



## Managing Short Term Climate Change - a post Kyoto Update

### Introduction : What are the Issues?

Climate change is not just an environmental issue but a political, social and a development issue — it will fundamentally shape the way present and future generations live their lives. Some climate change is now inevitable and we will have to adapt to that. Can climate change be kept within limits which global society can accommodate?

The Inter-Governmental Panel on Climate Change (IPCC) state that there is 'no longer any reasonable doubt' that climate change is a reality and that human activities are largely responsible for increasing concentrations of greenhouse gases in the earth's atmosphere, leading to a rate of warming not seen for 10,000 years. If emissions are not curbed, warming trends will accelerate further.

Management of Global Warming can be split into two main forms

1. **Modification of causes**
2. **Mitigating/managing the effects.** International emissions are a global problem -hence **international agreements** needed, supported by national/regional/local governments & lastly individual action( **Local Agenda 21 policy: Global problems, local action**)

### Kyoto Protocol - think and act global

The Kyoto Protocol is a complex structure, the first global treaty on tackling climate change.

**Emission restrictions** were made for the rich countries of **Annex 1** - the biggest greenhouse gas producers, and also the countries most able to cut emissions. LEDCs are not committed yet. Targets range from an 8 % cut for the EU to a 10% increase for Iceland & Australia. Annexe I also includes several 'transition countries', eg the Russian federation, whose economies still need some development and are allowed 'a certain degree of flexibility'.



Kyoto commits industrialised nations(38 + the EU of "Annex 1") to reduce their emissions of six greenhouse gases by an average of 5.2% below their 1990 levels within a decade. NB some scientists believe it would take carbon cuts of 60% or more to prevent dangerous climatic instability, so Kyoto would be only a modest, though necessary, start.

To become legally binding the protocol has to be **ratified** by at least 55 countries which account for >55 percent of the total 1990 GHG emissions of developed countries. The **USA** refuses to ratify Kyoto, but it is still a Convention signatory, so it still participates in international climate talks. It says it regards climate change as an urgent problem, which it will tackle - but not through Kyoto. Russia's agreement in 2004 means the protocol is now ratified

### Kyotos 3 Main Mechanisms

1. **International Emissions Trading Regime**-if countries reduce emission below targets, they can sell excess emissions credit to others. Called **carbon credits**
2. **Clean Development Mechanisms**- MEDCs can finance low emission projects in LEDCs & receive credits. Includes clean technology & planting trees to create extra carbon sinks
3. **Joint implementation** will provide credit for investments in projects in MEDCs & LEDCs

There are two other linked policies:

- **Carbon sinks & Carbon sequestration** Ways to store the main greenhouse gas, carbon dioxide, by: planting trees to soak it up, or possibly by pumping it into underground reservoirs or beneath the seabed; or fertilising seawater with iron to make it absorb carbon.
- **Carbon credits** are assigned to countries. These can then be traded with other countries, which may mean some countries using more greenhouse gases than allocated, on the understanding the trading country uses less.

The EU came into the talks believing that these two policies should be a small part of meeting targets but USA, Russia, Canada and some other countries thought they should be a major part. The latter group largely got its way, even though the US withdrew from proceedings. It was finally agreed that countries will be able to claim some carbon credits for planting forests in LEDCs and be able to claim credit for activities such as soil conservation, which will allow more carbon to be soaked up in soils. All 15 European Union states ratified the Kyoto deal in 2002.

The protocol's most enthusiastic supporter, the EU has pressured countries such as Russia to ratify Kyoto in the hope that the critical threshold of commitment will be obtained without the US. The Europeans and the Alliance of Small Island States (AOSIS) want Kyoto enforced strictly, meaning actual pollution cuts.

The non-EU developed country bloc - Japan, the US, Switzerland, Canada, Australia, Norway and New Zealand (JUSSCANNZ) – want a far more flexible application of the treaty (the US refuses to ratify it). It soon became apparent that the Kyoto treaty was a bureaucratic nightmare. Kyoto's complexity has meant real problems for its success : prosecutions have become impossible and had the treaty's proposals become international law, nothing could have been enforced beyond 2012.

