EU action against climate change

Leading global action to 2020 and beyond

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Introduction: Global warming must be kept below 2°C

Climate change is happening now

The world has warmed by an average of 0.76° Celsius since pre-industrial times and the temperature rise is accelerating, according to the 2007 Fourth Assessment Report (AR4) from the Intergovernmental Panel on Climate Change (IPCC). Sea levels rose almost twice as fast between 1993 and 2003 as during the previous three decades. Man-made emissions of greenhouse gases are causing these changes.

Without action to limit future emissions, the global average temperature is likely to increase further by 1.8° to 4°C this century, and in the worst case scenario by as much as 6.4°C., the AR4 projects.

We cannot allow this to happen. United Nations negotiations on an international climate agreement for the period after 2012, when the Kyoto Protocol's emission targets will expire, are due to be concluded in Copenhagen at the end of 2009. This agreement must be ambitious, global and comprehensive. Climate change can be addressed effectively only through a global effort.

The European Union is showing the way forward. It has committed to a set of far-reaching climate and energy targets and is putting in place concrete measures to achieve them.

The EU's agreed objective is to limit global warming to less than 2°C above the pre-industrial level – equivalent to around 1.2°C above today's temperature. This is widely seen as the threshold beyond which climate change will become dangerous, bringing a much greater risk of irreversible and potentially catastrophic changes in the global environment.

For the world to have a fair chance of keeping the average temperature rise below 2°C, global emissions of greenhouse gases will have to peak before 2020 and then be reduced by at least 50% of 1990 levels by 2050. This goal is both technically feasible and economically affordable if major emitters act urgently. The benefits of doing so will far outweigh the limited economic costs.

This brochure explains the EU's proposals for global action as well as the measures the Union itself is taking.

The high cost of failing to act

The growing evidence of the cost of climate change points to one simple conclusion: we cannot afford to do nothing.

The 2006 Stern Review on the economics of climate change and other studies reaffirm the enormous costs of failing to act. These costs – not only economic but social and environmental, too – will fall especially heavily on the poor, in developed and developing countries alike.

Allowing climate change to continue unabated would also have serious regional and global security implications.

The IPCC's[1] Fourth Assessment Report (AR4) shows that climate change is already having strong effects on ecosystems, water resources and coastal zones across the world. It is affecting people in various ways, including higher mortality during heatwaves, water scarcity, and changes in the distribution of diseases carried by vectors such as ticks and mosquitoes.

The Stern Review projects that, in the long term, climate change could cut global gross domestic product (GDP) each year by between 5% and as much as 20% or more if it is not brought under control by cutting greenhouse gas emissions (GHGs). Taking global action to combat climate change is thus the pro-growth strategy for the longer term. The earlier we act, the less costly action will be.

The European Commission's analysis shows that the investment needed to achieve a low-carbon economy would cost only around 0.5% of world GDP between 2013 and 2030. The emission cuts required to keep global warming below 2°C would reduce average GDP growth by less than 0.12% points per year up to 2050, the IPCC estimates.

This is a small insurance premium to pay to prevent dangerous levels of climate change. And these cost figures take no account of the benefits of cutting emissions, such as reduced damage from avoided climate change, greater energy security, and healthcare savings from less air pollution.

[1] The IPCC brings together the leading experts from around the world to assess the scientific, technical and socio-economic information relevant for understanding the risk of climate change. Its reports represent the most authoritative global scientific consensus on climate change.

