



Enviro-Watch

Focus on: Climate Change

The eyes of the world will be on Copenhagen between the 7th and 18th December 2009 as the United Nations Framework Convention on Climate Change (UNFCCC) hosts the 15th Conference of the Parties (COP).

From a historical perspective, this is one of the most significant gatherings ever. Up to 15,000 officials, advisers, diplomats, campaigners and media personnel from over 200 countries, as well as heads of states and government will be attending. They will meet in the Danish capital with a view to agreeing upon a solution to one of the most serious threats the global community has ever faced; that of global warming and climate change.

All of the world's major governments now formally accept that global warming is a reality and that the global increases in average temperature will, if unchecked, give rise to serious consequences for humanity. Despite this agreement, a consensus on how the problem should be tackled has so far evaded world leaders.

No-one disputes the fact that the world needs to dramatically reduce its carbon emissions, the crux of the matter lies in who should reduce and by how much.

The UNFCCC assigns "common but differentiated responsibilities" to developed and developing countries, recognising that industrialised countries must take the lead in the fight against climate change and its impacts. This has meant that, to date, developing countries have not had to take on any emission reduction commitments which in turn has led to difficulties.

China, for example, recently overtook the US as the world's biggest carbon emitter and its economy contin-

ues to grow. Historically, however, the US has emitted far more and even now, on a per capita basis, emissions from American citizens dwarf those of the Chinese. Heated debates have therefore ensued as to who should shoulder the financial burden of tackling climate change.

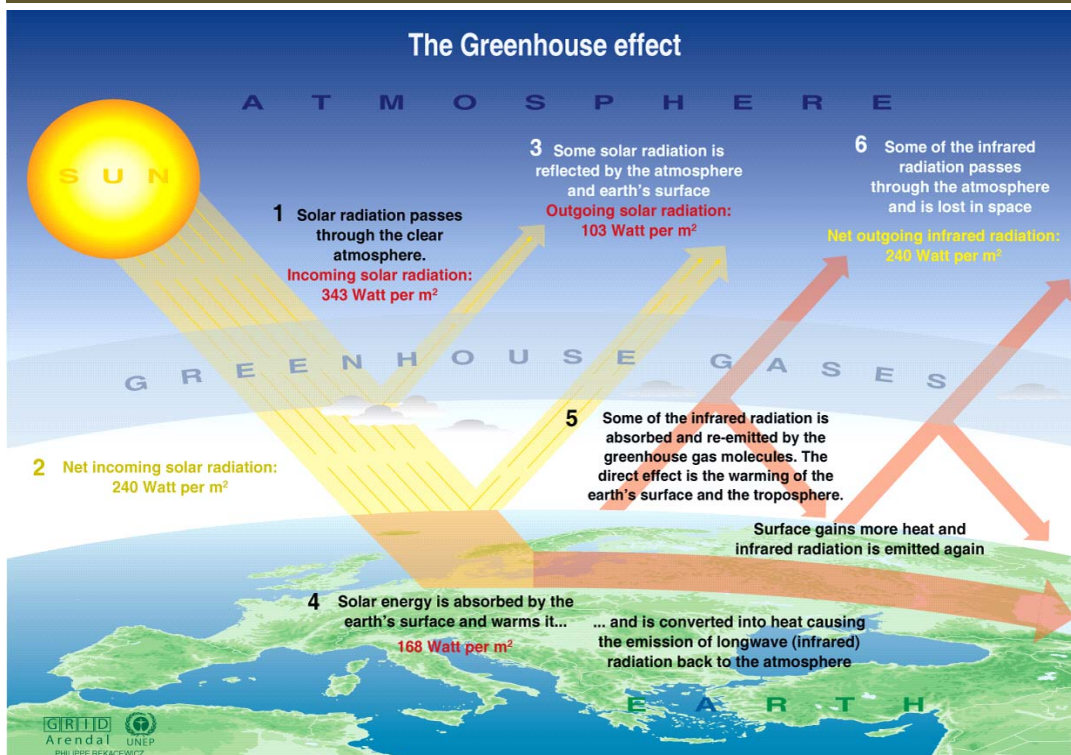
The negotiation process has been thwarted by these difficulties for a number of years but now time is running out and all parties will have to put their differences aside and focus on the common goal if they are to stand any chance of securing an agreement to safeguard the future habitability of the planet.

Experts believe that three main conditions must be met in order for Copenhagen to be considered a success:

- 1) Wealthy industrialised nations must agree to take on strict & binding new targets for cutting their CO₂ emissions.
- 2) Developing countries, led by China, must move away from the "business as usual" scenario of economic growth.
- 3) Wealthy nations must agree on a concrete way of financing developing countries, particularly the least developed countries, in their efforts to adapt to the climate change that is by this stage, inevitable.

