



## **The Integrated Energy and Climate Programme of the German Government**

### ***I. We are keeping our promises***

At its meeting in Meseberg in August 2007 the Cabinet adopted an ambitious energy and climate programme, consisting of 29 key elements. On 5 December 2007 the Cabinet submitted a comprehensive package of 14 acts and ordinances. Another, smaller package containing further legislative proposals will follow on 21 May 2008. The decisions of Meseberg will thus be rigorously implemented.

In time for the start of the UN Climate Change Conference in Bali, the German government has elaborated a historic energy and climate programme which is without precedent both in the history of German climate policy and internationally. No other comparable industrialised country has an equally ambitious and concrete programme!

Our package doubles Germany's previous climate protection efforts. At present, we have achieved an 18 percent reduction in greenhouse gas emissions compared to 1990. The programme will enable us to achieve a reduction of around 36 percent. We have thus taken a major step towards achieving our climate protection target of -40 percent by 2020.

### ***II. Efficient climate protection modernises the economy and society***

This package of measures aims at efficient climate protection. This includes ensuring that climate protection is affordable and keeps pace with economic development – an aim which is equally valid for industrialised and newly industrialising countries. For this reason, the German government will implement measures which reduce CO<sub>2</sub> emissions and are as cost-effective as possible. This will ensure that the

competitiveness of companies is not impaired and that excessive burdens for consumers are avoided.

The German government's guiding principles for energy policy remain the three objectives of security of supply, economic efficiency and environmental protection. This also means giving energy suppliers and industry reliable and competitive framework conditions for their investments. At the same time, consumers need cost-efficient solutions and transparent, reliable conditions for their purchasing and investment decisions. The legislative proposals presented ensure such conditions by defining targets until 2020 for their respective areas and supporting these with concrete measures.

The integrated energy and climate programme also promotes Germany as an industrial and investment location. Through improved efficiency and the use of renewable energies we can lower coal, oil and gas consumption in the transport, heating, hot water and electricity sectors, and thus reduce Germany's dependence on energy imports.

Innovative energy technologies hold the key to this, both on the supply side where energy is produced (e.g. in the power plant or renewable energies sectors) and on the demand side where energy is consumed (e.g. appliances, vehicles and buildings). If energy prices rise, those who construct low-energy buildings, machines and pumps, or manufacture renewable energy installations and products or fuel-efficient vehicles, will have a competitive edge on both the domestic and export markets. Greater energy efficiency reduces dependence on energy imports and keeps the financial burden on consumers and industry within a reasonable limit. This is also the right way to respond to rising energy prices.

The programme furthermore creates vital incentives for modernisation in energy and climate protection technologies. Such measures pay off with higher production and employment figures, more domestic value added and constant product innovations in these sectors.

### ***III. The integrated energy and climate programme's package of measures***

The package implementing the integrated energy and climate programme adopted on 5 December 2007 comprises the approval of 14 legislative proposals:

#### **Energy efficiency**

- 1. Amendment to the Combined Heat and Power Act:** in order to use fuel efficiently, the share of high-efficiency CHP plants in electricity production will be doubled by 2020 from the current level of around 12 percent to around 25 percent. The amendment to the Combined Heat and Power Act, which promotes the construction of new plants and heat grids, serves this goal.
- 2. Amendment to the Energy Industry Act (EnWG) on liberalising metering:** liberalising electricity metering will facilitate and promote innovative metering methods and demand-related, time-variable tariffs. This will enable consumers to reduce their energy costs and will improve the efficiency of the power generation sector. An ordinance specifying the relevant requirements will be adopted in May 2008.
- 3. Report and draft amendment to the Energy Saving Ordinance (EnEV):** in order to increase energy efficiency in buildings, energy standards will be tightened by an average 30 percent from 2009. As a second step (planned for 2012), these efficiency standards will be tightened by a further 30 percent. The Cabinet has adopted corresponding key elements.
- 4. Clean power plants:** by amending the 37th Ordinance on the Implementation of the Federal Immission Control Act (BImSchV), ambitious standards will be laid down for nitrogen oxide emissions from new power plants. This will make sure new plants are not only more efficient, but also cleaner than old ones.
- 5. Guidelines on the procurement of energy-efficient products and services:** with the adoption of guidelines on environmentally friendly and energy-efficient procurement, the German government is setting a good example for others to follow. Energy-efficient appliances and services will be promoted through priority procurement. Furthermore, money for electricity and fuels will be saved.