A global challenge that requires global action

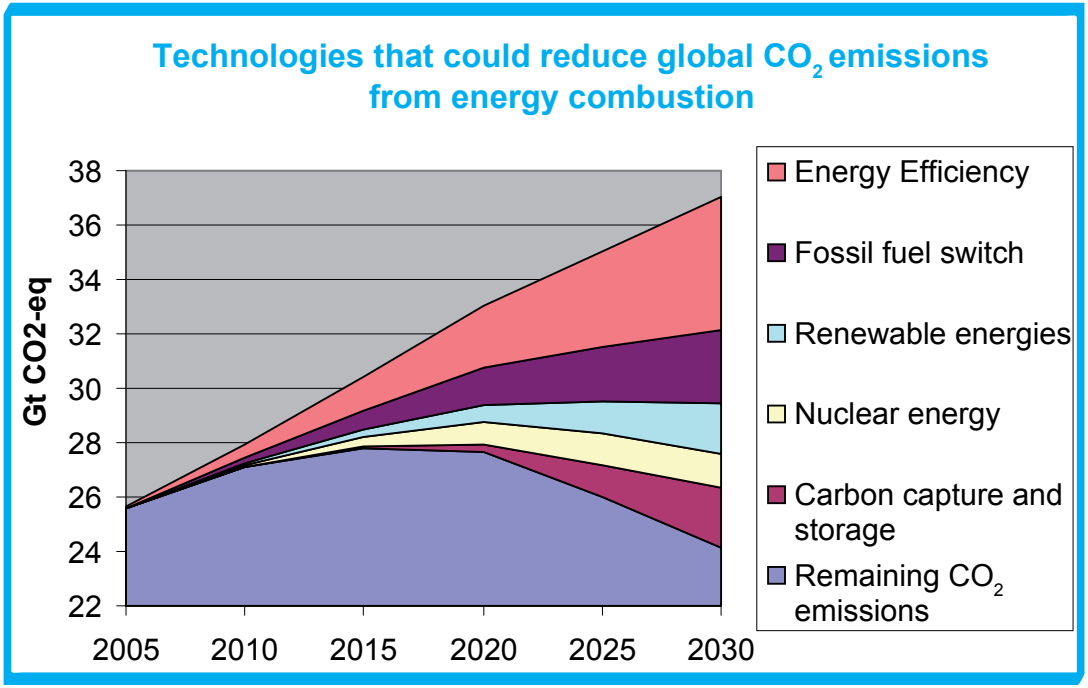
The Kyoto Protocol is a vital first step. It requires developed countries to start reducing their emissions and has put in place a set of international rules, market-based mechanisms and funds for addressing climate change.

But climate change is a global problem, and only global action can bring it under control. A global agreement covering all major emitters is now needed for the period after 2012, when the emission targets for developed countries set by the Kyoto Protocol expire.

The new agreement will have to be far more ambitious in order to keep global warming below 2°C compared with the pre-industrial temperature. Most of the technologies required to achieve deep reductions in emissions exist already or are well on the way to becoming operational.

A global agreement is also important for the business community, which is increasingly calling for a coherent, stable and efficient policy framework to guide its long-term investment decisions. The shift towards a low-carbon global economy is a huge opportunity for business, especially in terms of technological innovation, which can drive economic growth and the creation of new jobs.

Europe is determined to take full advantage of this opportunity.



EU initiatives show the way ahead

The European Union is leading global action on climate change, both by setting out what needs to be done internationally to keep global warming to less than 2°C above the pre-industrial temperature and by committing to significant cuts in its own greenhouse gas emissions.

To put the world on track to reduce global emissions by at least half of 1990 levels by 2050, the IPCC's AR4 shows that developed countries collectively need to cut their emissions to 25-40% below 1990 levels by 2020 and by 80-95% by 2050. If current emission trends continue, the 2°C threshold may be crossed as early as 2050.

EU heads of state and government made a commitment in March 2007 that the EU will cut its emissions to 30% below 1990 levels by 2020 in the context of a global and comprehensive international agreement, provided other developed countries commit to making comparable reductions. The economically more advanced developing countries should also pledge to make an adequate contribution according to their abilities.

At the same time, EU leaders committed to transforming Europe into a highly energy-efficient, low-carbon economy. They underlined their determination to see the Union gain a 'first mover advantage' by committing the EU to cut emissions by at least 20% of 1990 levels by 2020, regardless of what action other countries take.

These emissions targets are underpinned by three energy-related objectives, which are also to be met by 2020:

- a 20% reduction in energy consumption through improved energy efficiency;
- an increase in renewable energy's share of the market to 20% (from around 9% today); and
- as part of the renewable energy effort, a 10% share for sustainably produced biofuels and other renewable fuels in transport in each Member State.

The December 2008 climate and energy package

After extensive economic analysis and consultation with member states, in January 2008 the European Commission put forward a major package of legislative measures to implement these climate and renewable energy targets. Following intensive negotiations, the binding measures were agreed by EU leaders and the European Parliament in December 2008 and were signed into law in April 2009. They complement ongoing work to improve energy efficiency.

The adoption of the climate and energy package makes the European Union the first region of the world to have both committed to such ambitious targets and put in place the measures needed to achieve them. The package demonstrates the EU's leadership and shows that making the deep emissions cuts necessary to avert dangerous climate change is fully compatible with continued economic growth and prosperity.

The investment that the package requires will stimulate Europe's economy, jobs and innovation in the short to medium term while lays the basis for a more sustainable, lower-carbon economy in the longer term.

