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Climate Change

- ‘Greenhouse’ gases emitted by human activities are warming the Earth and causing changes in the global climate. These changes are having increasingly severe human, economic and environmental impacts and will continue to do so over the coming decades.
- The Kyoto Protocol is a first step towards limiting greenhouse gas emissions, but to stop global warming from reaching dangerous levels Kyoto needs to be succeeded by a stronger United Nations agreement involving climate action by all countries. It has been agreed that this framework will be adopted by 2015 and take effect from 2020.
- Long in the forefront of international efforts to tackle climate change, the European Union is well on track to achieve its target to cut its emissions by 20% by 2020. As part of its 2030 policy framework for climate and energy, the EU has put forward a domestic 2030 greenhouse gas reduction target of at least 40% compared to 1990. It also aims to increase the share of renewable energy to at least 27% and increase energy efficiency by at least 27%.
- For the long term the EU has committed to reducing its emissions to 80-95% below 1990 levels by 2050. The European Commission has published a ‘roadmap’ setting out how this can be achieved most cost-effectively.
- In parallel with cutting emissions, Europe and the rest of the world need to adapt to the current and future changes in the climate. Adaptation measures can increase society’s resilience to climate change and so reduce the associated impacts and costs.

Climate change is happening now ...

There is unequivocal evidence that the Earth's climate is warming. By 2012, the average global surface temperature was 0.85°C higher than in 1880, according to the UN Intergovernmental Panel on Climate Change (IPCC), which brings together thousands of the world's leading climate scientists. Each of the past three decades has been warmer than any preceding decade since records began in 1850.

The consensus among climate experts is that it is extremely likely that the main cause of recent warming is the 'greenhouse' gases (GHGs) emitted by human activities, in particular the burning of fossil fuels — coal, oil and gas — and the destruction of forests. Greenhouse gases are so called because they trap the sun's heat in the atmosphere in the same way as the glass of a greenhouse. Today, the atmospheric concentration of carbon dioxide (CO₂), the most important greenhouse gas, is at its highest level for at least 800,000 years.

This man-made warming is causing discernible climatic and environmental changes, such as more frequent or more severe extreme weather, rising sea levels, and the melting of glaciers and polar ice. In the longer term these changes threaten to cause serious damage to our economies and the environment we depend on, putting the lives of millions of people in danger and causing the extinction of many animal and plant species.

The 28 EU member countries are responsible for around 10% of world GHG emissions. Nearly 80% of the EU's emissions come from the production and use of energy, including in transport.

... and will become dangerous without urgent action

Scientific evidence suggests that an average world temperature rise of more than 2°C above the pre-industrial level – equivalent to around 1.2°C above today's temperature – will greatly increase the risk of large-scale, irreversible changes in the global environment. The EU has therefore long argued in favour of keeping global warming below 2°C. The need to do so is now recognised by the international community.

Preventing global warming from exceeding this threshold is both technologically feasible and economically affordable if the world takes strong action in the near future. The earlier measures are put in place, the more effective and less expensive they will be.

Moreover, building the low-carbon global economy that is needed to prevent dangerous climate change stimulates innovation in clean technologies such as renewable energy and energy efficiency. This creates new sources of economic growth and jobs, strengthens Europe's energy security, and saves money by reducing our dependence on fossil fuel imports and by cutting air pollution and its associated costs.

The European Union is leading the fight against climate change

Long in the forefront of international efforts to tackle climate change, the European Union is committed to becoming a highly energy-efficient, low-carbon economy. It has set itself some of the world's most ambitious climate and energy targets for 2020 and is the first region to have passed binding legislation to ensure they are achieved.

These measures will reduce GHG emissions to 20% below 1990 levels by 2020 and also ensure that by then at least 20% of the EU's energy comes from renewable sources like wind and solar. The EU also aims to improve its energy efficiency by 20% by the same deadline.

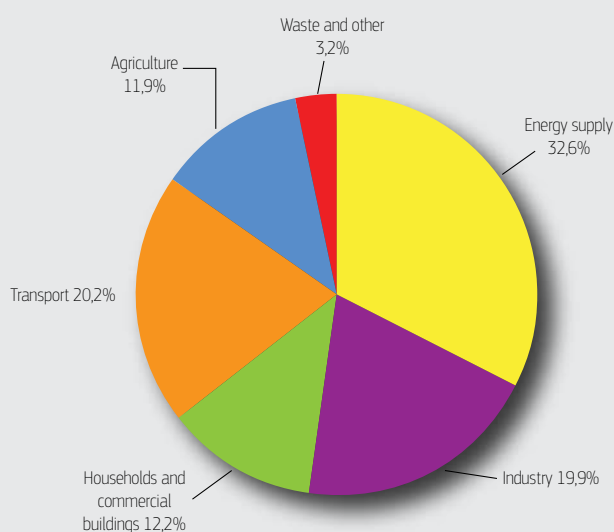
These actions strengthen the EU's energy security by reducing reliance on coal, oil and gas imports. They are also spurring innovation in clean technologies, creating sustainable sources of economic growth and jobs. It is estimated that the number of "green" jobs in the EU increased from 3 to 4.2 million between 2002 and 2011, including by 20% during the recession years.