## Renewable energies in the electricity and heat sectors

6. **Amendment to the Renewable Energy Sources Act (EEG):** the government's goal is to increase the share of renewables in the electricity sector from the current level of over 13 percent to 25-30 percent in 2020, and then to continue increasing the level further. The amendment to the Renewable Energy Sources Act, which among other things contains new provisions for regulating tariffs for offshore wind farms, serves this goal.
7. **Renewable Energies Heat Act (EEWärmeG):** renewable energies in the heat sector offer huge potential for climate protection and savings in fossil fuels. The share of renewable energies in heat provision will therefore be increased to 14 percent by 2020. Obligations to use renewable energies in new buildings are laid down in the Renewable Energies Heat Act. Funding for the government support programme for existing buildings will increase - from 130 million euro in 2005 to up to 350 million in 2008 and up to 500 million euro from 2009.
8. **Amendment to the Gas Grid Access Ordinance:** the amendment to the Gas Grid Access Ordinance will ensure that biogas can be fed into the natural gas grid to a greater extent. A share of 10 percent biogas is possible by 2030. Biogas will thus be widely available and no longer has to be primarily used at the production site.

## Biofuels

9. **Amendment to the Biofuel Quota Act:** as a contribution to achieving the German government's energy and climate policy goals, the share of biofuels will be increased and from 2015 will be geared more towards reducing greenhouse gas emissions. The amendment to the Biofuel Quota Act will lead to a rise in the biofuels' share to around 20 percent by volume (17 percent by energy content) by the year 2020.
10. **Sustainability Ordinance:** the Sustainability Ordinance will ensure that when producing biomass for biofuels, minimum requirements for sustainable management of agricultural land and for the conservation of natural habitats

are complied with. Furthermore, the entire production, processing and supply chain must show a certain potential for reducing greenhouse gases.

**11. Fuel Quality Ordinance:** the amended Fuel Quality Ordinance will increase the blending limit of bioethanol in petrol fuels from 5 to 10 percent volume. For biodiesel in diesel fuels, this blending limit will increase from 5 to 7 percent volume.

**12. Hydrogenation Ordinance:** by approving biogenic oils that are hydrogenated together with mineral oil based oils in a refinery process, compliance with the increased blending quotas will be considerably easier in future.

### Transport

**13. Reform of vehicle tax to a pollutant and CO<sub>2</sub> basis:** the vehicle tax will be amended in May 2008. For new vehicles, this tax will then be calculated on the basis of a vehicle's emissions rather than engine capacity as before. Today the Government adopted key elements as a proposal for the Federal Länder.

### Non-CO<sub>2</sub> greenhouse gas emissions

**14. Chemicals Climate Protection Ordinance:** this Ordinance will reduce emissions of fluorinated greenhouse gases from mobile and stationary cooling installations through provisions on leakproofness and labelling of the installations and on recovery and return of the refrigerants used.

## ***IV. Second package in spring 2008***

The Cabinet has already agreed to adopt a further package of energy and climate measures at the latest by 21 May 2008, so that it can be transmitted to the Bundesrat before the summer recess 2008. This package covers the four proposals for which key elements and drafts were adopted on 5 December 2007, as well as at least three further proposals. The German government has already agreed on the specific content for the following four measures:

1. **Draft amendment to the Energy Saving Ordinance (EnEV):** in May 2008 the Cabinet will adopt a complete reform of the EnEV – together with the necessary annexes and implementation provisions – based on the key elements adopted on 5 December 2007.
2. **Reform of vehicle tax on a pollutant and CO<sub>2</sub> basis:** following consultations with the Länder, the Cabinet will adopt a full reform of the vehicle tax by May 2008 at the latest based on the key elements adopted.
3. **Amendment to the Energy Industry Act to support expansion of the electricity grid:** the Energy Industry Act will be amended in spring 2008 in order to ensure that stable grid operation and the smooth expansion of renewable energies is also secured in the long term. This includes a bundled approval procedure for submarine cables connecting offshore wind farms to the grid.
4. **Amendment to the Passenger Car Energy Consumption Labelling Ordinance:** to strengthen incentives to buy fuel-efficient, low-CO<sub>2</sub> passenger cars, a consumer-friendly and clear labelling will be introduced. A corresponding national ordinance has been elaborated, to be enacted at the latest in August 2008. In the meantime it will be harmonised as necessary with the announced but not yet existing EU regulation on labelling.