### Case studies of opponents to Kyoto:

**Australia** Australia = 2.1% of the CO<sub>2</sub> emissions 1990. June 2002 - it will not ratify the Protocol until the USA does and until developing countries are included. In 2003 - Australia reaffirmed its opposition to ratification. PM John Howard stated "**For us to ratify the Protocol would cost us jobs and damage our industry**

**USA** UNFCCC state that USA produced 36.1% of CO<sub>2</sub> emissions in 1990 and the Kyoto Protocol determined a target cut of by 7% from their 1990 emissions by 2012. USA pulled out from treaty in 2001 and President Bush states that the USA will never sign the agreement ,objecting to LEDC countries like China who have greater leniency on emissions so far. In 2002, President Bush announced his **Climate Change Strategy** including a 10-year goal of reducing greenhouse gas intensity by 18 percent - way below that required if the US ratified the Protocol. The US Official view is that it has domestic policies in place to combat climate change and is pouring money into scientific research and the development of new technologies. Whilst the rest of the world is trying to put an **absolute cap** on carbon dioxide emissions, the US is trying to reduce what it calls the '**carbon intensity**' of its economy. It may get more productivity for the amount of fossil fuels it uses but its greenhouse gas emissions, already the highest in the world, will still continue to rise.

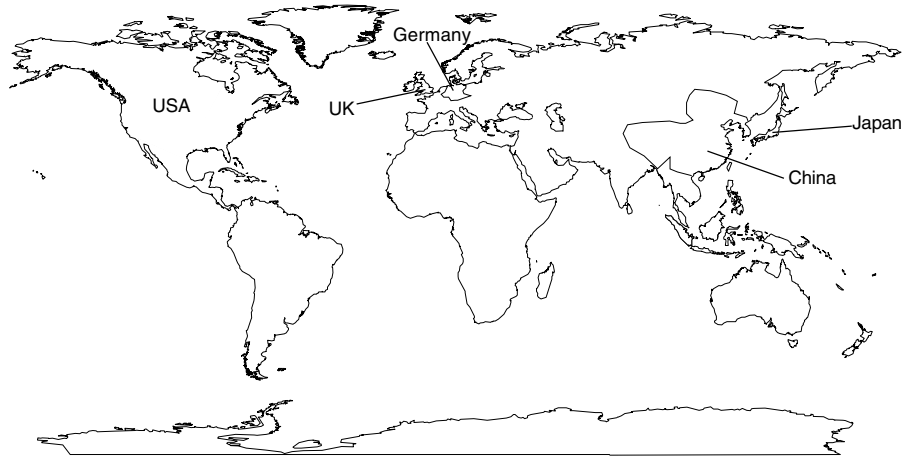
1990-97 **Canada** - which was under obligation to reduce its emissions under the 1992 Rio convention - increased emissions by approximately 20 % between 1990 and 2000!

**Reducing emissions-what progress by 2004? - a range of national perspectives**

Despite slow progress with international government negotiations over the Kyoto Protocol, the increasing urgency felt about climate change around the world has led to many unilateral actions to reduce emissions, both in the public and private sectors. These efforts are proving that significant green house gas reductions are possible and that they can be achieved cost effectively

**CASE STUDIES of GHG 'reducers' - a diverse group of government & other organisations**

Country scale	State scale	City scale	TNC scale
<p><b>Germany:</b> Between 1990 and 2002 Germany reduced its greenhouse gas emissions by 19.4%, equivalent to 240 million tonnes of CO<sub>2</sub> annually.</p> <p>As a result the country is responsible for three quarters of Europe's emissions reductions over the last decade.</p> <p>May 2003 - in a UNFCCC review, the <b>UK</b> was praised for its "notable achievement" in reducing GHG emissions by 12.8% between 1990 and 2000. <b>Japan ratified in 2002:</b> = 8.5% of the CO<sub>2</sub> emissions 1990.</p> <p>The Kyoto Protocol determined that Japan were to cut their 1990 emissions by 6% by 2012.</p>	<p>California's climate change strategy includes a zero emissions vehicle incentive and its own renewable energy programme. The State's Climate Registry will form the basis of a joint initiative with Oregon and Washington to reduce CO<sub>2</sub> emissions</p>	<p>Toronto was one of the first cities to commit to reducing greenhouse gas emissions, adopting a 20% reduction target in 1990. To implement its commitment, the city council established the Toronto Atmospheric Fund with a \$23m endowment</p>	<p>In 1998, BP set itself the target of reducing its greenhouse gas emissions by 10% within 12 years. It achieved this goal inside just three years. The company spent \$20million and saved approximately \$650 million as a result</p>



