



HOW TO CUT A THIRD OF EU GREENHOUSE GAS EMISSIONS BY 2020

Freezing Climate Change

Through a concerted strategy of policies and measures the EU can achieve:

- **huge and cost-effective improvements in energy efficiency in all sectors;**
- **reduction of energy consumption to below current levels;**
- **a contribution of renewable energy sources of about 25% of overall energy consumption by 2020...**

...leading to a 33% cut of greenhouse gas emissions in the European Union compared to 1990.

The European Union (EU) has committed itself to limiting global warming to a maximum 2°C average temperature increase above pre-industrial levels. This requires global greenhouse gases (GHG) emissions to be cut by approximately half by the middle of the century. In fact, global emissions will have to peak and decline in the next one to two decades for temperatures to stay below the 2°C threshold.

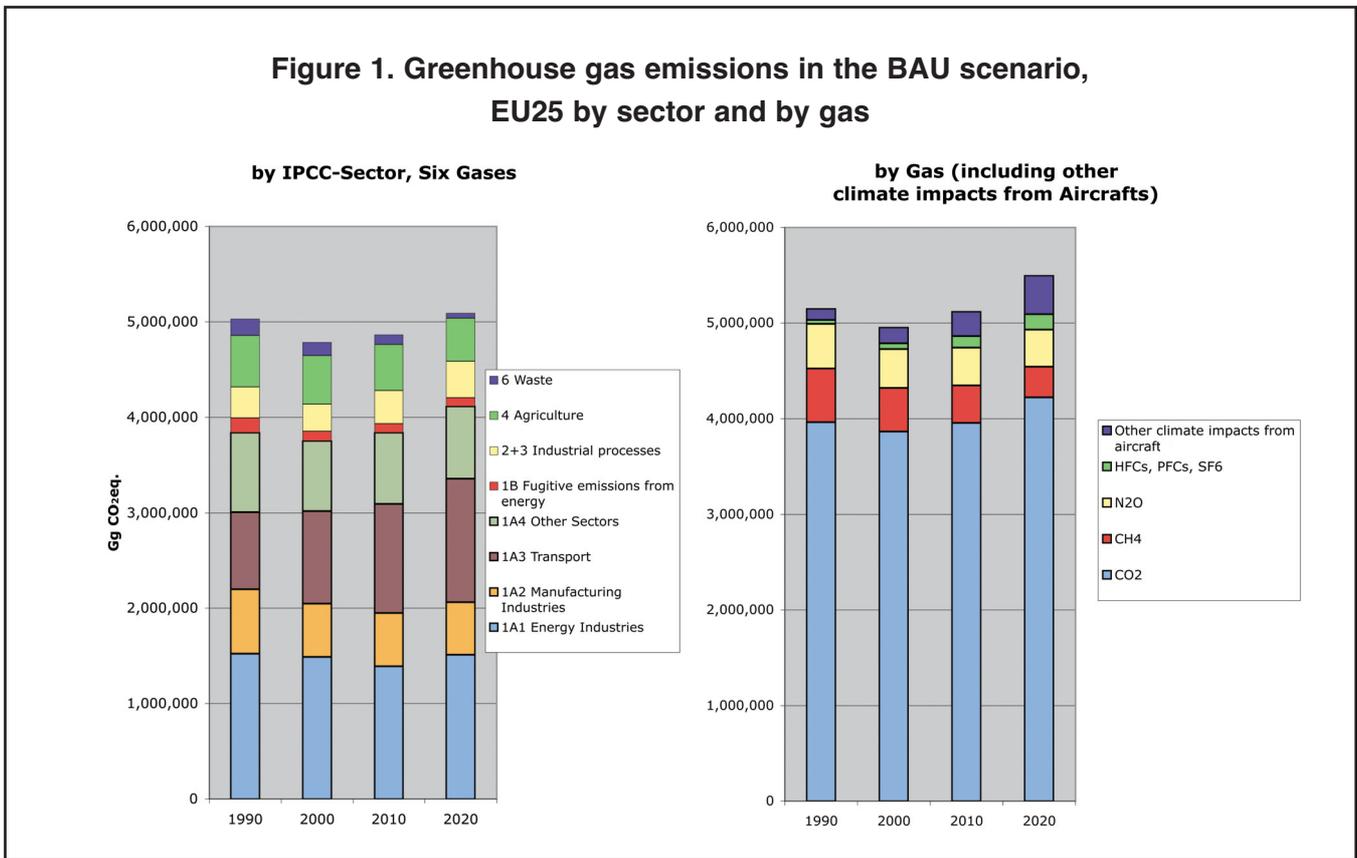
In March 2005, the Council of the European Union decided that “reduction pathways for the group of developed countries in the order of 15–30% by 2020 [...] should be considered”. Adoption of such targets by

This WWF briefing paper is the Executive Summary of the report *Target 2020: Policies and Measures to reduce Greenhouse Gas Emissions in the EU*, published in October 2005. The full report is available at:
www.panda.org/climate/EUtarget2020

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Figure 1. Greenhouse gas emissions in the BAU scenario, EU25 by sector and by gas



industrialized countries is critical if there is going to be any probability of keeping the global average temperature rise below 2°C.