In addition, the Cabinet will adopt at least the following three measures:

5. **Ordinance on the liberalisation of metering and implementation of the Energy Services Directive:** implementation of the adopted amendment to the Energy Industry Act for the liberalisation of metering requires an ordinance. The ordinance will also transpose the requirements of the EU Energy Services Directive in the field of metering.
6. **Amendment to the Heating Costs Ordinance:** the Heating Costs Ordinance will be amended to give both tenants and landlords an incentive to minimise heating costs: tenants by being entitled to reduce their rent in the case of excessive heating costs, landlords through the streamlining of regulations on contracting for energy saving purposes.

- 7. Amendment to the HGV Toll Ordinance:** by May 2008, the Cabinet will adopt an amendment to the HGV Toll Ordinance. This will ensure that in future the burden on low-emission trucks will be eased while vehicles with higher emissions will face considerably higher charges. Furthermore, if necessary the German government will adapt the toll rates following the evaluation of the new 2007 report on infrastructure costs.

*Further elements of the integrated energy and climate policy*

The German government's integrated energy and climate policy goes beyond the agreed measures and key elements. It also includes the ongoing legislative initiatives on creating greater competition in the energy markets, the promotion of local public transport, the Allocation Plan 2008-2012 and the new regulations for emissions trading. Emissions trading in particular makes a significant contribution to emissions reductions in Germany. The climate protection targets for the period 2008 to 2012 have been made significantly more stringent: from 2008, old power plants in Germany will be allocated around 30 percent fewer emission allowances than their current level of emissions. Furthermore, 10 percent of the allowances will be auctioned.

At the Cabinet meeting in Meseberg on 23 August 2007 the German government also adopted initiatives in many other areas, which have since been updated.

The integrated energy and climate policy is also reflected in the federal budget. A total of around 3.3 billion euro (including up to 400 million euro from the auctioning of emissions allowances and around 700 million euro from bilateral and multilateral development cooperation) are earmarked for climate policy for the 2008 financial year. This is 1.8 billion euro more than in the federal budget for 2005. The Cabinet will decide on the consolidation and further topping up of programmes in the course of its future budget planning consultations.

***V. Impact of the measures***

The Federal Environmental Agency has drawn up calculations on the climate protection impacts of the integrated energy and climate programme. These show that

with rigorous implementation, the programme can lead to emissions reductions of more than 36 percent by 2020 compared with 1990. According to these calculations almost 220 million tonnes CO<sub>2</sub> will be saved with the existing and agreed measures. The programme therefore represents a very large step forward towards the -40 percent target. Major reductions in CO<sub>2</sub> will be brought about by the expansion of renewable energies in the electricity sector (54 million tonnes), increased energy efficiency in buildings (31 million tonnes) and in electricity consumption (25 million tonnes). The package of measures for the transport sector and reductions in gases other than CO<sub>2</sub> will also make contributions of more than 30 million tonnes each (see Table 1).



**Table 1: Impact of the Meseberg energy and climate programme**

<b>Title of measure</b>	<b>CO<sub>2</sub> saving by 2020 in m t</b>
<b>Modernising fossil power plants</b>	<b>-15</b>
<i>Emissions trading</i>	
<b>Electricity from renewable energies</b>	<b>-54.4</b>
<i>Amendment to the Renewable Energy Sources Act, support concept on repowering onshore wind power, Power Grid Development Act, designation of priority areas for offshore wind power, feed-in regulation for biogas</i>	
<b>Combined heat and power</b>	<b>-14.3</b>
<i>Combined Heat and Power Act, promoting CHP in the Renewable Energy Sources Act</i>	
<b>Modernisation of buildings and heating systems</b>	<b>-31</b>
<i>Building modernisation programme, amendment to the Energy Saving Ordinance, amendment to the Heating Costs Ordinance, facilitating contracting, energy-efficient modernisation of social infrastructure, programme for the energy-efficient modernisation of federal buildings</i>	
<b>Heat from renewable energies</b>	<b>-9.2</b>
<i>Renewable Energies Heat Act, market incentive programme for heat from renewable energies in existing buildings</i>	
<b>Savings in electricity</b>	<b>-25.5</b>
<i>“Top_Runner” approach towards implementing the Eco-Design Directive, support programme for climate protection and energy efficiency, energy consumption labelling of appliances, replacement of night-storage heaters, smart metering for electricity consumption, guidelines for public procurement for energy-efficient products and services</i>	
<b>Transport</b>	<b>-33.6</b>
<i>CO<sub>2</sub> strategy for passenger cars, expansion of biofuels, CO<sub>2</sub>-based vehicle tax, energy labelling for passenger cars, reinforcing the influence of the HGV toll, including aviation in emissions trading, measures in the field of shipping, expansion of electric mobility</i>	
<b>Other greenhouse gases (methane, N<sub>2</sub>O, F-gases)</b>	<b>-36.4</b>
<i>Chemicals Climate Protection Ordinance, ending the storage of untreated wastes, decline in emissions from mining</i>	
<b>Total</b>	<b>-219.4</b>
in percent compared with base year	<b>-36.6%</b>

