

The Renewable Energies Heat Act¹ in brief

1. Where does our heat come from at present?

Humans need heat. We all want to shower with hot water and live in warm houses – especially in winter. Indeed, whatever the time of year we always need energy for heating or cooling. The demand is enormous: heat generation alone accounts for more than half of the final energy consumed in Germany. In Germany we take our heat from a number of energy sources, but at present not much more than 6 percent comes from renewable energies. The rest is obtained from finite energy sources such as gas, oil and coal. Natural gas and mineral oil alone cover nearly three-quarters of Germany's heat demand. Nuclear energy makes no contribution to heat supply, as it produces only electricity.

2. Is our heat supply a problem?

Germany's heat supply is secure. There is no reason to fear that oil or gas will become scarce in the near future. In the medium and long term, however, heat supply presents a problem. There are several reasons for this:

- Coal, oil and gas are finite. Adequate quantities of fossil fuels are available in the short term, but that will not remain the case. Once their production peaks² are reached, supplies will start to dwindle. At the same time, global demand for energy is increasing, particularly in China and India. The prices of coal, oil and gas will therefore continue to increase until supplies of fossil fuels eventually run out.
- A large proportion of the world's oil and gas comes from politically unstable regions. Germany has no sizeable deposits of its own and therefore has to import energy. This makes us politically dependent on other states.
- Oil and gas play a major part in global warming and climate change. The use of oil and gas for heat accounts for 40 percent of our total annual CO₂ emissions of 800 million tonnes.

3. What can be done?

We can increase energy efficiency, thus reducing the need for heat. Everyone can use less energy or make more efficient use of the energy they consume. An example is the insulation of buildings: the better insulated the building, the less energy it uses. It follows that owners who insulate their build-

¹ Produced by Division KI III 4 – Renewable Energies Law.

² The Energy Study 2006 of the Federal Institute for Geosciences and Natural Resources (BGR), published in November 2007, calculates that the extraction of conventional mineral oil will peak by 2020. The study (in German) can be downloaded at: <http://www.bgr.bund.de/energiestudie2006>.

ings well will release fewer greenhouse gases. The government is therefore encouraging greater energy efficiency in buildings – with some success: the modernisation of building exteriors and economical heating alone have reduced CO₂ emissions in the residential sector by 13 percent between 1990 and 2005. This is equivalent to 16 million fewer tonnes of carbon dioxide.³

So saving energy is one option; using more renewable energies is another. Renewable energies are environmentally friendly. That is their greatest advantage in comparison with natural gas and oil. Using renewables releases fewer harmful greenhouse gases. This protects the atmosphere and benefits the climate.

The use of renewables has other positive effects. Renewable energies remain fully available for future generations. The more we use solar collectors, or wood from native forests, the less oil and gas we need to import. This reduces our dependence on energy resources – both in terms of availability and price. Fewer energy imports mean higher value added in Germany. Renewable energy installations are high-tech plants and many are manufactured in Germany. We are therefore using our own resources with our own technology. This promotes Germany as a location for business and industry, leads to innovation and creates new jobs. The renewable energies sector (heat, electricity, fuels) already provides employment for more than 235,000 people.⁴

4. Which renewable energies produce heat?

Renewable energies are sources which will not run out in the foreseeable future. The sun will continue shining for many millions of years; its energy can be harnessed by the solar thermal systems that can be seen on more and more roofs.

Heat can be extracted from other natural sources too. The Earth's interior contains usable heat (geothermal energy), while air and water are often so warm that they too can provide heat, with heat pumps raising the temperature to a useful level if necessary (ambient heat). Another possible energy source is biomass – vegetable oils, biogas (e.g. from liquid manure or maize), wood pellets or wood chips. Of course these sources are limited, but they are termed renewable because plants can always be cultivated again.

5. Can renewable energies provide enough heat?

The contribution of renewable energies to heat supply has been growing for years but is still relatively small overall: at present renewable energies meet around 6.6 percent of Germany's heat needs. But there is considerable future potential: as early as 2020 renewables' share in heat supply can reach 14 percent, enabling us to save over 86 million tonnes of CO₂. Studies carried out by leading research institutes confirm that by 2050 renewables will be able to meet half of Germany's heat needs⁵.

³ See the CO₂-Gebäudereport 2007 (CO₂ Building Report 2007) drawn up for the Federal Ministry of Transport, Building and Urban Affairs (Bundesministerium für Verkehr, Bau und Stadtentwicklung) and downloadable in German at: <http://www.bmvbs.de>.

⁴ "Renewable energies: effects on the labour market", downloadable at <http://www.erneuerbare-energien.de/inhalt/36356/>.

⁵ Nitsch, "Lead Study 2007 – Strategy to increase the use of renewable energies" downloadable at: <http://www.erneuerbare-energien.de/inhalt/39499/>.