**International scale: The Economic Union** This accounted for 4.2% of all global CO<sub>2</sub> emissions in 1990. In 2002 all original 15 EU states ratified the Kyoto Protocol Within the EU: Greece & Ireland are able to increase emissions, whilst Germany & UK have more stringent cuts. However in May 2003 a report by the European Environment Agency showed that greenhouse gas emissions increased for the second year running and that 10 of the original 15 member states are likely to overshoot their agreed share of EU GHG emissions. Ireland, Spain and Portugal are furthest away from meeting their targets. From 2004 the expanded EU will have greater problems cutting CO<sub>2</sub> given the many less energy efficient economies involved such as Poland

**Case study of a NIC: China, an Annexe II country:** China is not required to reduce emissions under the Rio Convention or the Kyoto Protocol, yet this Annexe II country emits more CO<sub>2</sub> than any nation in the region and 50% of CO<sub>2</sub> emissions from all LEDCs

As most LEDCs are China is more vulnerable to the effects of climate change than MEDCs. It has increasing hazards of coastal and river flooding, drought, landslides, storms, and tropical cyclones. Rising sea levels could flood low-lying areas along the Yellow and Yangtze Rivers and the Pearl River Delta, which would affect 70 % population and 80 % industrial output.

Greenhouse gas emissions will increase by an estimated 9 times by 2100 because of its large and growing population, desire for energy, rapid projected economic growth, and heavy dependence on indigenous coal reserves. Controlling emissions while maintaining economic growth and improving living conditions, however, will be difficult; China faces some of the most complex and costly choices in developing a **mitigating strategy**. Despite being an **Annex II** country, it is estimated to have cut its CO<sub>2</sub> emissions by 17% since mid-1990s. In the same period its economy has grown by 1/3. Accounting for a fifth of the world's population, with hopes of a better life, **China could dominate any reductions agreed by the Annex I countries**. China recognises that climate change could devastate society & encourages the protocol's supporters to believe **'that Kyoto is already helping to make a difference'** The GEF is a joint venture of the United Nations Development Programme (UNDP), the Environment Programme (UNEP), and the World Bank. It is a financial mechanism that provides grants and concessional funds to developing countries for projects and activities designed to protect the global environment and in 1992-4 GEF of US\$2m was used for: gathering data, training Chinese personnel, giving advice on efficient industrial boilers, & how to reduce coal use. A type of **Technological Transfer**, GEF worked with China's National Environmental Protection Agency

GEF = Global Energy Fund

**Case study of the UK & Climate Change - How are we doing?****Key facts**

- **Largest source of CO<sub>2</sub>** is from burning fossil fuels in **power stations** especially older coal fired ones
- In the 1990s, **emissions fell** as electricity companies **switched from coal to gas**. Recently this trend has reversed as gas prices have risen making coal more economic.
- Some still argue that **nuclear power** is a solution to climate change :by 2002 nuclear power accounted for 23% of electricity generated in the UK but by 2025 there will only be one nuclear power plant in operation and since the government currently has no plans to build new plants, UK needs to develop alternative energy sources.
- Over time improvements in **energy efficiency** will get increasingly more difficult and expensive to achieve - it can never be the only solution to climate change.
- Using as **little energy as possible** (and thereby burning less fossil fuels such as oil, gas and coal) is one of the most cost effective solutions that will help stop climate change.
- **Green energy** is energy which comes from renewable resources such as **wind**- and this is proving controversial as well!
- The UK will be a **net importer of energy**, by 2006 for gas and 2010 for oil as it uses up its **indigenous energy supplies**.

