EU

Emissions targets and implications for business

The EU has committed to at least a 40% reduction compared to its 1990 level by 2030 without the use of international carbon credits

What is the EU's contribution...

- The detail is in the EU Climate and Energy Package launched in October 2014.
- Increasing the share of **renewables** in energy consumption from 12% today to at least 27% by 2030.
- Reducing **energy consumption** by 27% against projections by 2030 through energy efficiency (this may be revised upwards in 2020 to 30%).
- **EU Emissions Trading System** (EU ETS) sectors to reduce emissions by 43% compared to 2005, equivalent to 2.2% a year from 2021 onwards, up from 1.74% between 2013 and 2020.
- Non-EU ETS sectors, such as **non-energy intensive businesses** and the residential sector, to cut emissions by 30% below 2005 levels.
- Intra-EU **aviation** to follow the EU ETS emissions targets notwithstanding International Civil Aviation Organisation plans to propose a global carbon offset scheme from 2020.
- **Transport fuel** greenhouse gas intensity to be reduced by up to 10% (at least 6%) by 2020.

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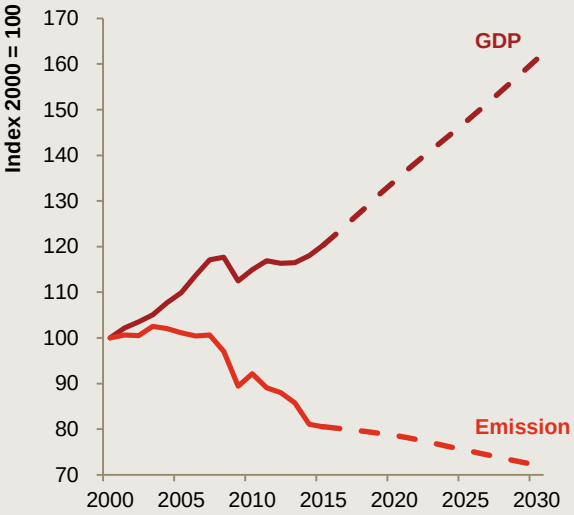
...and what are the implications for business

- The EU pledged around half ($4.8bn) of the initial $10bn capitalisation of the **Green Climate Fund** in Lima in 2014.
- The EU's **energy and transport systems will require over $300bn** of additional public and private investment per year for the next 40 years, or around 1.5% of EU GDP. In July 2015, the EU approved around $15bn of European Commission money for transport infrastructure investment, said to unlock an additional $33bn of public-private co-financing. This is estimated to create up to 10 million jobs and increase Europe's GDP by 1.8% by 2030.
- The cumulative investment needed to reach the EU's 2030 **renewable energy target is likely to add up to at least $400bn**, three quarters of which is for 200GW of solar which dominates capacity additions compared to 70GW of onshore wind.
- **Horizon 2020 offers $90bn** between 2014 and 2020 for research and development.
- Recent EU ETS reforms (backloading allowances and the market stability reserve) are designed to reduce the oversupply in the EU market and raise the **price of EU carbon credits (EUAs) from €8/tCO2 today to €29/tCO2 in 2020.**
- For illustration, a **carbon price of US$30 per tonne under the EU ETS in 2030 would form at least 15% of the cost structures** of energy intensive industries such as refineries and over 10% for petrochemicals.
- Upgrades and transformations to refineries are needed to remain profitable. For example Total invested €400 million to upgrade a refinery to produce new low-sulphur fuels and €200 million to transform a refinery into a biorefinery.
- The **NER300 programme raised $2.4bn** from the EU ETS from new entrants to the scheme and invested in 38 renewable energy projects and a **carbon capture and storage** (CCS) project. The successor in 2021, **NER400, could generate over $10bn** for investment in low carbon innovation in industrial sectors as well as renewables and CCS.
- Investment in **biofuels** has remained stagnant since 2012 owing to concerns about the indirect impacts of first generation biofuels on land use change and a cap of 5% for their contribution to renewable fuels. No new targets or rules for accounting for land use change have been adopted by the European Parliament. Investment today focuses on demonstration level second generation biofuels supported by grants.

GDP, energy and related emissions

GDP forecast: 2.0% per year
Emissions forecast: -0.7% per year



Our absolute emissions trend is based on combining the GDP forecast above with the average decarbonisation rate so far this century

GDP: The European economy is 18% bigger than it was in 2000, averaging 1.2% per year growth in spite of falls of 4.4% and 0.5% in 2009 and 2012 respectively. Last year it grew at 1.3%. According to our latest 'World in 2050' report, 2.2% yearly growth is expected over the next five years, falling to 1.9% on average in the 2020s. By 2030, the EU economy is projected to be 60% bigger than it was in 2000.

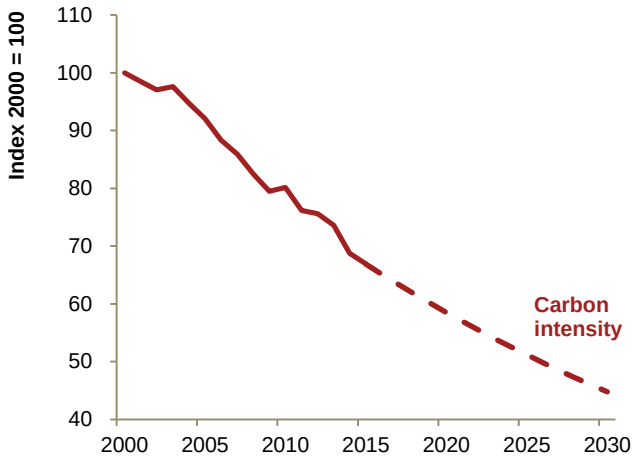
Emissions: Emissions in the EU fell from 4.1GtCO2 in 2000 to 3.4 GtCO2 today. The biggest contributor to emissions is the power sector with 40%, followed by emissions from transport at 29%, buildings contributed 19% and industry 13%.