6. Why is the contribution of renewables still so small?

There are many reasons. One is that the technologies used for producing heat from renewables are still in their infancy. In recent years renewable energies have been thought of primarily as a means of generating electricity, but not heat. This is changing. There is great potential in the heat sector. A clear statutory framework is required. The Renewable Energies Heat Act (in short: the Heat Act) provides this framework⁶.

Another reason is that high investment costs act as a deterrent. Many consumers lack the necessary confidence to invest in renewable energy systems. They should be reassured: heating with renewable energies is good not only for the climate but also for the purse. Many people have failed to realise that in the medium and long term renewable energies can be cheaper than traditional fuels. As prices for gas and oil rise faster and reach new heights, renewable energies become more and more worth while. A few years ago the price of oil was around 30 dollars per barrel; by early June 2008 it had crossed the 130-dollar mark. Installing a pellet boiler incurs relatively high investment costs, but the user then benefits from the lower running costs – and has no oil or gas bills to pay.

7. Is the Heat Act already in force?

On 6 June 2008 the Bundestag adopted the Heat Act on the basis of the German government's draft of 5 December 2007. The final consultation on the Act in the upper house, the Bundesrat, takes place in July 2008, enabling the legislative process to be completed in the summer of 2008. The Act is due to come into force on 1 January 2009 (see below). All the relevant documents can be found on the Internet (in German) at: <http://erneuerbare-energien.de/inhalt/41719/> A selection of documents in English is available at: <http://erneuerbare-energien.de/inhalt/36356/>.

8. What are the main points of the Heat Act?

The Heat Act stipulates that by 2020 14 percent of Germany's heat must come from renewable sources. There are three aspects to the Act:

- Firstly – the obligation to use renewables: Owners of newly erected buildings must use renewable energies. All owners are subject to this obligation, whether private individuals, the state or businesses. All forms of renewables, or combinations of them, can be used. Those who do not wish to use renewable energies can take other climate change mitigation measures: improve the insulation of their buildings, obtain heat from district heating systems or use heat from combined heat and power generation (CHP).
- Secondly – financial support: The use of renewable energies will continue to be financially supported. The government will inject more money into the existing market incentive programme, increasing funding for this support instrument to as much as 500 million Euro per year. This means better planning certainty for investors.
- Thirdly – heat grids: The Act makes it easier for heat grids to be extended. It makes provision for local authorities to prescribe connection to and use of such a grid in the interests of climate protection in addition to other reasons.

⁶ The bill adopted by the German government on 5 December 2007 can be downloaded (in German) at: <http://www.erneuerbare-energien.de/inhalt/40512/>.

9. What does this obligation to use renewables mean?

All owners of new buildings must cover part of their heat demand from renewable sources. This applies even if the property is rented out. Owners are free to decide which source of energy they wish to use. Depending on local conditions, it may be more appropriate to use solar thermal or geothermal energy, biomass or ambient heat.

10. From what date does the obligation apply?

The obligation to use renewables applies to all new buildings constructed after 1 January 2009. However, since the construction of a building requires a long planning phase, the Act provides for a transition period. Buildings still in the planning stage are exempted from the obligation. In concrete terms this means that owners who submit building applications to the responsible authority or notify the start of construction before 1 January 2009 do not have to use renewable energies. This provides planning certainty and ensures that the obligation applies only to builders who have had sufficient time to adjust to the new statutory framework.

11. Can a solar collector be used?

Building owners can cover a certain proportion of their heat needs from solar energy. The Act stipulates the size of the collector in relation to the type of building. In a building containing no more than two dwellings the collector size must be at least 0.04m² per m² of heated floor space⁷. For example, a building with 100m² of floor space must have a collector measuring at least 4m². For buildings with more than two dwellings the collector must be at least 0.03m² per m² of heated floor space. Owners of all other types of building, notably non-residential buildings, must cover at least 15 percent of their heat needs if they opt to use solar radiation.

12. Can wood pellets and heat pumps be used?

Wood pellets and wood chips can be used, as can heat pumps. Those who use solid biomass, geothermal heat or ambient heat must cover at least 50 percent of their heat needs by these means. In addition, the Act lays down specific environmental and technical standards which are intended to ensure that the technologies have minimum overall environmental impact. For example, heat pumps must have a certain seasonal performance factor.

13. Can biogas and vegetable oil be used?

Liquid and gaseous biomass are a special case among renewable energies. Biogas and vegetable oil are not available in unlimited quantities. It is therefore a requirement that systems integrating vegetable oil and biogas deploy the most efficient technologies available – the most modern condensing boilers in the case of vegetable oil and combined heat and power plants in the case of biogas. In addition, those who use biogas and vegetable oil must demonstrate that these fuels meet specific sustainability standards. Owners of new buildings who opt to use biogas must cover at least 30 percent of their heat needs by this means; if bio-oil is used the minimum coverage is 50 percent.