**So what are the present UK policies?**

- **UK climate change programme 2000**, set out a wide ranging package of policies and measures aiming to reduce the UK greenhouse gas emissions to 23 % below 1990 levels by 2010 and a cut of 19 % in carbon dioxide by 2010. This is significantly beyond the UK's Kyoto target and a long way towards the Government's domestic 20 per cent goal. However on present projects the UK may only achieve a 14% cut
- The **UK Energy White Paper 2003**, was a new energy policy to ensure that "energy, the environment and economic growth are properly and sustainably integrated". Blair pledged the UK government would cut emissions by 60% by 2050. But by 2004, according to Friends of the Earth, the "sad reality" was the UK had not progressed since 1997, being only one fifth of 1% lower in carbon dioxide emissions than when Labour came to power.
- **Sustainable energy usage**, energy conserving houses, grants for efficient gas boilers etc
- **Waste strategies** including recycling to avoid methane from landfill. In Hampshire, Project Integra has led to the highest recycling rate nationally of 25%. Currently, in 2004 around 17% of waste is recycled.
- Move to **renewable sources of power, combined heat & power systems**( eg Woking Council), and cleaner coal. **The Renewables Obligation** is the key to securing 10% of electricity sales from renewable energy by 2010. These encourage new, cleaner technologies to extract energy from waste, rather than incineration; and capital grants to support offshore wind and energy crop installations. The UK has, in the form of wind power, the largest renewable energy resource in Europe (British Wind Energy Association) The more renewable energy we use the cheaper it will become .The debate is whether renewables can meet our future energy needs. 2004 still only 3% of generated power.
- **Green transport strategies (clean lean burn)**- car engines, fuel efficiency, new fuels, car parking (e.g Winchester's extended Park & Ride and MIRACLES project) working patterns, public transport. Indirectly, London's Congestion Charging will help
- **Air quality regulation**- strict Environment Agency & EU requirements
- **Agricultural practices programme**- feeding strategies for animals to reduce methane
- **Planning regulations:** encouragement of compact cities and avoidance of urban sprawl eg through the Greenbelt policy. Other policies include the Urban village concept (ie live, work, play in same area to cut commuting) curb on out of town developments, sponsorship of flagship regeneration inner city redevelopments in eg Southampton( W Quay III shopping & leisure expansion at the edge of the CBD on a brownfield site) or London Docklands
- **Carbon emissions trading scheme** - setting caps on emissions in industry to "provide clear incentives for investment in energy efficiency and cleaner technologies".
- **Technological innovation** - supporting research and development into new long term options (such as hydrogen economy) and allowing current renewable energy supplies to "demonstrate their potential". In March 2001, the **Carbon Trust** was launched as a new, independent, not for profit company, funded by the Government and the Devolved Administrations to promote low-carbon technology and innovation in the UK.
- **The Climate Change Levy (CCL)** is a tax on the use of energy in industry, commerce and the public sector, with offsetting cuts in employers' National Insurance Contributions and additional support for energy efficiency schemes and renewable sources of energy
- In May 2004 Tony Blair challenged George Bush's refusal to confront global warming by announcing the creation of a powerful coalition of big businesses, including oil giants, to tackle climate change, called the **Climate Group**. In the Prime Minister's most outspoken statement yet on the threat posed by global warming, Blair claimed that big business had a responsibility to tackle climate change, a direct contrast to Bush's stance, which has seen him accused of having helped industry by watering down anti-pollution measures in the United States.

**Conclusion**

**So, Is It Too Late for us to cope with climate change by using mechanisms like Kyoto?**

**YES**

Most scientists use the 2 degree rule: ie any warming of the atmosphere over two degrees Centigrade above pre-industrial levels is considered dangerous. To date, temperatures have risen by 0.6 degrees Centigrade.

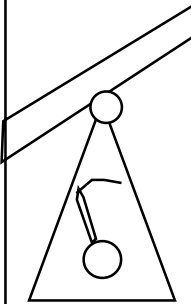
So, to stay under the two degree ceiling, global atmospheric concentrations of carbon dioxide will have to be kept below 450 parts per million. However, as carbon dioxide (and other greenhouse gases) are present in the atmosphere for at least 100 years, keeping below the 'rule' is going to involve major cuts in emissions for the next half Century.