The package will help reduce emissions by 20% of 1990 levels by 2020. However, it also puts in place the necessary arrangements for scaling this up to 30% under a satisfactory global climate agreement. In this case, EU governments and companies will be allowed to use higher amounts of credits from emission-saving projects in third countries to offset their emissions.

A stronger emissions trading system

Central to the package is a strengthening and expansion from 2013 of the Emissions Trading Scheme (EU ETS), the EU's key tool for cutting greenhouse gas emissions cost-effectively. The revamped EU ETS will contribute some two-thirds of the overall emission reductions the EU intends to achieve by 2020.

The cap on emission allowances for the sectors covered by the system – power generation, energy-intensive manufacturing industry and, from 2012, aviation – will be cut in a linear fashion every year from 2013, with the result that the number of emission allowances available in 2020 will be 21% below 2005 levels.

By fixing the limits on emission allowances for the medium term well in advance, the EU is providing the investment certainty that will drive the large-scale development and deployment of emission-reduction technologies and low-carbon solutions. Once a global agreement has been reached, the EU cap will be adjusted to a stricter reduction target as necessary.

The scope of the system will also be extended to include further big industrial emitters, such as the chemicals and aluminium sectors. As well as emissions of CO_2 and nitrous oxide, perfluorocarbons from aluminium production will also be covered.

The current system of fixing 27 national caps on emissions from the ETS sectors will be replaced from 2013 by a single EU-wide cap. Instead of receiving emission allowances for free, businesses covered by the system will have to buy a progressively higher share at auction. From 2013 around 50% of total allowances will be auctioned and the goal is to reach full auctioning by 2027. However, in the absence of a satisfactory global climate agreement, certain energy-intensive sectors whose competitiveness is judged to be at risk would continue to receive up to 100% of their allowances for free provided they used state-of-the-art technology.

Auctioning will raise considerable new income for governments, and member states have agreed that at least half of this revenue should be used to combat climate change at home and abroad.

Strengthening the EU ETS through these changes will make it a more attractive partner for linking with similar cap-and-trade systems being developed in other parts of the world. The development of a network of linked schemes will strengthen the international carbon market, enabling it to play a key role in achieving global emission reductions at least cost.

(For more details see the brochure in this series ***EU action against climate change: The EU Emissions Trading Scheme***).

Tackling emissions from other sectors

Sectors not covered by the revised EU ETS – such as transport (except aviation), buildings and households, agriculture, and waste – will still account for almost 60% of the EU's overall emissions. Emissions from these non-ETS sectors will be cut by 10% of 2005 levels by 2020.

This will be done through agreed national emission targets for 2020 which, to ensure a fair distribution of effort, have been differentiated according to member states' relative wealth (measured by GDP per capita). The targets range from a 20% emissions reduction by the richest Member States (Denmark, Ireland and Luxembourg) to a 20% emissions increase by the poorest one (Bulgaria).

This approach means the less wealthy EU Member States will have room to continue growing their economies but will still need to keep their emissions below 'business-as-usual' levels. It gives practical effect within the European Union to the international principle that countries at different levels of development have "common but differentiated responsibilities" in tackling climate change.

Increasing renewable energy

To ensure that the EU target of obtaining 20% of the energy consumption from clean, renewable energy by 2020 is met, differentiated national targets have been agreed based on national wealth and renewables potential. The targets range from a renewables market share of 10% for Malta up to 49% for Sweden. Achieving these targets will both reduce greenhouse gas emissions and increase the EU's energy security.

The renewables legislation also lays down a 10% target for renewable transport fuels in each country and sets out sustainability criteria that biofuels must meet to be counted towards this target.

Promoting carbon capture and storage

The climate and energy package also puts in place a legal framework for carbon capture and storage (CCS) aimed at facilitating the development and safe use of this promising family of technologies. CCS enables the carbon dioxide emitted by industrial processes to be captured and stored underground where it cannot contribute to global warming.

The European Commission wants to see CCS technology become commercially viable by around 2020. Up to 12 demonstration projects for CCS and innovative renewable energy technologies will be funded from the proceeds from auctioning 300 million EU ETS allowances.

Addressing emissions from transport

While the EU is successfully reducing greenhouse gas emissions from manufacturing, waste and energy production and use, emissions from transport continue to grow steadily. Efforts are under way to address this challenge.