⁷ As defined by the Energy Saving Ordinance (EnEV)

14. What alternative measures are possible?

Not every property owner can use renewable energies, nor is it always appropriate to do so. Therefore, instead of using renewable energies owners can take other measures which are similarly climate-friendly. These alternatives are:

- use of waste heat. The generation of waste heat has already involved the use of energy; waste heat therefore cannot be regarded as a form of renewable energy. Nevertheless, it is appropriate to “reuse” waste heat, since resources are thereby saved. Owners who use waste heat must cover at least 50 percent of their heat needs by this means.
- use of heat from combined heat and power plants (CHP). CHP plants use resources to produce both electricity and heat simultaneously. Here too the Act specifies a minimum coverage of 50 percent.
- improved building insulation, significantly above the level prescribed by law. Owners who insulate their houses to the point at which the building’s thermal performance is 15 percent better than required under the Energy Saving Ordinance consume significantly less energy and are therefore not required to also use renewables.
- connection to a local or district heating grid, provided that the grid is operated using a significant proportion of renewable energies or draws more than 50 percent of its heat from CHP plants or waste heat. Such local and district heating grids are very efficient.

Owners who can neither use renewables nor take alternative measures are exempt from the obligation. In cases where measures lead to unreasonable hardship, the competent Land authority can release the building owner from the obligation to use renewables.

15. Can the different renewable energies and alternative measures be combined?

Yes. The Heat Act gives building owners broad scope for action. Each building owner can combine the use of different renewables. For example, a solar collector can be supplemented by a heat pump. Alternative measures can also be used in combination with each other and with renewable energies. The underlying principle is that the Act should facilitate individual solutions at least cost and should boost the development of new technologies.

However, building owners who combine different measures must meet the same standards as those who opt only for renewable energies or for alternative measures. Owners who cover only 7.5 percent of their heat needs (instead of the prescribed 15 percent) from solar energy have fulfilled only half of the obligation to use renewables; they must therefore meet the remaining half of the obligation by other means, such as by using wood pellets to cover 25 percent rather than the prescribed 50 of heat needs, or by providing insulation that is 7.5 percent instead of the prescribed 15 percent in excess of that required under the Energy Saving Ordinance (EnEV).

16. What does the obligation to use renewables cost?

The obligation to use renewables costs money – but is good value. Renewable energy installations entail investment costs and are therefore expensive at the outset. However, the use of renewables subsequently saves the costs of the conventional fuels that are no longer required. Those who use renewables need less fossil oil or gas. If we factor in not only the investment costs but also the running

costs across the life of the whole system, the use of renewable energies can pay off. For example, heating a new building with a heat pump involves spending money initially on the new heating system, but thereafter money spent on fossil fuels is saved. The same applies to solar thermal systems: such systems can normally cover a high proportion of hot water needs.

17. Can the state help financially?

Building owners are supported by the market incentive programme. This government support programme has a good track record. Even if the programme has not in the past increased the share of renewable energies to the desired extent, it has nevertheless been very successful. Since its launch the programme has provided financial support amounting to 827 million Euro, which has triggered investments of 6,500 million Euro. This is why the market incentive programme is being continued, but with improvements to some aspects: in particular, the funds available are being substantially increased, enabling even more people to benefit from government grants.

18. How can I access support?

In principle, everyone who uses renewable energies for heat supply is eligible for support. Applications for support can be made to the Federal Office of Economics and Export Control (Bundesamt für Wirtschaft und Ausfuhrkontrolle); further information and application forms are available on the Internet.⁸ For example, in 2008 someone who installs a solar thermal hot water system receives 60 Euro from the state for each square metre of collector surface. If the system combines hot water and heating, the amount is increased to 105 Euro per square metre of collector surface. A special subsidy is currently (until the summer of 2008) being paid for particularly efficient measures: someone who replaces an old heating boiler with a modern condensing boiler at the same time as installing a solar thermal system receives an additional bonus of 750 Euro. The subsidies can even be combined, so that someone who replaces a heating system and at the same time installs a 10 m² solar system to provide heating support is eligible for an investment grant totalling 1,800 Euro.

The Heat Act continues with this support programme. Funding will again be increased, making more than 500 million Euro available to the scheme. This provides planning and investment certainty. But in future there will be a restriction on support: people who are required to use renewable energies under the obligation to use renewables will not receive support for this. Only those who do more will be eligible for support. Building owners who use innovative technologies that are particularly efficient or that have particularly low emissions figures will continue to receive money from the state. The same applies if the proportion of heat needs covered by renewable energies is higher than that specified in the Act, or if the deployment of renewables is combined with the performance of energy efficiency measures.

⁸ http://www.bafa.de/bafa/de/energie/erneuerbare_energien/index.html