

## Implementation of EC Directives

Country

**Germany**

| # | Name and reference of measure  | Type of measure | Responsible organ   | Existing or planned? |
|---|--------------------------------|-----------------|---|----------------------|
| 1 | Energy Saving Ordinance (EnEV) | Law (A)         | Federal Ministry for Economics and Technology;<br>Federal Ministry of Transport, Building and Urban Development | Existing             |

### Quotations from the measure

Unofficial, legally not binding translation

#### Article 1

##### Scope

(1) This ordinance applies to

1. buildings, if they are heated or cooled using energy, and
2. heating, cooling, ventilation, lighting and warm water installations and appliances of buildings according to No. 1.

(...)

#### Article 3

##### Residential building standards

(1) New residential buildings must not exceed the yearly primary energy demand for heating, warm water production, ventilation and cooling of a reference building with the same geometry, usable building area and orientation and with the technical reference design according to Annex 1 Table 1.

(...)

(3) The yearly primary energy demand of the new residential building as well as the reference building is to be calculated according to a method contemplated in Annex 1 No. 2. The new residential building and the reference building have to be calculated according to the same method.

(...)

#### Annex 1 (to Articles 3 and 9)

##### Residential building standards

#### 1 Maximum value of the yearly primary energy demand and the specific transmission heat loss (to Article 3 Paragraph 1 and 2

##### 1.1 Maximum value of the yearly primary energy demand

The maximum value of the yearly primary energy demand of new residential buildings is the yearly primary energy demand calculated according to a method contemplated in No. 2.1 and relating to the usable building area of a reference building with the same geometry, usable building area and orientation and with the technical reference design according to Table 1.

(...)

#### Table 1

##### Technical reference design of the reference building

(...)

##### 5 Heating System

- Calorific value boiler (enhanced), domestic fuel oil, (...)

### 6 Warm water installation

- Central warm water production
- Combined warm water production in heating system according to line 5
- Solar system (...)
- Storage system (...)
- (...)

### 7 Cooling

- No cooling
- (...)

## **2 Calculation method for residential buildings (to Article 3 Paragraph 3, Article 9 Paragraph 2 and 5)**

### 2.1 Calculation of the yearly primary energy demand

2.1.1 The yearly primary energy demand of residential buildings  $Q_p$  is calculated according to DIN V 18599 : 2007-02. Primary energy factors are the values for the non-renewable share according to DIN V 18599-1 : 2007-02. (...)

For various reasons the technical standards referenced by the EnEV can not be translated.

## **The Purpose of the measure**

### Why was it introduced?

Buildings play a big role in combating climate change. In order to lift the potential the ordinance aims to reduce the primary energy demand of buildings to reduce use of resources and greenhouse gas emissions. The target is to reduce the primary energy demand for heating and warm water consumption by 30 % in the building sector.

The ordinance has a holistic approach on the building envelope, the systems engineering and the primary energy sources which are being utilised. Balancing the different measures is possible. For instance the obligations can be fulfilled by either using more insulation or more efficient systems engineering or primary energy sources. The system in general therefore reflects the efficiency benefits of District Heating based on CHP.

### For which target groups? National or regional?

The ordinance targets building owners on the national level.

### Which activities does it aim to stimulate?

Further reduction of the primary energy demand of buildings.

### What results does it expect?

A reduction of the primary energy demand of buildings by 30 %.

### Is it related to Germany's implementation of any EC Directive?

The Act serves as the implementation of Directive 2002/91/EC on the energy performance of buildings, Council Directive 92/42/EEC of 21 May 1992 on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels, amended by Directive 2005/32/EC of the European Parliament and of the Council of 6 July 2005 establishing a framework for the setting of ecodesign requirements for energy-using products and amending Council Directive 92/42/EEC and Directives 96/57/EC and 2000/55/EC of the European Parliament and of the Council

## **Impact of Measure**

|          | Planning | Generation | Distribution | Demand | Organization |
|----------|----------|------------|--------------|--------|--------------|
| Positive |          | x          |              |        |              |
| Negative | x        |            |              | x      |              |

Planning:

Since the EnEV is changed on a regular basis and it also has an effect on heat demand it has a negative effect on the planning stages since it is harder to estimate heat demands and plan production units accordingly.

Generation:

The EnEV effects heat demand in a negative way, but heating supply with a low primary energy factor, especially district heating based on combined heat and power also benefits from the act, making such a heat supply more attractive for consumers.