Source: Federal Environmental Agency (2007)

## **VI. Economic costs and benefits of the energy and climate programme**

On behalf of the Federal Environmental Agency, a team of experts calculated the economic costs and benefits of the energy and climate programme. This team was led by the Fraunhofer Institute for Systems and Innovation Research (ISI) in Karlsruhe. In the study “Economic assessment of measures in the integrated energy and climate programme”, the main measures were analysed on the basis of the key elements with regard to their programme costs, investment costs and saved energy costs. The interim findings of the study are clear: the majority of the analysed measures save costs. In total, by implementing these measures Germany can achieve gains of about 5 billion euro in 2020 (see Table 2).

**Table 2: Costs and benefits of selected measures in the year 2020**

<b>Measure no.</b>	<b>Title of measure</b>	<b>Gross costs in billion euro</b>	<b>Annually saved (fossil) energy in billion euro</b>	<b>Reduction costs in euro/t CO<sub>2</sub></b>
1	Combined heat and power	0.003	-0.3	12.9
2	Electricity from renewable energies	5.55	4.2	27
7	Energy management systems and support programmes energy/climate	2.30	3.2	-90
8	Energy-efficient products - households/industry	0.21	4.2	-266
10A	Energy Saving Ordinance	8.43	10.30	-47
10B	Replacement of night-storage heaters	1.05	0.90	23
12	Modernisation programme to reduce CO <sub>2</sub> emissions from buildings	2.43	3.20	-58
13	Energy-efficient modernisation of social infrastructure	0.49	0.26	163
14	Heat from renewable energies	4.42	3.5	77
15	Energy-efficient modernisation of federal buildings	0.06	0.080	-38
16	CO <sub>2</sub> strategy for passenger cars	6.44	8.7	-128
17	Biofuels	0.00	-1.0 to 2.0	84 to 168
	<b>Total</b>	<b>31</b>	<b>36.3</b>	<b>-26</b>

Source: Fraunhofer ISI (2007)

The annually apportioned investment costs amount to 31 billion euro in 2020, compared with energy savings of more than 36 billion euro. It is important to note here that assumptions made regarding gas and oil prices were moderate (\$65 per barrel), although even now significantly higher oil prices (approx. \$90 per barrel) are a reality.

## ***VII. How will the public benefit from the programme?***

Like any intelligent policy, the programme is a combination of support measures, economic instruments and regulatory law.

### Buildings sector:

- New buildings must now be constructed according to the more stringent Energy Saving Ordinance and the Renewable Energies Heat Act: they will have improved insulation and a renewables' share in heat generation (e.g. solar thermal installations). Overall, these measures are economically efficient as the investment pays off well within the service life of the installations.
- The energy-efficient modernisation of buildings will be comprehensively supported by the building modernisation programme. House owners who wish to insulate their roof or replace windows receive a grant or low-interest loan. The German government is providing a total of 1.4 billion euro per year for the energy-efficient modernisation of buildings.
- Those who wish to equip their house with heat from renewable energies will receive extensive funding from the market incentive programme. Solar thermal installations, biomass boilers and heat pumps will be supported with grants or low-interest loans. The funds earmarked for this will rise from 130 million euro in 2005 to up to 350 million euro in 2008 and up to 500 million euro in 2009.
- The German government will also provide grants for the energy-efficient modernisation of schools and kindergartens (200 million euro).