- From 1 January 2012 emissions from aviation will be covered by the EU ETS, meaning that any airline operating flights to and from EU airports will require emission allowances to offset its emissions. The European Commission is also considering ways to address emissions from shipping.
- The climate and energy package is complemented by two further legislative acts agreed at the same time. These require:
  - A reduction in CO_2 emissions from new cars to an average of 120g per km, to be phased in between 2012 and 2015. This represents a cut of around 25% from current levels. The CO_2 limit will be further reduced to 95g per km in 2020. This measure alone will contribute more than one-third of the emission reduction required from non-ETS sectors by 2020;
  - A reduction in greenhouse gas emissions from transport fuels of 6%, with a possibility to increase this to 10%, by 2020.

Research

For 2007-2013, the EU has substantially increased its research and development budget for environment, energy and transport to €8.4 billion. This is helping to support the deployment of clean technologies as well as further strengthening knowledge of climate change and its impacts.

Reducing greenhouse gas emissions will benefit the EU

Besides helping to avert the most damaging impacts of global climate change, reducing greenhouse gas emissions will bring the EU a range of co-benefits. These include improving energy security, reducing air pollution and its associated health and control costs, and increasing employment.

Improving energy efficiency and security

Security of supply is a growing concern as the EU becomes increasingly dependent on imported energy. With 'business as usual', the Union's energy import dependence will jump from 50% of total Union energy consumption today to 65% in 2030. Reliance on imports of gas is expected to increase from 57% to 84% by 2030, and of oil from 82% to 93%.

There is thus a very strong economic case for making more efficient use of resources, as a contribution towards improving EU competitiveness, even before the associated benefits of cutting emissions are taken into consideration. With implementation of the January 2008 climate and energy package, the cost of oil and gas imports is expected to drop by around €50 billion per year in 2020. This estimate is based on an oil price of US$61 per barrel, so if prices go higher the saving will be larger.

Statement by EU leaders on post-2012 action

EU heads of state and government set out the EU's position on post-2012 global action to combat climate change at their European Council meeting in March 2007. The following are key extracts from their summit statement:

"The European Council underlines the vital importance of achieving the strategic objective of limiting the global average temperature increase to not more than 2°C above pre-industrial levels.

The European Council underlines the leading role of the EU in international climate protection. It stresses that international collective action will be critical in driving an effective, efficient and equitable response on the scale required to face climate change challenges. To this end, negotiations on a global and comprehensive post-2012 agreement, which should build upon and broaden the Kyoto Protocol architecture and provide a fair and flexible framework for the widest possible participation, need to be launched at the UN international climate conference… at the end of 2007 and completed by 2009.

The European Council reaffirms that absolute emission reductions are the backbone of a global carbon market. Developed countries should continue to take the lead by committing to collectively reducing their emissions of greenhouse gases in the order of 30% by 2020 compared to 1990.

In this context, the European Council endorses an EU objective of a 30% reduction in greenhouse gas emissions by 2020 compared to 1990 as its contribution to a global and comprehensive agreement for the period beyond 2012, provided that other developed countries commit themselves to comparable emission reductions and economically more advanced developing countries to contributing adequately according to their responsibilities and respective capabilities. It invites these countries to come forward with proposals for their contributions to the post-2012 agreement.

The European Council emphasises that the EU is committed to transforming Europe into a highly energy-efficient and low greenhouse-gas-emitting economy and decides that, until a global and comprehensive post-2012 agreement is concluded, and without prejudice to its position in international negotiations, the EU makes a firm commitment to achieve at least a 20% reduction of greenhouse gas emissions by 2020 compared to 1990.

The European Council notes the increasing share of greenhouse gas emissions from developing countries and the need for these countries to address the increase in these emissions by reducing the emission intensity of their economic development, in line with the general principle of common but differentiated responsibilities and respective capabilities. The European Council stands ready to continue and further strengthen its support for developing countries in lessening their vulnerability and adapting to climate change."

Reducing air pollution and health costs

Cutting greenhouse gas emissions will also reduce air pollution, which still causes 370,000 premature deaths in Europe every year. The associated air quality benefits of bringing down CO_2 emissions by just 10% by 2020 would yield healthcare savings of up to €27 billion per year. The reduced need for measures to control air pollution will bring additional savings of €11 billion per year in 2020.

Increasing employment

Eco-industries are one of the most dynamic sectors of the European economy, growing at around 5% a year in response to global demand for green technologies, products and services. They employ some 3.4 million people in Europe and offer particular growth potential. Renewable energy technologies have already created 300,000 jobs, and it is estimated that a 20% share for renewables will take this to almost 1 million by 2020 – and possibly more if Europe exploits its full potential to be a world leader in this field.

Looking towards a new global climate change agreement

In December 2009 in Copenhagen, the 192 Parties to the UN Framework Convention on Climate Change (UNFCCC) - 191 countries plus the European Community - aim to reach an agreement on global action to combat climate change covering the period after 2012.