The change in the US administration has led many to hope that it will also signal a new era for global climate action. Current scientific evidence indicates that the effects of climate change will only remain manageable if global temperatures rise by no more than 2°C above pre-industrial levels. For this to happen, worldwide emissions must not be allowed to exceed the predicted levels for 2020 and emissions must be cut to 50% of 1990 levels by 2050. These are ambitious goals and it is therefore vital that a strong and binding agreement is reached at Copenhagen.

The Science



Sources: Okanagan university college in Canada, Department of geography, University of Oxford, school of geography; United States Environmental Protection Agency (EPA), Washington; Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge university press, 1996.

such, policy makers need an objective source of information about the causes of climate change, its potential environmental and socio-economic consequences and the adaptation and mitigation options to respond to it. As such, the World Meteorological Organisation and the United Nations Environment Programme established the IPCC in 1988. The IPCC is a scientific intergovernmental body which provides a comprehensive account of the latest evidence and thinking within the scientific community on the subject of climate change.

What is Climate Change?

Climate change refers to all types of climatic variation and it is known that the earth's climate is subjected to constant, natural change. When people refer to climate change nowadays, however, they are generally referring to the accelerated process of change being driven by human influence.

The Greenhouse Effect

The natural greenhouse effect is what warms the planet and makes it suitable for human habitation. Greenhouse gases such as carbon dioxide, methane and water vapour have occurred naturally for millions of years. Energy from the sun warms the earth's surface and heat is radiated back into the atmosphere as infra-red energy. Some of this energy is absorbed within the atmosphere by greenhouse gases. This natural process is called the greenhouse effect.

Human activities such as the burning of fossil fuels and deforestation are adding greenhouse gases to the atmosphere, resulting in an enhanced greenhouse effect. It is this enhanced effect which is resulting in human-induced climate change.

The Intergovernmental Panel on Climate Change (IPCC)

Climate change is a complex issue and even as we continue to learn more about it, we become increasingly aware of how much there is yet to be discovered. As

IPCC Findings

The IPCC Fourth Assessment Report synthesizes current scientific understanding of global warming and projects future climate change using the most comprehensive set of well-established global climate models.

The report finds that it is "very likely" that emissions of heat-trapping gases from human activities have caused "most of the observed increase in globally averaged temperatures since the mid-20th century." The report concludes that it is "unequivocal" that the Earth's climate is warming, "as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level." The report also confirms that the current atmospheric concentration of carbon dioxide and methane, two important heat-trapping gases, "exceeds by far the natural range over the last 650,000 years." Since the dawn of the industrial era, concentrations of both gases have increased at a rate that is "very likely to have been unprecedented in more than 10,000 years."

The Evidence

- 11 of the last 12 years rank among the 12 hottest years since records began.
- Droughts have become longer & more intense, affecting larger areas since the 1970's.
- Between 1993 & 2003, ocean expansion due to heat absorption, was the largest contributor to sea level rise.

The Impacts

The impacts of the predicted climate change will be far-reaching and will undoubtedly impact more heavily on poorer nations. In an increasingly interconnected world, however, both rich and poor stand to lose. Impacts on individual sectors or regions will vary depending on the sensitivity of the system and its adaptive capacity. Those already affected by poverty, malnutrition and disease will face displacement and new hardships. In the developed world, our industries, livelihoods and public health will face serious threats from drought, disease and extreme weather events.

There is already documented evidence of the impacts of a changing climate: retreating glaciers, longer growing seasons, shift of species ranges and health impacts due to heat waves of unprecedented magnitude. These observed changes are consistent with what is projected for future climate change.

Freshwater resources



Average river runoff and water availability are predicted to increase at high latitudes but decrease over already dry regions. Drought affected areas will increase in extent and an increase in the frequency of heavy precipitation events will augment flood risk. Over the course of the century, water supplies stored in glaciers and snow cover are projected to decline, reducing water availability to one sixth of the world's population.

Ecosystems

The resilience of many ecosystems is likely to be exceeded this century by an unprecedented combination of climate change and associated disturbances. Over the course of this century net carbon uptake by terrestrial ecosystems is likely to peak before mid-century and then weaken or even reverse, thus amplifying climate change. Approximately 20-30% of plant and animal species assessed face an increased risk of extinction if global temperature rises exceed 1.5°C – 2.5°C. Should temperatures rise further than this, there will be major changes in ecosystem structure and function with predominantly negative consequences for biodiversity and ecosystem goods and services.

Food production

Globally, the potential for food production is expected to increase with temperature rises of 1°C - 3°C but should temperatures rise by more than this, food production capacity will



be compromised. Increases in the frequency of droughts and floods are also projected to affect crop production negatively especially in subsistence areas. Overall, this will result in increased food prices and greater risk of starvation and malnutrition.

Coastal systems and low lying areas

Coasts will be exposed to increasing risks, including coastal erosion due to sea level rise. Many millions more people are projected to be flooded every year due to sea level rises. Those densely-populated and low lying areas where adaptive capacity is relatively low are especially at risk.