It is therefore essential that the EU makes a strong and determined commitment to GHG emission reductions and provides leadership in the international process.

Business as usual... or rising to the challenge?

As a contribution to the climate debate within the European Union, a comprehensive analysis of the energy system within the entire EU has been developed for WWF by the Wuppertal Institute. The analysis stresses that a range of policies and measures will be required in order to reduce emissions; these include a strong emissions trading system and mandatory and ambitious energy efficiency and renewables laws. The analysis demonstrates:

- the potential to mitigate greenhouse gas emissions now to achieve a 33% cut in emissions by 2020;

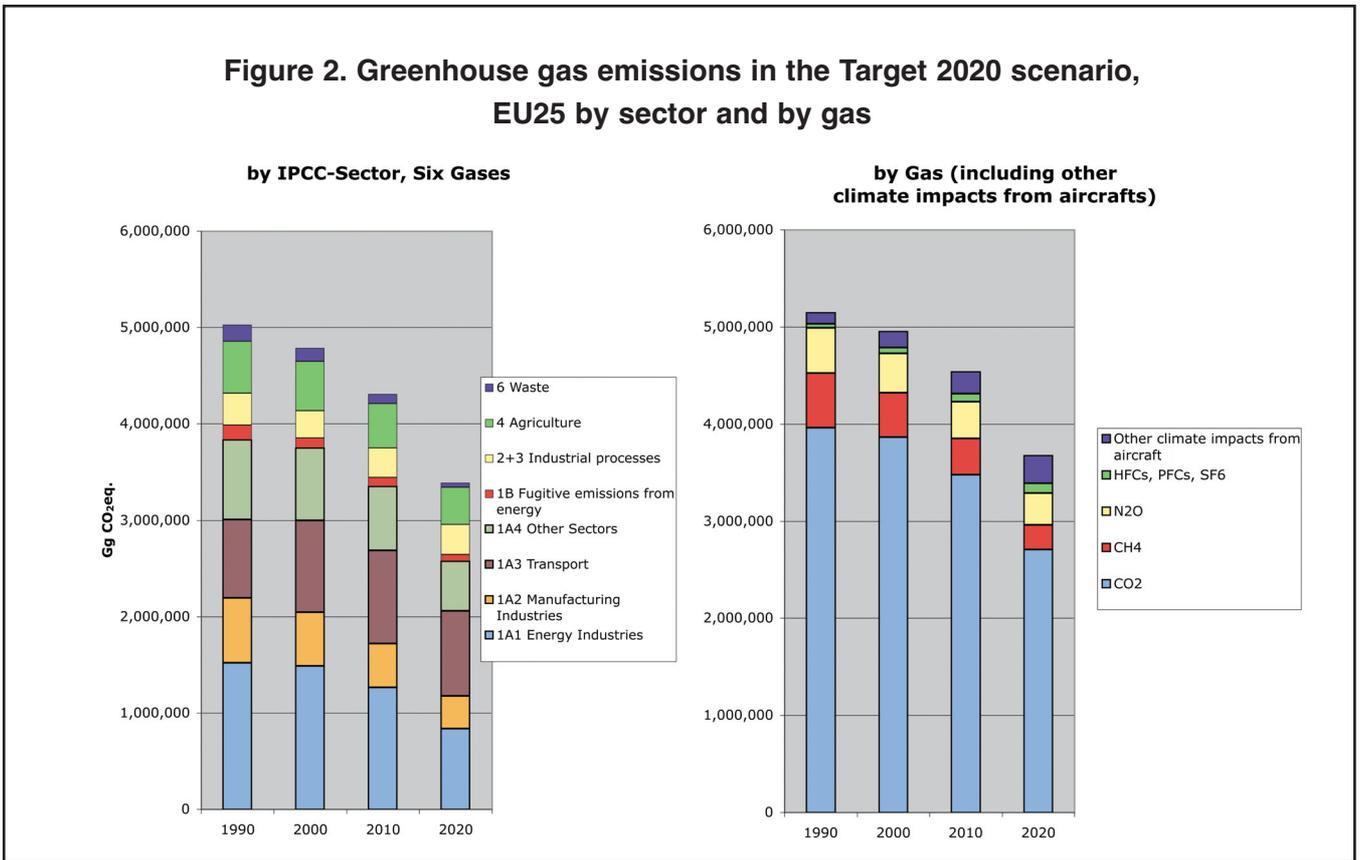
- the policies and measures needed to achieve such reductions; and

- the benefits that would accrue from such measures.