Discussions to prepare the new agreement were launched at the end of 2007 in Bali, Indonesia. The Bali Action Plan forms the core of an agreed 'roadmap' that sets the agenda for the negotiations.

The European Union has been developing its position on post-2012 action since 2005. In January 2009, the European Commission proposed a comprehensive vision for the agreement in its 'Copenhagen Communication.'[2] This was endorsed by the EU's environment ministers in March 2009 as well as by EU leaders at their European Council summit later the same month.

[2] *Towards a comprehensive climate change agreement in Copenhagen*

Developed countries must continue to lead ...

Developed countries are responsible for 75% of the greenhouse gases in the atmosphere today, excluding those from tropical deforestation. These nations have the most financial resources and the greatest technological capacity to cut their emissions.

The European Union and the other developed countries[3] must therefore show the way forward and demonstrate that a low-carbon economy is both feasible and affordable. Under the post-2012 agreement they should take on binding, quantifiable commitments to reduce emissions from their entire economy by an amount consistent with the objective of keeping global warming to less than 2°C above the pre-industrial temperature.

The IPCC's AR4 shows that meeting this objective will require emission reductions by developed countries, as a group, in the range of 25-40% by 2020 and 80-95% by 2050, compared with 1990 levels.

The EU is committed to scaling up its own emissions reduction for 2020 from 20% to 30% if other developed and developing countries agree in Copenhagen to take on their fair share of the collective effort needed.

The EU is also calling on other countries which are at comparable levels of development or per-capita wealth to developed countries to consider making similar commitments. This goes particularly for OECD member countries or candidate countries which do not have emission targets under the Kyoto Protocol.

[3] All those listed in Annex 1 of the UNFCCC, plus all EU Member States, EU candidate countries and potential EU candidate countries.

Sharing the effort fairly

The collective emissions reduction by developed countries must be shared out fairly in a way that ensures each country makes a comparable effort. The distribution of the overall target should be based on each country's responsibility for emissions and its capability to reduce them. A balanced combination of criteria should be used to assess comparability, such as:

- **Capacity to pay for domestic emission reductions and purchase reduction credits from developing countries:** nations with high per capita income levels should contribute more to reducing emissions at home and in other countries.
- **Potential for cutting greenhouse gas emissions:** countries with less efficient economies usually have more scope for reducing GHG output at lower cost, and should therefore contribute more to overall cuts.
- **Domestic early action to reduce GHG emissions:** past reduction efforts should be rewarded when assessing the size of cuts on current levels.
- **Population trends and total GHG emissions:** countries with growing populations should be asked for smaller cuts than those with stable or declining populations.

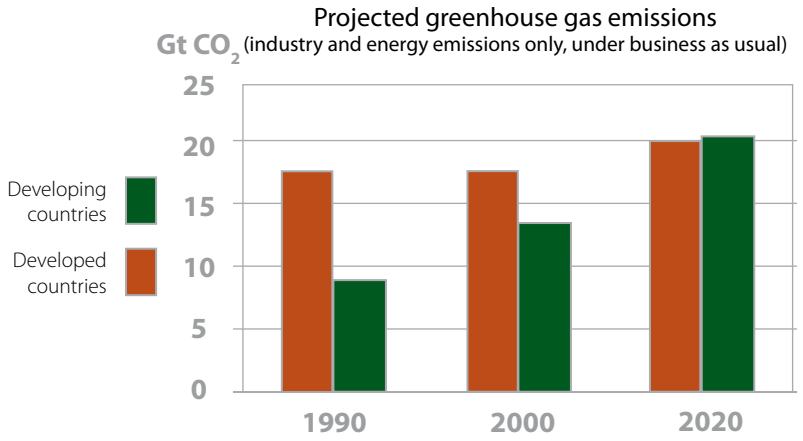
Aviation, shipping and fluorinated gases

The international aviation and maritime transport sectors are large and rapidly growing sources of GHG emissions yet they are not covered by the Kyoto Protocol. The post-2012 agreement must include emission reduction targets for these industries. In addition, countries should work together through the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) to agree global measures by 2010, which should be approved by 2011. Market-based instruments, including emissions trading, can ensure that emission reductions from these sectors are achieved cost-effectively.

Another potential problem is the increasing industrial use of hydrofluorocarbons (HFCs) to replace ozone-depleting hydrochlorofluorocarbons (HCFCs) which are being phased out under the Montreal Protocol on the protection of the ozone layer. The problem is that many HFCs are potent greenhouse gases, so the EU wants international emission reduction arrangements for HFCs to be included in the Copenhagen deal. This will encourage industry to step up research and development of HFCs with low global warming potential and of HFC-free alternatives.

