



for a living planet®

BLUEPRINT GERMANY

A strategy for
a climate safe 2050

A low carbon society is achievable!

Man-made climate change is one of the central problems of this century. If we are to try and ward off the worst consequences for humanity and the world's eco-systems, we will have to set the course in the coming years to limit global warming to below 2 degrees Celsius compared to pre-industrial times.

In the past, Germany has always taken on a leading role in climate protection – and it should keep doing so. Only when a highly industrialised country like Germany demonstrates that a low carbon economy is in fact possible will it be able to inspire change also in other countries.

In concrete terms, this means that by 2050 Germany will have to reduce greenhouse gases by around 95 % compared to the level of emissions in 1990. In other words, less than 0.5 tonnes per capita of CO₂ may be emitted each year (compared to today's 11 tonnes).

The study by WWF titled “Blueprint Germany. A strategy for a climate safe 2050” is a concrete policy programme for this purpose. The study contains answers to central questions:

- How must a highly industrialised and technology-based society be designed in order to reach this goal?
- Which political safeguards and technical preconditions are needed for this transformation if stability and prosperity are also to be warranted?
- How can we live well in 2050 without dangerously changing our climate?

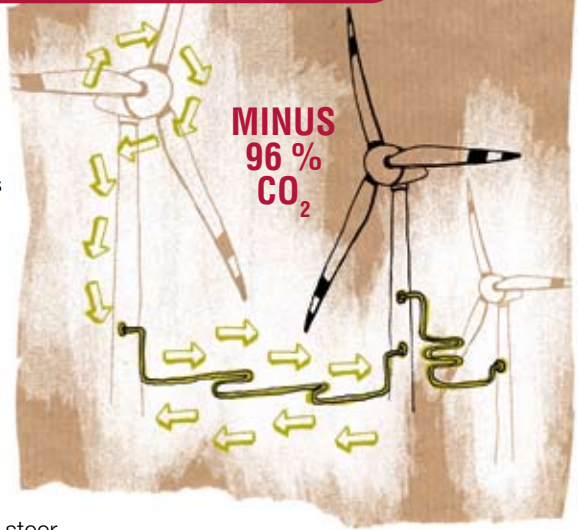
A 95 % reduction in greenhouse gas emissions in Germany by the year 2050 is possible

- Renewable energy will have a paramount role to play in electricity generation and in the transport sector.
- We now need targeted investment in long-term infrastructures, e.g. for generating sustainable biomass.
- A central task will be to promote innovation for energy efficiency, electric vehicles and intelligent infrastructures.
- All sectors of the economy must and can contribute.
- The additional costs of such a reduction in emissions are reasonable and total on average 0.3 %, at most 0.6 %, of gross domestic product (GDP).
- By the year 2050, we can reduce our per-capita emissions of CO₂ to 0.3 tonnes.

Renewable energy has a key role to play

How it could happen:

- Greater efficiency will reduce demand for electricity by one third. This is a precondition for a power sector that emits less CO₂.
- By 2050, renewable sources will account for 84 % of electricity generation.
- Since renewable electricity is not always available, energy storage will have to be increased significantly.
- We need smart electricity grids in order to steer fluctuating supplies of wind and solar energy.



How we can make it happen:

- **Further-development of the Renewable Energy Feed-in Law with a preference scheme for renewable energy.**
- **Moratorium for coal-fired power stations without CO₂ capture and storage (CCS).**
- **A six-fold increase in electricity storage capacity.**
- **Investment programme for smart electricity grids.**

Low carbon products will bring about a new industrial revolution

How it could happen:

- By 2050, industry will grow by 20 %. It will benefit from early investment in production methods with low CO₂ emissions, new materials and products.
- The engineering, chemicals and plastics sectors, as well as the glass and ceramics industries will benefit from the targeted development of new materials.
- These industrial sectors with low energy consumption will grow by 44 % and account for a large part of the industrial sector.
- Total energy consumption by the industrial sector will fall by 53 % between 2005 and 2050.