In the UK, to stabilise climate change altogether, emissions of CO<sub>2</sub> would have to be reduced by around 70% globally - the Kyoto Protocol doesn't propose reductions of anything near this level. Certainly negative change should not be as rapid as 'The Day After Tomorrow', film of 2004! However in October 2004 Dr David King at the annual Greenpeace business lecture highlighted '**Runaway Global Warming**' as evidence accumulates for a more rapid than first thought rise in CO<sub>2</sub> levels from 1.5 to 2.5ppm from 2002

**NO**

Kyoto protocol's scientific advisers, the Intergovernmental Panel on Climate Change, say it will buy us 10 years at most. To halt global warming will need much more radical measures. The panel says that the world has to agree a maximum concentration of greenhouse gases in the atmosphere. A reasonable target might be twice pre-industrial levels, which works out at 50 per cent above today's levels. Because the most important greenhouse gas, CO<sub>2</sub>, stays in the atmosphere for more than 100years, this means substantially lowering emissions over the next few decades. Cutting emissions by 60 per cent is a suggested figure.

By reducing the concentration of greenhouse gases even marginally, the rate of change should be less and therefore there will be less impact on our planet and our lives. A gradual change to our climate is easier to adapt as well - we should have more time to prepare our houses and other buildings for changes to the weather, wildlife should have more time to migrate, and the changes to our agricultural practices should be less sudden.



**Further research - It is vital that you keep up todate on this fast moving topic. Always look at the bias issue**

**Key Weblinks**

International Panel on Climate Scientific background. Good power point slides too	<a href="http://www.ipcc.ch">http://www.ipcc.ch</a>
United Nations Economic Commission for Europe has information on the 1979 Geneva Convention on trans boundary pollution	<a href="http://www.unece.org/env/lrtap/lrtap_h1.htm">http://www.unece.org/env/lrtap/lrtap_h1.htm</a>
United Nations Environment Programme has a wealth of interesting data on climate change	<a href="http://www.unep.org/">http://www.unep.org/</a>
The UK Climate Impacts Programme (UKCIP) helps organisations assess how they might be affected by climate change, so they can prepare for its impact. Set up by the Government 1997 & funded by Defra Its based at the University of Oxford	<a href="http://www.ukcip.org.uk">http://www.ukcip.org.uk</a>
UK Government: DEFRA (Dept of Environment, Food and Rural Affairs)	<a href="http://www.defra.gov.uk/environment/climatechange">http://www.defra.gov.uk/environment/climatechange</a>
Television & media eg. BBC Super quiz on climate change Guardian newspaper, thought provoking articles	<a href="http://www.bbc.co.uk/climate">http://www.bbc.co.uk/climate</a> <a href="http://newsvote.bbc.co.uk/hi/english/static/in_depth/sci_tech/2000/climate_change/default.stm">http://newsvote.bbc.co.uk/hi/english/static/in_depth/sci_tech/2000/climate_change/default.stm</a> <a href="http://www.guardian.co.uk/">http://www.guardian.co.uk/</a>
The Carbon Trust is an independent company funded by UK Government Role is to help the UK move to a low carbon economy by helping business and the public sector reduce carbon emissions now and capture the commercial opportunities of low carbon technologies.	<a href="http://www.thecarbontrust.co.uk/carbontrust/about/index.html">http://www.thecarbontrust.co.uk/carbontrust/about/index.html</a>
FoE , UK pressure group, climate is one of their campaigns !to inform the public & change government policy to reduce global warming Greenpeace also has many links & case studies Linked with the Body Shop, it is campaigning for more renewable energy use globally	<a href="http://www.foe.co.uk/campaigns/climate/">http://www.foe.co.uk/campaigns/climate/</a> <a href="http://www.greenpeace.org/international/en/">http://www.greenpeace.org/international/en/</a> <a href="http://www.choose-positive-energy.org/">http://www.choose-positive-energy.org/</a>
The Global Climate Coalition is an organization of trade associations 1989, to coordinate business participation in the international policy debate on the issue of global climate change and global warming in USA- helped present anti-Kyoto policy!	<a href="http://www.globalclimate.org/aboutus.htm">http://www.globalclimate.org/aboutus.htm</a>
The Climate Group- latest efforts to go beyond Kyoto, a charitable organisation	<a href="http://www.theclimategroup.org/about.html">http://www.theclimategroup.org/about.html</a>

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