Distribution:

Demand:

The EnEV has a negative effect on the demand side. The heat demand of buildings is decreasing over the time.

Organization:

## Effectiveness of the measure

Could the measure be considered effective?

The measure is effective in the sense that it is driving down heat demand in new and renovated buildings.

Due to which reasons? (quantifications if possible)

The yearly primary energy demand criteria are tightened more and more, therefore driving down the heat demand.

How well does the measure suit the market conditions of your country?

The fact that both the demand and the supply side are incorporated into the calculation of building efficiency is in general the right direction to suit the market conditions in Germany. There is also a market mechanism integrated since customers are free to choose, within the criteria set by the regulation, how to achieve the yearly primary energy demand. But the problems in building stock resulting from lack of energy efficient heating supply are not tackled by the ordinance. Cost efficiency is also not taken into account, which is a driving factor since the ratio of new buildings is comparatively low in Germany.

Are there any recommended changes to this measure?

Is there any review process for this measure and if so what is it?

In 2012 another review is planned, which aims to reduce the primary energy demand by another 30 %.

## IV. Implementation of EC Directive 2004/8/EC

|         |         |
|---------|---------|
| Country | Germany |
|---------|---------|

| # | Name and reference of measure         | Type of measure | Responsible organ                            | Existing or planned? |
|---|---------------------------------------|-----------------|--|----------------------|
| 1 | Combined Heat and Power Act (KWKModG) | Law (B)         | Federal Ministry of Economics and Technology | Existing             |

## Quotations from the measure

Unofficial, legally not binding translation

### Article 1

#### Purpose of the Act

The purpose of the Act is to contribute to the objective of increasing the share of electricity produced in combined heat and power plants in the Federal Republic of Germany to 25% by protecting for a restricted period, modernising and constructing new combined heat and power plants (CHP plants), supporting the launch of fuel cells on the market as well as promoting the construction of new and expanding existing heat networks which supply heat from combined heat and power plants, in the interests of saving energy, environmental protection and achieving the government's climate protection targets.

### Article 3

#### Definition of terms

(...)

(4) CHP electricity is the arithmetical product of useful heat and the power to heat ratio of the CHP plant. All the net electricity generated by plants which do not have facilities for the removal of waste heat is CHP electricity.

(5) Net electricity generation is the electricity generated by a plant, measured at the generator terminals, less internal consumption required for its own operations.

(6) Useful heat is the heat decoupled from a CHP process and used outside the CHP plant for space heating or warm water preparation, cooling production or as process heat.

(...)

(13) Heating networks within the meaning of this Act are facilities for a piped supply of heat which extend horizontally beyond the boundary of the site of the supplying CHP plant and to which an unspecified number of customers may be connected, as they form a public network. At least one customer who is not the owner or operator of the CHP plant supplying the network must be connected to said network.

(14) Within the meaning of this Act, heating network operators are those who supply third parties with heat via a network. The characteristic of operator does not require ownership of the heating network.

(15) The route means all the components which are required to transmit heat from the site of the supplying CHP plants to the consumer's outlet.

(...)

(17) The consumer outlet is the transfer point in accordance with Article 10, paragraph 1 of the Order on General Conditions for the Supply of District Heating of 20 June 1980 (BGBl I p. 742) as most recently amended by Article 20 of the Act of 9 December 2004 (BGBl. I p. 3214).

### Article 5a

#### New and extended heating networks entitled to premiums

(1) Heating network operators are entitled to payment of a premium by the grid operator for new or extended heating networks if

1. The new heating network or extension is commenced no earlier than 1 January 2009 and the new

- or extended heating network is commissioned no later than 31 December 2020;
2. The supply of consumers connected to the new or extended heating network predominantly with cogenerated heat from CHP plants takes place within the scope of application of this Act in accordance with Article 2 hereof and a proportion of at least 60% of cogenerated heat is substantiated for the planned final status of the network coverage;
  3. A licence has been granted in accordance with Article 6a.

(2) New construction means the initial establishment of a heating network including all the components required for transmission of heat from the site of the supplying CHP plant to the consumer outlet in a territory in which heat was not previously supplied by heating networks.