How we can make it happen:

- **Emissions trading and the establishment of an energy efficiency market will create incentives to save energy.**
- **Targeted investment in innovations will triple energy productivity.**
- **Capture and storage (CCS) of emissions from industrial processes will be mandatory.**

Electric appliances go low on power

How it could happen:

- The number of appliances in households and the commercial sector will increase further – despite this, electricity consumption will decline by 40 % in German households, and by even 66 % in commerce and trade.
- New technologies, for example, for cooking (induction cookers), lighting (organic LEDs instead of energy-saving bulbs) OR for washing (water-free washing machines) will have become established on the market by 2050.
- The most significant decline will be seen in the fields of lighting (efficiency increase of more than 85 %) as well as refrigeration and freezing with a consumption reduction of more than 70%.
- Key technologies, such as nanotechnology, biotechnology and microsystems technology will have to be developed with a view to material efficiency whilst at the same time examining all the risks involved.



How we can make it happen:

- **Dynamic consumption standards for electrical devices/appliances (top-runner principle) will cut consumption.**
- **Incentives for research and development of new device technologies.**
- **Inefficient and expensive night storage heating will be replaced by efficient heating systems.**

Buildings become more energy-saving

How it could happen:

- In 2050, we will live and work in buildings that can control heating and ventilation by themselves – our buildings will become intelligent.
- In 2050, buildings (both old and new) will be so well insulated that they would require hardly any additional energy for heating. That's why final energy consumption to generate space heating will have then declined by 86 %.
- The remaining demand will be covered primarily by renewable energy and district heating.
- From 2012 onwards, twice today's number of buildings will be refurbished each year. In 2025, the energetic standard for refurbished houses will be equal to a high new-building standard.
- Water-saving fittings will be improved further and will become standard. That's why per capita consumption of hot water will decline by a quarter whilst comfort increases.
- In 2050, the energy consumed to generate hot water will be one third lower than in 2005.



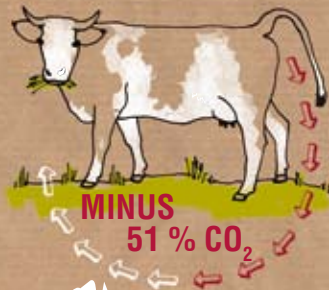
How we can make it happen:

- **Support programmes and tax deductions for refurbishment costs will warrant a growing number of high-quality, energy-related refurbishment projects.**
- **After 2020, no new buildings will be permitted to emit greenhouse gases.**
- **The development of new insulation materials will be supported.**

Farmers work hard for the table and the climate

How it could happen:

- Farmers will change their farms in such a manner that average nitrogen surpluses total 40 kgs rather than today's 110 kgs per hectare.
- Moors and wetlands will be restored to their natural flooded state and will store rather than emit carbon.
- In 2050, emissions of methane and nitrogen oxide from animal farming will fall dramatically because Germans now consume only 20 kgs of meat per capita per year compared to 60 kgs and hence have a more healthy and climate-friendly diet.
- Slurry and manure from animal farming will be stored in sealed containers and recycled in biogas plants or processed for more effective fertilisation.
- 25 % of German agricultural land will be farmed according to the rules of organic farming.



How we can make it happen:

- **A duty will be imposed on nitrogen surpluses and the resultant revenues invested in more efficient technology, research and training.**
- **The EU common agricultural policy will only promote climate-friendly technologies and investment.**
- **The Federal government will launch a large-scale education programme to attract Germans to food with less meat and a healthier diet.**

Transport electrifies

MINUS
83% CO₂



How it could happen:

- Although people will continue to be as (auto)mobile as they are today, energy consumption in the transport sector will decline by 40 %.
- In 2050 there will be a few more cars on the road than today, but more than 80 % of these will be hybrid or electric cars.
- Freight transport will increase further up until 2050, however, this will be shifted to a large degree to rail transport which will run on electricity.
- By 2050, all remaining mineral-oil based fuels will have been replaced by biofuels.
- By 2050, the efficiency of the entire car fleet will have increased by more than 60 %.

How we can make it happen:

- **Consumption standards for passenger cars, vans and HGVs will step up efficiency by up to more than 60 %.**
- **The greatest share of biomass will be used for biofuels for freight transport.**
- **Targeted expansion of the rail network and of the infrastructure for charging electric vehicles.**



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It is high time that we tackle climate change with determination in order to limit global warming. WWF's study "**Blueprint Germany. A strategy for a climate safe 2050**" shows how Germany can reduce greenhouse gases by 95 %.

You can find this study in German, an English summary, and German fact sheets on all analysed economic sectors, as well as other information at:

www.wwf.de/klima2050 or by contacting WWF.

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