Health

Projected climate change-related exposures are likely to affect the health status of millions of people, particularly those with low adaptive capacity, through:

- increases in malnutrition and consequent disorders, with implications for child growth and development;
- increased deaths, disease and injury due to heat waves, floods, storms, fires and droughts;
- the increased burden of diarrhoeal disease;
- the increased frequency of cardio-respiratory diseases due to higher concentrations of ground-level ozone related to climate change; and,
- the altered spatial distribution of some infectious disease vectors.

Minister's column



Protecting our environment is a goal that undoubtedly we should all share, as politicians, as professionals in our respective fields, and indeed as citizens of this planet. This edition focuses on Climate Change which is perhaps the most serious problem the world has faced to date. Its impacts will be wide reaching, affecting every corner of our planet. It is our collective responsibility to ensure we leave the world in a fit state for future generations.

The challenge we face is nothing short of the conversion of an economy sustained by high-carbon energy to one based on low-carbon, sustainable sources of energy. The scale of this undertaking is immense but I am confident that Gibraltar will play its part. We can all take conscious decisions during our daily lives, decisions that when added to our collective goal will have an influence on the net reduction of greenhouse gases. The Government has produced a Climate Change Programme developed in consultation with The Climate Change Forum. This document has been adopted by the public sector and changes will need to take place. These changes can be adopted by all sectors as examples of how to contribute to our collective goal.

Ernest Britto
Minister for the Environment and Tourism

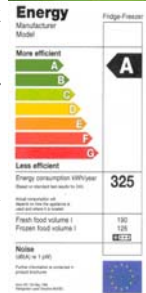
What next?

Mitigation

Mitigation is defined as a way of decreasing or reducing something. When put into the context of climate change, it refers to the ways in which we can reduce our carbon footprint and decrease the levels of greenhouse gases in the atmosphere. Whilst world leaders are debating about what can be done at national and international levels, we can all make a difference at the local level.

The following series of points illustrate some of the things that we can do to become more environmentally friendly and reduce our energy consumption:

- **Switch off** appliances when not in use
- Do not leave appliances on 'stand-by' mode as this consumes electricity
- Change our electrical fitting to energy efficient options
- Look at the eco-labels on products to be purchased and buy more energy efficient products
- Wash clothes and dishes at a lower temperature and try to only use these appliances when you have a full load
- Use the bus, cycle or walk more and become less dependent on private vehicles
- Invest in hybrid, electric or low emission vehicles if you need a new car
- Buy recycled paper products or paper produced from sustainable forests
- Print or photocopy on both sides of the paper
- Close dripping taps and replace fittings with water efficient, leak-proof alternatives
- Ask your travel agents about carbon offsetting flights
- **Reduce** the amount of waste produced by choosing products with less packaging
- Decrease the volume of waste thrown out by flat packing or squashing cardboard boxes and cartons
- **Reuse** as many items as possible
- **Recycle** glass and cans
- Buy fresh, in-season and where possible local/regional produce
- Green shopping - take your own bags or buy reusable bags
- Reduce food waste at home



Adaptation

Changing behaviour to respond to the impacts of climate change is known as 'adaptation'. Adapting to climate change means changing the ways things are done - in all areas of life - to respond to changing circumstances. Even if the world succeeds in limiting and then reducing emissions of greenhouse gases (GHG), the feedback mechanisms and timescales involved mean that the world will still suffer the effects of the GHG's already in the atmosphere. As a result society will be faced with the effects of climate change for at least the next 50 years and needs to take measures to adapt. Adaptation needs to be built into planning and risk management now to ensure the continued and improved success of businesses, Government policies and social operations. The early adoption of adaptation measures will mean being better equipped to cope with higher temperatures, increased rainfall and other changes.

When adapting to climate change, in many cases there will be a number of different possible adaptation options available to a particular organisation at a particular time. The choice will depend on the costs and benefits of different options, the attitude to risk of the organisation and the information that is available to it. An organisation might decide at any particular time to:

- make no change to its operations and behaviour, and accept the possible risks
- undertake a major change in the way it works to avoid the impact
- reduce its vulnerability to the impact by changing its behaviour.

Most decisions will be made in the context of other, non-climate related change.

The outcome of the adaptation decision is likely to have an impact beyond the organisation that makes it - for example, on suppliers, service users, staff and the natural environment. This is because of the complex and interconnected nature of systems within our society, the economy and the environment. One particular impact or decision - even a seemingly small one - can lead to a chain of impacts, affecting several different sectors of society. That's why a climate change adaptation policy needs to take a holistic look at the systems (ecological and human) that might be affected. Planning on the basis of good information and understanding of the wider effects of action is likely to lead to more cost effective and sustainable adaptation.

Adapting to climate change is a necessary process.

Useful Telephone Numbers

Department of the Environment 20050294
Environmental Agency 20070620

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