... But action by developing countries is also essential

While much of the effort to fight climate change in the immediate future must come from the developed nations, their actions alone will not be enough to reduce global greenhouse gas emissions.



As developing countries expand their economies their emissions are increasing, and by 2020 these are projected to overtake total emissions from the developed world – indeed, they have already done so if emissions from deforestation and forest degradation are counted. It is therefore indispensable that developing countries, and in particular the more advanced emerging economies, start to limit their emissions growth.

Industrialised countries, for their part, will have to significantly boost their cooperation with developing countries to provide the necessary finance and technology and to support capacity building.

Recent scientific evidence indicates that, to keep the 2°C objective within reach, developing countries as a group will need to limit the rise in their emissions to 15-30% below 'business as usual' levels by 2020.

Reducing emissions from deforestation and forest degradation will need to be part of this action. Tropical deforestation in developing countries generates around 20% of global greenhouse gas emissions - more than all forms of transport combined. The EU proposes that the Copenhagen agreement should fix the objective of at least halving tropical deforestation from current levels by 2020 and halting global loss of forest cover by 2030 at the latest. This would also have major benefits for biodiversity conservation and sustainable development.

These actions by developing countries are feasible without jeopardising economic growth and poverty reduction. Just as measures to combat climate change will benefit Europe, they are also in the long-term interest of less wealthy countries. Since vulnerable populations are the first to suffer the impact of floods, storms, droughts and the other effects of climate change, developing countries have every interest in joining the global effort to meet the 2°C objective.

The cost would be modest. By 2020, GDP is expected to double in China and India, and to rise by 50% in Brazil. The European Commission estimates that taking action to cut emissions would shave just 1% point off this GDP growth. In reality, the cost is likely to be even smaller and probably even negative since these estimates do not take into account the benefits of avoiding the damage that climate change would cause.

There are many policy options available to developing countries where the benefits outweigh the costs. These include:

- Boosting energy efficiency and thus also energy security;
- Implementing policies to promote renewable sources of energy. These policies are often cost-effective, including for rural communities;
- Improving air quality and thereby also public health; and
- Capturing methane from industrial and agricultural sources for cheap energy.

Low-carbon development strategies

The EU is proposing that under the Copenhagen agreement all developing countries, except the least developed countries, should commit to adopting low-carbon development strategies. These should set out a credible pathway to limit emissions through nationally appropriate mitigation actions covering all key emitting sectors, especially power and transport, major energy-intensive industries and, where significant, forestry and agriculture.

Low carbon development strategies should differentiate between actions which can be funded from domestic sources and those which require international financial and technical support.

To ensure a sufficient level of ambition, the EU proposes to explore establishing a coordination instrument at international level which, based on a technical assessment, would match up the actions proposed by developing countries under their strategies with the appropriate international support. The aim would be to achieve the maximum reduction of emissions possible from the support provided. Developing country actions should be entered in an international registry which would show the benefits in terms of emissions mitigation.

New developments in science, technology, and the socio-economic conditions in each country mean that the strategies and their implementation will need to be reviewed regularly. The strategies should be updated by 2012 at the latest to ensure they are contributing to the 2°C objective.

In the medium to longer term, as they reach a level of development similar to that of industrialised countries, advanced developing nations should take on binding emission reduction commitments. These should be tailored to their emission levels and their own technical and financial capacities to limit and reduce emissions.

Adapting to inevitable climate change

Adaptation to climate change must be comprehensively addressed in the post-2012 agreement. Climate change is already under way, and keeping global warming below 2°C will not be enough to prevent negative impacts.

Adaptation is a global challenge but many developing countries are particularly vulnerable. The Kyoto Protocol's Adaptation Fund can help to pay for capacity building and priority actions, but further financing will be needed under the Copenhagen agreement to meet the cost of adaptation in developing countries. According to the UNFCCC secretariat, the cost for the developing world as a whole could reach between €23-54 billion per year by 2030.

The EU has proposed that the Copenhagen agreement provide a Framework for Action on Adaptation to reinforce international partnership and solidarity, improve tools such as monitoring and forecasting, and promote effective action. Multilateral insurance options to cover disaster losses should be explored to complement existing funding mechanisms in the event of climate-related natural disasters. The European Commission is already involved in piloting such a scheme for African, Caribbean and Pacific (ACP) developing countries.