Energy: Energy demand is 7% lower than it was in 2000. It followed the pattern of the economy, dipping in 2008 and 2009 and increasing in 2010. Over the last four years however it has come down at an average of 2%, with a 4% fall last year aided by a warm winter. In terms of fossil fuel energy, the five EU countries most reliant are the UK (85%), Greece (88%), Lithuania (93%), Poland (95%) and the Netherlands (96%). But in absolute consumption terms the biggest energy consumers are Germany (253 Mtoe), the UK (159), Italy (121), France (118) and Spain (95). Since 2000, total demand for oil has fallen by 18%, reducing its share of consumption to 36% in 2014. Only Poland, the Czech Republic and Austria increased oil consumption over the period. Nuclear, coal and gas changed negligibly between 2000 and 2014: nuclear remained at 12% of the mix, more than half of which is from France, coal changed from 18% to 17% of the mix and gas from 23% to 22%. There are more interesting changes at the country level: gradual nuclear phase out in Germany – responding to Fukushima - reduced its share of nuclear from 10% in 2010 to 7% in 2014 (aiming for zero by 2022, equivalent to roughly 30Mtoe in 10 years) and pushed a small return to coal during 2012 and 2013. France has comparable goals for phasing out 30Mtoe of nuclear over the next 10 years, replacing one third of its nuclear with renewables. In response to the EU ETS, there may have been some fuel switching from coal to gas since 2005, but overall this century only Poland, Sweden, Spain, Portugal and Greece increased total gas consumption.

Renewable energy: Since 2000, the share of renewables in the EU's energy mix has risen from 6% to 13.5% in 2014, mainly through additional wind capacity (3.5 percentage points). Renewables displaced coal and gas by 1 percentage point each and oil by 4 percentage points in the fuel mix. With nuclear, this leaves the EU at around a quarter of energy from zero-carbon sources consumed in 2014, having started the century at 18%. Half of hydro energy is produced in France, Italy and Sweden. Sweden also tops the renewable energy tables consuming 38% of its energy from hydro, wind, geothermal and biomass, with Austria (31%) and Portugal (30%). The Netherlands foots the table with only 3% of energy consumption from renewable sources.

Carbon intensity

Carbon intensity forecast: -2.6% per year



- The EU's carbon intensity has fallen by 2.6% on average since 2000 and remains amongst the lowest of the major economies.
- In 2014 the EU's decarbonisation rate picked up to its fastest rate this century of 6.7% - a combination of 1.3% GDP growth and a 5.4% reduction in energy related emissions. This partly the result of a switch away from coal, but it was also helped by a warm winter.
- We use the average decarbonisation rate since the turn of the century, 2.6%, for our business as usual forecast opposite and below.

How ambitious is Europe's 40% target?

The EU will need to decarbonise at 3.1% per year to reach its 40% reduction target by 2030. This is faster than the UK's 'dash for gas' in the 1990s or Germany's restructuring after reunification.

The 40% target looks quite close to business as usual, but despite the EU's existing policies to tackle climate change, it will still need to find another gear. However, the EU's recent pick up in decarbonisation rate to 6.7% suggests that this target could be achieved. It is also supported by a raft of European Directives that are transposed into national legislation. But, the EU's Paris target falls short of the emissions pathway to its own long term target of 80%-95% by 2050. This 2050 target is more closely aligned with a 2 degrees pathway and would require average annual decarbonisation of 6.9%.

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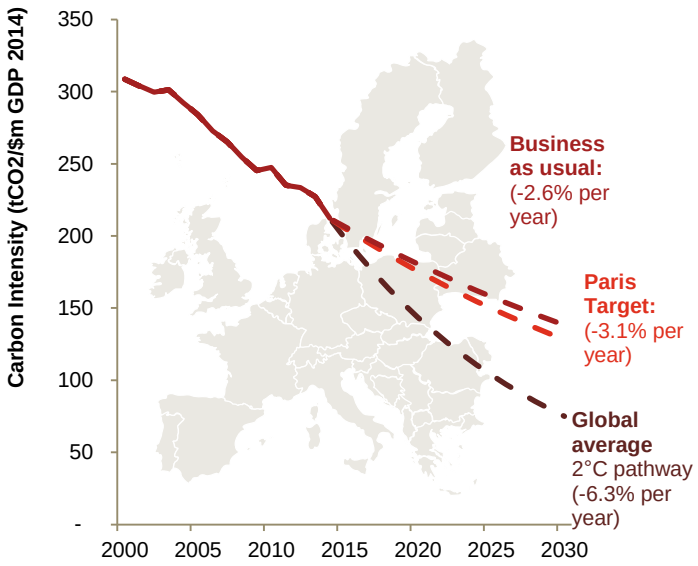

Sources:
Historic GDP: World Bank, 2014
GDP Forecasts: PwC World in 2050, 2015
Energy data: BP, Statistical Review of World Energy, 2015
Historic emissions data: International Energy Agency, World Energy Outlook, 2014
Scientific America, France Plans to Reduce Nuclear in Favour of Renewables, 2015
European Environment Agency, Climate change and investments, 2015
Bloomberg carbon price forecasts, 2015

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