This roadmap for a climate-friendly Europe will bring a range of benefits, including less dependency on foreign sources of energy, cost savings across all sectors, reduction of local pollution due to a switch from coal to cleaner sources, increased job opportunities in the fields of energy efficiency and renewables and, of course, reduced CO₂ emissions. If this roadmap were to be adopted by the European Union, Europe would indeed be a more efficient, secure and environmentally safe place to live and do business.

The key strategies and policies should not be a surprise to anyone involved in climate change or energy work. The first priority must be to drive efficiency and fuel switching through an increasingly stronger Emissions Trading Scheme (ETS). Such an ETS will send the right price signals to the

Figure 2. Greenhouse gas emissions in the Target 2020 scenario, EU25 by sector and by gas



market to adopt energy-efficiency measures and switch from coal to clean power. Another top priority is energy efficiency where many co-benefits enter into the equation. Introducing strong efficiency policies across all levels and all sectors would not only reduce CO₂, but would significantly reduce the demand for foreign sources of energy. It would also create large cost savings. Finally, Europe must continue to invest in renewable energy sources such as biomass, wind and sustainable hydropower. Each of those technologies should be implemented in a sustainable manner, ensuring the avoidance of negative impacts.

The study clearly demonstrates that achieving deep reductions in Europe by 2020 is not a question of available technologies, but rather one of EU leaders taking clear decisions to move in this direction, instead of maintaining a strong dependence on fossil fuels. WWF urges policymakers and business to adopt this roadmap as the path forward for Europe.

The analysis compared two scenarios over the period 1990–2020:

- A business-as-usual (BAU) scenario that assumed continuance of existing policies and measures with no specific emphasis on climate and energy policies. This was based mainly on data and assumptions made in the most recent energy projections for Europe.
- A ‘Target 2020’ scenario which considered the potential to increase energy efficiency and market penetration of renewable energies, a fuel switch to less carbon-intensive fossil fuels such as natural gas, and ways to mitigate rapidly increasing demand, particularly in the transport sector. It assumed a moratorium on new nuclear power plants and compliance with ongoing nuclear phase-out.

With end-use energy efficiency and demand reduction as its two main strategies, the Target 2020 scenario identified the policies and measures necessary to reduce carbon dioxide (CO₂) emissions in the different sectors: electricity, steam and heat generation; renewable energy supply;

residential; the tertiary and services sector; industry; and transport. It also considered measures to reduce other greenhouse gases (e.g. methane) in the waste management and agriculture sectors.

Main findings

Figures 1 and 2 show the results of the respective strategies implemented under the BAU and Target 2020 scenarios.

Energy demand

A continuation of existing policies under BAU will see overall demand for final energy in the different sectors grow between 0.8% and 1.4% per year from 2000 to 2020. Over the same period, an immediate switch to a more ambitious set of measures (Target 2020 scenario) will result in a decrease in final energy demand of 0.4% per year.

Electricity, steam and heat generation

Continuation of current electricity generation from fossil fuels will wipe out the huge emission reductions that occurred in the EU as a consequence of the demise of industry in new members states in the 1990s. Measures such as increased power generation by renewable energy sources, greater use of combined heat and power production (CHP) and a switch to low-carbon fuels like natural gas can reduce CO₂ emissions by as much as 56% (compared with 1990 levels) by 2020.

Renewable energy supply

Under BAU, consumption of renewable energy will reach 9.3% (172 million tons of oil equivalent [Mtoe]) by 2020, with a growth rate of 1.8% between 2000 and 2020. Under Target 2020, it will account for 402 Mtoe, a market share of 24.5% of primary energy supply and an annual growth rate of 6.1% over the same period. With a total supply of 200 Mtoe per year, biomass will account for more than half of renewable energy sources by 2020, of which 61% will be converted into heat and electricity.

Residential

Energy savings of 20% are possible within households under Target 2020, equivalent to a total reduction in energy demand of over 2% of 1990 levels. This can be achieved through using more energy-efficient appliances, better insulation, and more efficient heating and cooling systems. Per capita energy intensity of households also decreases faster under the Target 2020 scenario (attaining a value of 0.566 tons of oil equivalent per head of population in 2020) than under BAU (0.710 toe per capita).

Tertiary sector and services

This sector includes public building, shops, office buildings, warehouses and agricultural premises. Considerably higher energy-saving potentials exist under Target 2020 conditions than under BAU (e.g. in space heating 32% can be saved, water heating 17%, lighting 13%, air conditioning 17%, cooking 23%). By 2020, CO₂ emissions under BAU will show little change from 1990 levels, while in the Target 2020 scenario they will be reduced by 45%. This reduction will be achieved by a range of measures including higher energy efficiency and increasing use of renewable energies.