Adaptation support is especially necessary for the least developed countries, small island developing states and African countries which are prone to drought, desertification and floods. The European Union is providing such support through channels such as the UNFCCC's Nairobi Work Programme on impacts, vulnerability and adaptation to climate change, the UN's climate funds, bilateral development cooperation,and the Global Climate Change Alliance.

The Global Climate Change Alliance

The European Commission has proposed creating a Global Climate Change Alliance between the EU and the developing countries most vulnerable to climate change, in particular the least developed countries (LDCs) and small island developing states (SIDS).

The intention is to provide substantial resources to address climate change in the countries targeted. These resources will be focused primarily on adaptation and disaster risk reduction, but the developing countries will also receive help to halt deforestation and participate in the global carbon market. The EU will work together with these countries to integrate climate change fully into poverty-reduction strategies.

Activities are already planned in Vanuatu, Maldives, Tanzania and Cambodia. The GCCA also intends to invest in about 10 more countries from the African and Asian region, islands in the Pacific and Indian Ocean and the Caribbean.

The GCCA also acts as a platform for dialogue on climate change between the EU and LDCs and SIDS. During the course of 2008 this dialogue resulted in three joint declarations on climate change between the EU and, respectively, Africa, the Caribbean and the Pacific.

The Commission has earmarked €90 million for 2008-2010 to launch the GCCA. Sweden and the Czech Republic have also contributed and it is expected that other EU Member States will also do so.

To support the post-2012 agreement a global carbon market needs to be built. This can be achieved by linking up comparable domestic emission trading systems like the EU Emissions Trading Scheme (EU ETS). Such 'cap-and-trade' systems are being developed in an increasing number of developed countries and will be a key tool in enabling them to meet future emission commitments cost-effectively.
Putting a value on carbon is the most efficient and cost-effective way of reducing emissions: estimates show that emissions trading systems can reduce the cost of mitigation by as much as 75%.

Auction revenues from cap-and-trade systems can also raise funds to finance mitigation and adaptation in developed and developing countries alike. The EU member states have agreed that half of the revenues from the auctioning of EU ETS allowances from 2013 onwards should be spent on mitigation and adaptation, in Europe and beyond.

The EU's vision is to link up comparable cap-and-trade schemes in developed countries as soon as possible, and by 2015 at the latest, to create an OECD-wide carbon market. This should then be extended to include the major emitting sectors in the economically more advanced developing countries by around 2020. The possibility that a US emissions trading system may be in place by around 2012 opens up the prospect of building a transatlantic carbon market that could become the engine room of the global market.

The development and linking up of domestic trading systems should remain under the control of governments and should not come within the scope of the UN negotiations.

Reform of UN offset mechanisms

In the transition towards a global carbon market, the Kyoto Protocol's emissions offset mechanisms continue to have a strong role to play, but they need to be reformed.

The **Joint Implementation** mechanism (JI) enables developed countries to invest in emission-saving projects in other industrialised countries and to use the emission credits generated by the projects to help meet their own emission targets. The effectiveness and efficiency of JI needs to be improved, however. Reforms should include guaranteeing its environmental integrity and opening it to new participants.

The **Clean Development Mechanism** (CDM) works in the same way as JI, except that the emission-saving projects are carried out in developing countries. The CDM has enabled developing countries to participate in the international carbon market and is generating considerable flows of capital and technology that are helping to promote low-carbon growth in these countries. However it, too, now requires reform.

The environmental integrity of the CDM needs to be strengthened, notably by making sure that only projects which go beyond the lowest-cost options and deliver emission reductions that are genuinely additional to 'business as usual' are able to generate credits. Furthermore, the participation in the CDM of developing countries, particularly the least developed countries, needs to be broadened and the mechanism's governance improved.

The EU ETS accepts credits from most types of JI and CDM projects as equivalent to European emission allowances, thus promoting investment in such projects, and this will continue after 2012.

Sectoral crediting and trading in developing countries

An increasing proportion of global emissions mitigation efforts will be needed in developing countries. The EU is therefore proposing the creation of new sector-specific mechanisms to enable developing countries to strengthen their contribution to global mitigation efforts and to expand their access to carbon markets by tapping into increased demand from developed countries for emission credits post-2012.

As a first step, for highly competitive sectors in the more advanced developing countries the CDM should be phased out and replaced by a **sectoral carbon crediting mechanism** under UN auspices that would cover entire national sectors rather than merely single projects as the CDM does. Emission credits would be generated when the sector bettered a pre-defined emission standard. This standard could vary according to the circumstances of different host countries.