### Examples of costs and benefits for citizens:

**Buildings:** Insulating the ceiling of a cellar in a single family house costs around 2000 euro. This saves approx. 150 euro in heating costs per year; support can also be applied for from the KfW building rehabilitation programme. The investment therefore pays off in around 10 years - even quicker in the case of rising oil and gas prices.

**Transport:** Purchasing a small car with 20 percent greater efficiency only costs an additional 100-200 euro - and over 6 years saves around 700 euro, i.e. more than 5 times as much!

**Motors:** An efficient 11 kilowatt motor for industrial operation only costs 100 euro more than a standard model - these 100 euro are already saved in the first year, from the second year a profit of 100 euro per year is made!

**Products:** A high-efficiency fridge (A++) costs around 50 euro more than a less efficient appliance, but saves 11 euro per year. Buying the more efficient fridge therefore pays off in only a few years.

**Heat from renewable energies:** A new heating system in an old building (condensing boiler combined with a solar thermal installation) costs around 11,240 euro for a single family house. Calculated over 20 years, this saves around 6 euro per year. From the 21st year a profit of 850 euro per year is made!

### Electricity costs

- In Brussels, the German government will push for efficiency standards for appliances. For example, new appliances should only be permitted to consume 1 watt in standby modus. This will save money in electricity consumption.
- The amendment to the Combined Heat and Power Act means that compared to today's level, there will be no further burdens. Cost apportionment under the CHP Act will remain stable at around 90 cent per month for a 3-person household. However, the public can benefit from the expansion of local and district heating.
- The amendment to the Renewable Energy Sources Act (EEG) will slightly raise the EEG apportionment on electricity prices. Under current law, it would have risen to a maximum of around 1.4 ct/K/Wh up to 2015, after which it would fall again. We expect the current amendment, which contains better tariffs for offshore wind power, to put the apportionment at around 1.5 ct/k/Wh in 2015. This means around 4.40 euro per month for a 3-person household in 2015 (currently around 2.20 euro per month).
- The liberalisation of electricity metering enables people to choose who operates and reads their electricity meter. Meters can be installed which calculate different tariffs according to demand and time of day. By switching on their washing

machines and dishwashers at times when electricity is cheaper, people can make real savings.

#### Transport:

- The revenue-neutral change to the vehicle tax rewards energy-efficient vehicles. Those purchasing such vehicles will pay less vehicle tax in future.
- Increasing the quotas for biofuels from 2015 can have slight impacts on fuel prices from that date. However, the research and development that will have been carried out on second-generation biofuels by then will further reduce the price difference between fossil fuels and biofuels.
- The planned amendment to the ordinance on energy labelling for passenger cars will ensure that car purchasers will be able to immediately identify whether a car is efficient and what costs for fuel and vehicle tax will be entailed. This will make it easier to buy an economical car.

#### ***VIII. Monitoring***

Accountability for reaching its goals and the effects of the measures taken are a prerequisite of good policy. For this reason, the ministries involved in implementing the integrated energy and climate programme will submit a report to the Cabinet in November 2010 - and every two years thereafter - on the overall impact of the climate and energy package in general and on the individual measures in the field of energy efficiency and renewable energies in detail. The achievement of goals in the respective areas and their cost efficiency will be the focal point of these reports. Independent experts commissioned by the German government will provide the data required. Should it turn out that the measures are not adequate or not cost-effective, the Government will supplement existing measures or propose and implement new ones.

#### ***IX. Signal for the Climate Change Conference in Bali***

If climate protection is to succeed we need a global transformation of energy supply structures through increased efficiency and renewable energies. We will only be able to tackle this challenge if the major industrialised countries lead the way so that other countries, including newly industrialising and developing countries, can be included.

By implementing the key elements adopted in Meseberg, Germany is demonstrating that climate protection can be implemented in all sectors in an economically viable way. With Meseberg we are moving away from the attitude in international climate policy of “you first” towards “this is what I’m doing, what about you?” This is the only way to break the deadlock in international negotiations.

Germany and the EU have put their offer to our negotiating partners on the table: the EU is willing to reduce its emissions by 30 percent by 2020. Germany is even willing to commit to a 40 percent reduction in the same period. We are now counting on similarly ambitious responses and commitments from our partners.

We have to act today - we owe this not only to ourselves, but also to future generations. As UN Secretary-General Ban Ki-moon summed it up: “What we do not have is time.”