In October 2014, EU leaders strengthened their commitment to make the European Union's economy and energy system more competitive, secure and sustainable by adopting the 2030 climate and energy framework. By 2030, the EU domestic greenhouse gas emissions should be reduced by at least 40% compared to the 1990 level. In addition, targets for 2030 were set to increase the share of renewable energy to at least 27% and increase energy efficiency by at least 27%.

And for the long term Europe has fixed the goal of reducing its emissions to 80-95% below 1990 levels by 2050. The European Commission has published a 'roadmap' setting out how this can be achieved most cost-effectively.

The cornerstone of the EU's climate strategy is the EU Emissions Trading System (EU ETS), launched in 2005. The world's first and biggest international GHG emissions trading system, the EU ETS has made climate change a boardroom issue for companies by putting

Sources of EU greenhouse gas emissions



Source: European Environment Agency

Note: The category 'households and commercial buildings' shows emissions from fuel used directly but not from the use of electricity and heat produced by the power sector

Some current and future impacts of climate change

- The polar ice caps are melting, sea levels rising and glaciers retreating. Sea level rise threatens the existence of low-lying island states and coastal communities. The melting of glaciers is putting millions of people at risk of floods and will eventually deprive them of fresh water resources.
- Extreme weather events such as floods, droughts and heatwaves are becoming more frequent or more severe and more costly in some parts of the world. Their impacts include reduced water availability and crop yields, jeopardising food production. Developing countries are particularly vulnerable.
- Climate change has direct impacts on human health. For instance, heatwaves contribute to thousands of premature deaths. Global warming may also encourage the spread of tropical diseases such as malaria and dengue.
- Climate change is exacerbating other human pressures on nature. Some plant and animal species will be at increased risk of extinction if global average temperatures continue to rise unchecked. Coral reefs, which are crucial nurseries for fish and other marine life, are already suffering extensive damage at current levels of warming.
- Through its impact on water resources and food production, climate change could threaten regional and international security by triggering or exacerbating conflicts, famines and refugee movements.

a price on their carbon emissions. A new architecture introduced in 2013 and reforms proposed as part of the 2030 policy framework are designed to ensure that the system will play a central role in achieving the Union's climate and energy targets for 2020 and beyond.

The Kyoto Protocol is a first step ...

Two major international agreements have been adopted to address climate change: the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and its 1997 Kyoto Protocol.

The UNFCCC, which has been ratified by 196 countries and the European Union, establishes a framework for international cooperation with the ultimate objective of preventing dangerous man-made interference with the global climate system.

The Kyoto Protocol, which entered into force in 2005, is a first step towards reversing the global trend of rising emissions. In its first phase, from 2008 to 2012, the Protocol set legally binding targets for industrialised countries to reduce their GHG emissions by an average of 5% compared to a chosen base year.

...but now a much more ambitious global framework is needed

The Kyoto Protocol is a far from comprehensive response to climate change, however. While its first phase addressed around 30% of global emissions, the second phase, which runs from 2013 to 2020, covers less than half that proportion. Russia, Japan and New Zealand have decided against taking part and Canada has withdrawn from Kyoto entirely, aligning itself with the United States which never ratified the Protocol.

Moreover, Kyoto does not require developing countries to do anything to limit or reduce their emissions, whereas they already account for more than half of total global emissions and it is projected they will account for nearly two-thirds by 2020.

The EU therefore wants Kyoto to be succeeded by a truly global agreement that requires action not only from all developed countries – which have a duty to continue leading – but by all countries. Negotiations on a new global climate agreement were launched in 2011. The agreement is to be adopted by the end of 2015 at the UN climate conference in Paris and implemented from 2020. The EU wants a new protocol that is ambitious, comprehensive and legally binding involving all.



In parallel, the international community is discussing ways to raise the ambition level of global climate action up to 2020. This reflects the recognition that current pledges to cut emissions by 2020 fall well short of what is needed to hold warming below 2°C. To keep the 2°C ceiling within reach, scientific studies show that global GHG emissions need to peak by 2020 at the latest, be at least halved from 1990 levels by 2050 and continue to decline thereafter.