Such a crediting mechanism can be efficient in driving the development and deployment of low-carbon technologies in developing countries and should be taken up as part of their low-carbon development strategies. Estimates suggest sectoral crediting could generate as much as one-third or more of the extra investment in mitigation developing countries will need.

While widening and deepening the major emerging economies' participation in the carbon market, sectoral crediting would also be a stepping stone towards the development of **sectoral emissions trading systems** in developing countries.

Such company-level cap-and-trade systems in advanced industrial sectors will be the most cost-effective approach for those developing countries that have the capacity to monitor emissions and ensure compliance. The idea would be to link such systems to those in developed countries, such as the EU ETS. Targets in each sector would be tightened gradually, bringing them progressively into line with those applied in the same sectors in developed countries.

The EU is offering capacity-building support to help developing countries set up emission trading systems.

Finance, technology and capacity building to support a global deal

The European Union and the rest of the industrialised world have a responsibility to support developing countries in combating and adapting to climate change. The EU is doing so in many ways, notably through overseas development assistance from Member States and the European Commission, the purchase of Clean Development Mechanism credits by EU companies and governments, EU contributions to multilateral climate funds, and the creation of innovative funding mechanisms such as the EU's Global Energy Efficiency and Renewable Energy Fund (GEEREF) (see box on p. 30).

A comprehensive post-2012 agreement must be underpinned by adequate financial resources to support its implementation, and it is clear that financial, technical and capacity-building assistance to developing countries from the developed world will need to be substantially scaled up.

Analysis undertaken for the European Commission indicates that the additional global investment needed to reduce world emissions to a level compatible with the 2°C objective will amount to around €175 billion a year by 2020, more than half of which will be needed in developing countries.

EU leaders have pledged that the European Union will provide its fair share of the additional support required. Potential private and public sources of funding include the use of grants and loans through international, bilateral and multilateral channels; the introduction of innovative international public funding sources; and the international carbon market.

The EU proposes that developing countries should identify their external financing and technology needs in their low-carbon development strategies. Following a technical assessment, these needs would be matched up with the appropriate international support through a coordination instrument established at international level.

Specific financial support will be needed for the forest sector to reduce emissions from deforestation and forest degradation. The European Commission has proposed the creation of an international finance mechanism through which developing countries would be rewarded on the basis of their performance in reducing these emissions.

The post-2012 global financial architecture will need to be efficient, transparent, accountable and fair. Countries' financial contributions should be comparable and be based on their emission levels and relative wealth. They should be negotiated as part of the Copenhagen agreement.

As the sources of funding for mitigation and adaptation will be multiple, international coordination and cooperation will need to be improved. International climate finance governance arrangements should be reviewed. The European Commission has suggested setting up a high-level forum on international climate finance that would bring together key decision makers from the public and private sectors and international financial institutions. The forum should regularly review the availability and expenditure of funding and recommend improvements when needed.

Boosting research and development of climate technologies

Global research, development and demonstration (RD&D) of low-carbon technologies to reduce emissions as well as of technologies to support adaptation to climate change needs a major boost.

Provisions on such funding should form an integral part of the Copenhagen deal, with the aim of doubling worldwide energy-related RD&D spending from current levels by 2012 and quadrupling it by 2020. Industrialised countries need to make a substantial investment, on top of traditional overseas development aid spending.

In developing countries a range of barriers - including lack of policies, information and capacities - hampers the development, transfer and deployment of technologies for adaptation and mitigation. Establishing national and regional centres of technological excellence is one way to create the necessary enabling environment and promote the development and transfer of technology, stimulate capacity-building and improve access to information.

Cooperation between developed and developing countries on RD&D is essential to achieving common technology technology goals, and the EU is committed to working with developing countries to explore how joint research efforts can be taken forward as part of the Copenhagen agreement.

GEEREF

GEEREF, the Global Energy Efficiency and Renewable Energy Fund, is an innovative global risk capital fund set up by the European Commission to mobilise private investment in energy efficiency and renewable energy projects in developing countries and economies in transition.

GEEREF will help to bring clean, secure and affordable energy supplies to some of the 1.6 billion people around the world who currently have no access to electricity. It will do so by accelerating the transfer, development and deployment of environmentally sound energy technologies. This will combat both climate change and air pollution, and could contribute to a more equitable distribution of Clean Development Mechanism projects in developing countries.

The Commission is putting €80 million into GEEREF over 2007-2010. Additional pledges from several European governments have taken the total to over €110 million. This funding is expected to mobilise additional risk capital of over €300 million.

European Commission

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