Industry

Industry accounted for some 28% of energy consumption in the EU in 2000. While this share will remain more or less constant in the future under BAU conditions, overall energy demand by this sector will increase by 19% by 2020, with CO₂ emissions rising to almost 5% above current levels. Stringent implementation of the European Emissions Trading Scheme and other measures, allied to new technologies in motors, pumps, fans, lighting, electronics etc, offer huge savings potential and can stabilize energy consumption at around 5% below 2000 levels by 2020.

Transport

This is the fastest-growing sector in the EU in terms of energy demand and CO₂

emissions. If existing policies and measures are implemented successfully, by 2020 emissions will still be above 1990 levels by some 466 million tons of CO₂. Under the Target 2020 scenario, emissions will amount to some 854 megatons in 2020, 397 megatons (or 31.7%) of CO₂ less than under business as usual. This equates to a stabilization of emissions at roughly 1995 levels.

Waste

Full implementation of the EU Landfill Directive by member states, as assumed in the BAU scenario, will reduce GHG emissions from waste management by more than two-thirds. However, increased recycling quotas and improving technologies such as mechanical or biological waste water

treatment under the Target 2020 scenario make a further annual emission reduction of about 10 million tons of CO₂ equivalent possible by 2020.

Agriculture

The BAU scenario already shows a clear downward trend in GHG emissions, such that by 2020 a reduction of more than 15% is likely in comparison to 1990 levels. However, the Target 2020 scenario demonstrates that emissions can be reduced by a further 67 million tons of CO₂ equivalents, representing an overall reduction of 28% from 1990 levels. This can be achieved through, for example, better storage conditions for manure, improved fertilizer use efficiency, and a better match of nitrogen supply with crop demand leading to reductions in nitrous oxide.

Conclusions

An integrated and active climate protection strategy for the EU, while ambitious, is clearly feasible. To achieve this, the EU must speed up improvements in energy efficiency and adapt power generation systems to renewable energy supplies.

Through a concerted strategy of policies and measures the EU can achieve:

- huge and cost-effective improvements in energy efficiency in all sectors;
- reduction of energy consumption to below current levels;
- a contribution by renewable energy sources of about 25% of overall energy production by 2020.

Importantly, a 33% reduction of GHG emissions from fuel combustion is possible for all EU25 member states by 2020, even with a moratorium on nuclear energy. Non-energy GHG emissions can also be reduced by 33%, chiefly in the agricultural sector (e.g. by increased use of biogas) and the waste sector (e.g. by strict compliance with the Landfill Directive).

An active climate protection strategy can yield further benefits in the form of massively reduced risks of energy shortages and energy price peaks, as well as improved resilience of the European energy system. Such a strategy releases the European economy from high energy costs, creates a net increase in employment – the European Commission Green Paper on Energy Efficiency (March 2005) estimates that an energy saving of 20% by 2020 could generate up to one million jobs in the EU – and also reduces other environmental burdens.

Recommendations

WWF urges European Union policy-makers to:

1. Abandon the disastrous “business-as-usual” approach and develop a comprehensive and ambitious energy strategy that will increase energy security, make the European economy energy efficient, and reduce EU emissions of CO₂ by a third by 2020;
2. Develop and adopt a comprehensive climate policy strategy, both at the EU level and at member state level;
3. Further develop and strengthen the European Emissions Trading Scheme (ETS). The ETS should form a central part of the overall strategy as it covers sectors responsible for 60% of the total emission reductions expected by 2020. For the ETS to achieve its full potential, strict and reliable long-term emission reduction paths are crucial, with EU member states responsible for achieving national caps on emissions;
4. Develop and adopt a comprehensive set of sector- and technology-specific policies and measures for:
 - energy end-use and supply efficiency
 - combined heat and power (CHP) production
 - electricity generation from renewable energies, and
 - thermal uses of renewable energies.
5. Carry out ecological finance reform, particularly removal of direct and indirect subsidies for unsustainable energy generation and use pattern;
6. Fast-track EU directives on energy services and energy-efficiency programmes; this will create multi-billion Euro markets for services and technologies;
7. Give legal and fiscal support to renewable energies and combined heat and power production;
8. Establish regional and national energy agencies and consumer organizations which can intensify the drive for energy efficiency, CHP and renewable energies.

Particular attention should be given to energy efficiency in transport (e.g.

increasing fuel efficiency in all modes of transport, increased market share for biofuels) and in households (e.g. rebate schemes for thermal insulation, obligatory solar heating for new and renovated homes);

A call to action...

WWF calls on the EU to adopt a target of cutting greenhouse gas emissions by one third by 2020. The EU can now decide to grasp the technical, political and economic opportunities to do so. This will help to ensure that the increase of the world’s average temperature remains less than 2°C above pre-industrial levels. It will also help the EU to renew and intensify its leadership in international climate change negotiations.



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