(3) Extension means that expansion of an existing heating network for the connection of consumers not hitherto supplied by heating networks by the erection of new heating network with all the components necessary for the transmission of heat from the existing heating network to the consumer outlet. Network enhancement measures which entail an increase in the transportable volumetric heat current of at least 50% over the part of the route in question, and the combination of existing networks, are equivalent.

(4) Should the new or expanded heating network extend through the territory of more than one network operators, the network operator to whose network the CHP plant with the greatest installed electrical capacity is connected and which supplies the heating network is obliged to make payment. Article 4, paragraph 3, sentence 2 applies analogously. In the case of more than one CHP plants of the same size, the first to enter operation will be applicable.

#### **Article 6a**

##### **Licensing of new and extended heating networks**

(1) The heating network operator must be granted a licence if the new or extended heating network fulfils the requirements of Article 5a, paragraphs 1 to 2. The application must include:

1. Details of the applicant and network operator;
2. A detailed description of the project, including details of the length of the new or extended heating network (route length), the planned minimum heat flow, a schedule of the investment costs and the date of commissioning;
3. Certification by an auditor or sworn accountant that the requirements of Article 5a, paragraph 1, Nos. 1 and 2 and of the details in accordance with Article 7a, paragraph 1, sentences 2 and 3 have been fulfilled and the amounts deducted in accordance with Article 7a, paragraph 3.

(2) The licence application may be submitted up to 28 February of the calendar year following the year of commissioning of the new or extended heating network. The time of initial commencement of a continuous supply of heat will be deemed commissioning.

(3) Article 6, paragraphs 4 and 5 will apply analogously.

#### **Article 7a**

##### **Payment of premiums for new and extended heating networks**

(1) The responsible authority sets the premium for new and extended heating networks under Article 5a. The premium is one Euro per metre of route for each millimetre of the nominal diameter of newly-laid heating pipe. The premium in sentence 1 may not exceed 20% of the qualifying investment cost of the new or extended network, or five million Euros per project.

(2) Qualifying investment costs are all the costs actually incurred for necessary services by third parties within the scope of new or extended heating networks. They do not include the internal costs of design, planning, calculation, property, insurance and finance. Reductions in investment costs and payments by third parties must be deducted.

(3) The proportion of the premium attributable to the connection between the distribution network and the consumer outlet must be deducted from the amount invoiced to the consumer for connection costs.

(4) The total paid in premiums for heating networks must not exceed 150 million Euros per calendar year. Annual premium payments will be made in the order of licensing, in accordance with Article 6a, subparagraph 1, up to the amount specified in sentence 1. Amounts above this level will be paid in subsequent years, allowing for sentence 2.

## The Purpose of the measure

### Why was it introduced?

Taken directly from the Act (unofficial translation by AGFW):

“The purpose of the Combined Heat and Power Act is to contribute to the objective of increasing the share of electricity produced in combined heat and power plants in the Federal Republic of Germany to 25 % by protecting for a restricted period, modernising and constructing new combined heat and power plants (CHP plants), supporting the launch of fuel cells on the market as well as promoting the construction of new and expanding existing heat networks which supply heat from combined heat and power plants, in the interests of saving energy, environmental protection and achieving the government's climate protection targets.”

As a basic instrument the Combined Heat and Power Act obliges grid operators to connect CHP plants to their grid and give priority to buying electricity from cogeneration. A similar priority exists for electricity from renewable energy sources so the Combined Heat and Power Act clarifies that both these obligations are equal before the law.

For electricity from cogeneration a premium is paid by the grid operator on top of the market price for electricity or the price the CHP plant operator achieved by marketing the electricity from cogeneration himself. By means of a management system the costs for this premium are shifted towards and divided upon all electricity customers. The premium is granted for a limited time only and serves to offset higher investment costs for CHP plants in comparison to condensing power plants.

In order to produce electricity from cogeneration sufficient heat sinks are needed. In order to reach the target of 25 % of electricity from cogeneration the government realised, that incentives had to be granted for opening up new heat sinks. Therefore the aforementioned premium now applies to new and extended heating networks as well, if they are supplied mainly by heat from cogeneration. The premium is one Euro per metre of route for each millimetre of the nominal diameter of the newly-build heating pipe. The premium may not exceed 20 % of the investment cost of the new or extended network, or five million Euros per project.

### For which target groups? National or regional?

The target groups are national CHP plant operators and heating network operators.