Recent UN climate conferences have also agreed new rules, institutions and commitments which have opened the way for concrete action on the ground in the near term. In particular, these decisions:

- The EU and a number of some Member States announced voluntary climate finance contributions to developing countries adding up to €5.5 billion from their respective financial provision in 2013.
- The EU plans to commit up to €14 billion in grants from the EU budget and the European Development Fund (EDF) over the years 2014-2020 to support climate action in partner countries outside EU in line with the goal of investing at least 20% of the EU's budget in climate-relevant actions during 2014-2020.
- Establish a Green Climate Fund through which much of this finance may be channelled in the longer term.
- Provide support for developing countries' efforts to adapt to climate change and strengthen their resilience to it.
- Launch action to combat tropical deforestation and forest degradation (estimated to account for some 15% of world GHG emissions) and establish a framework for financing this.
- Promote greater international cooperation in the development and transfer of innovative technologies.
- Increase the transparency of countries' actions so that overall progress towards reducing global emissions can be tracked effectively.

Key EU measures

Measures the EU is taking to reduce greenhouse gas emissions, while also stimulating innovation and promoting growth and jobs, include:

- The EU Emissions Trading System
- Targets for member countries to limit or reduce their domestic greenhouse gas emissions from sectors not covered by the EU ETS, such as agriculture, transport (except aviation), buildings and waste
- National targets for renewable energy to ensure the EU gets at least 20% of its energy from renewable sources by 2020
- Standards to reduce CO₂ emissions from new cars and vans and measures to address emissions from heavy-duty vehicles
- Action to control emissions of fluorinated industrial gases, which are powerful greenhouse gases
- Standards, labelling and legislation to improve energy efficiency, including of buildings
- Emissions reduction, renewable energy and energy efficiency targets for 2030 set as part of the 2030 climate and energy policy framework

Greenhouse gases

In its second phase, running from 2013 to 2020, the Kyoto Protocol limits developed countries' emissions of seven GHGs released by human activities:

- **Carbon dioxide** (CO₂). The most important greenhouse gas from human activities in terms of quantity, it is emitted by combustion — of fossil fuels, wood or anything else containing carbon — but is also absorbed by plants and trees.
- **Methane** (CH₄). Releases come from a wide range of natural sources and human activities, including fossil fuel production, livestock husbandry, rice cultivation and waste management.
- **Nitrous oxide** (N₂O). Emission sources are fertilisers, fossil fuel combustion and industrial chemical production using nitrogen.
- Four types of **fluorinated gases** developed specifically for industrial applications: hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃).

Certain other industrial gases, such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), contribute to both global warming and the depletion of the ozone layer. They are not covered by the Kyoto Protocol as they are being phased out under the Montreal Protocol on protecting the ozone layer.

While cutting emissions, we must also adapt to climate change

Even if the world cuts GHG emissions sharply, climate change will become more severe for decades to come because of the delayed effect of past emissions. Adapting to climate change has therefore become an indispensable complement to reducing emissions.

Adaptation means anticipating the adverse impacts of climate change and acting to prevent or minimise the damage these impacts can cause. Early action will save costs later. Examples of adaptation measures include developing crops that can tolerate drought and strengthening coastal flood defences against sea level rise.

The poorest developing countries are especially vulnerable to climate change. As the world's largest aid donor, the EU continues to provide financial and other support to help them adapt.

In Europe itself adaptation is needed at all levels, from the European level down to the local level. The EU adaptation strategy, adopted in 2013, focuses on promoting action by member countries, 'climate-proofing' action at EU level and improving decision-making by filling gaps in knowledge.



The EU Emissions Trading System (EU ETS)

To help reduce emissions most cost-effectively, the EU has developed the world's largest company-level system for trading in allowances to emit GHGs. The EU ETS today covers around 45% of total EU GHG emissions.

This 'cap-and trade' system limits emissions from over 12 000 large emitters in the power generation industry and other energy-intensive industrial sectors across the 28 EU Member States plus Iceland, Liechtenstein and Norway, as well as emissions from flights that airlines operate between airports in the EU.

Companies covered by the EU ETS must surrender allowances equivalent to their verified GHG emissions after each year. Most companies still receive a proportion of the allowances they need for free, but many have to buy a progressively increasing share of their allowances through auctions. Those who have more allowances than they need can sell their surplus, while those that expect to emit more than their allowances cover can invest in measures or technologies to reduce their emissions or buy additional allowances on the market to cover some or all of their excess.

This ability to trade - within the limits of the overall 'cap' on emissions - creates flexibility, ensuring that emissions are cut where it is cheapest to do so and investments are directed to where they buy the greatest emission savings. The cap on emissions is reduced annually and by 2020 will be 21% lower than in 2005.



Useful resources:

European Commission Climate Action website and social media:

ec.europa.eu/clima

facebook.com/EUClimateAction

twitter.com/EUClimateAction

November 2014