Garrett



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