### Which activities does it aim to stimulate?

In general the Act tries to stimulate the production of electricity from cogeneration. And in order to stimulate the production it also aims to stimulate the creation of additional heat sinks by incentivizing the building of new and the extension of existing heating grids.

### What results does it expect?

The result is 25 % of electricity from cogeneration by 2020. That translates to almost doubling the current share of electricity from cogeneration of 13 %.

### Is it related to Germany's implementation of any EC Directive?

The Act also serves as the implementation of Directive 2004/8/EC on the promotion of cogeneration based on a useful heat demand in the internal energy market (Cogeneration Directive).

## Impact of Measure

|          | Planning | Generation | Distribution | Demand | Organization |
|----------|----------|------------|--------------|--------|--------------|
| Positive | x        | x          | x            | x      |              |
| Negative |          |            |              |        |              |

Planning:

The Act has a positive effect on planning because grid operators are obliged to connect CHP plants to the grid and buy electricity from cogeneration with priority over conventional electricity. In this context the legal equality between electricity from cogeneration and electricity from renewable energy sources also has a positive effect because electricity from renewable energy sources and electricity from cogeneration block out conventional electricity and can not be used to block each other out. This gives plant operators more certainty in regards their investments and future developments.

Generation:

The Act also has a positive effect on generation because of the premium being paid for electricity from cogeneration. This premium has been extended in the newly amended Act and was introduced to offset higher investment costs for CHP plants. Because of the ecological and climate change benefits CHP has over the separated generation of heat and electricity, CHP and District Heating are natural allies. The connection between the development of CHP and the development of District Heating is finally being acknowledged by the legislative body, when Heating networks can now apply for a payment of the premium used for electricity from cogeneration exclusively before. In this sense District Heating serves as a heat sink for CHP and on top of that provides valuable infrastructure for renewable energy sources and/or heat that would otherwise be wasted.

Distribution:

The Act has a positive effect on distribution since it helps to offset high investment costs involved with the laying of pipelines.

Demand:

Since the Act provides incentives to connect more customers to District Heating networks it also helps the demand side. Connecting more customers to District Heating will secure or even raise heat sales.

Organization:

The Act has no direct effect on the organization side.

**Effectiveness of the measure**Could the measure be considered effective?

The Act can be considered effective.

Due to which reasons? (quantifications if possible)

The Act has only been in force for about a year, making quantifications complicated at this time. AGFW is currently conducting a survey aimed at District Heating utilities and asking them about their plans for the development of District Heating in their company. Results are expected sometime next year. Although quantifications are complicated there are a lot of District Heating utilities currently planning and already beginning (due to the fact that work has to be finished before the network operator can apply for premium payment) with the further development of District Heating in their supply areas. The Act and its incentives have sparked interest in District Heating development strategies.

How well does the measure suit the market conditions of your country?

The measure suits the market conditions in the sense that it aims to offset the relatively high investment costs in both production and distribution of District Heating from CHP.

Are there any recommended changes to this measure?

There are certain clarifications that may be necessary in the context of administrative procedures but the District Heating branch is satisfied with the general direction of the Act.

Is there any review process for this measure and if so what is it?

An interim audit is foreseen for 2011, involving the Federal Ministry for the Economy and Technology, in conjunction with the Federal Ministry for the Environment, Nature Protection and Reactor Safety and the involvement of German industrial and energy industry associations. The interim audit will deal with the development of electricity from cogeneration in Germany, particularly in respect of the achievement of the energy and climate policy objectives of the federal government, the conditions for cost-effective operation of CHP plants and the annual premium payments, taking past and emergent developments into consideration.

## IV. Implementation of EC Directive 2009/28/EC

Country

Germany

| # | Name and reference of measure | Type of measure | Responsible organ | Existing or planned? |
|---|-------------------------------|-----------------|-------------------|----------------------|
|   |                               |                 |                   |                      |

### Quotations from the measure

The Directive has yet to be implemented. Some of the obligations adopted by the Directive, such as the obligation to use minimum amounts of renewable energy sources in the building sector, have already been in effect in Germany.

### The Purpose of the measure

### Impact of Measure

|          | Planning | Generation | Distribution | Demand | Organization |
|----------|----------|------------|--------------|--------|--------------|
| Positive |          |            |              |        |              |
| Negative |          |            |              |        |              |

|                                     |
|-------------------------------------|
|                                     |
| <b>Effectiveness of the measure</b> |
|                                     |