

<b>Title of the measure:</b>	GER26	KfW CO <sub>2</sub> Reduction Programme (KfW-Programm zur CO <sub>2</sub> -Minderung)
------------------------------	-------	--

### General description

The KfW CO<sub>2</sub> Reduction Programme (KfW-Programm zur CO<sub>2</sub>-Minderung) supports those responsible for investment measures in buildings, for example private individuals, housing companies, housing cooperatives, municipalities, districts, etc. If energy saving is an essential part of *contracting* projects, they can be supported as well. The programme started in January 1996. In the beginning, it was restricted to the old federal Länder, since 2001 it has become valid all over Germany. The investors are granted long-term, low-interest loans with fixed interest rates and a repayment-free starting-up time of up to years. Any time, the loan can be repaid at one time without costs.

Since 2005 it has been replaced by the new programme in the area of housing construction and modernisation and energy conservation (KfW). A new programme "Housing Modernisation" (GER42) replaces the former Housing Modernisation Programme 2003 (GER7) and the KfW CO<sub>2</sub> Reduction Programme (GER26).

Support is both given to investments in climatic protection in existing buildings (e. g. heat insulation in walls and windows or exchange of boilers) as well as the building of new KfW Energy Saving Houses "40" and "60", which are defined by maximum standards concerning yearly primary energy consumption (not more than 40 resp. 60 kWh per m<sup>2</sup> useful heated area A<sub>N</sub>). Expenses resulting directly from building operations can be financed up to 100%. The maximum amount of the loan for climatic protection investments is 5 million EUR; KfW Energy Saving Houses "40"/"60" are supported with up to EUR 50 000/30 000 per unit. The credit period is limited to 20 years. Up to three years are repayment-free. Support accumulation of KfW loans with other support programmes is possible.

Between 1996 and 2004, the total volume of approved loans within the KfW CO<sub>2</sub> reduction programme stood at 6 thousand million Euro. In total, 56.8 million m<sup>2</sup> living space in existing buildings was energetically improved. 66 % of the loans were used for heat insulation measures, about 20 % for the installation of energy-efficient boilers (Kleemann/Hansen 2005). The original KfW CO<sub>2</sub> reduction programme was closed at the end of 2004. The new KfW programme "Housing Modernisation" (GER 42) combines the Housing Modernisation Programme 2003 (GER7) and the KfW CO<sub>2</sub> Reduction Programme.

### Impact evaluation (methods and results)

A first evaluation is available for the first phase of the programme which was restricted to the old Federal Länder. Assuming a total credit volume of 5000 million DM (2500 million EUR), the total savings of energy and CO<sub>2</sub> achieved by the programme were estimated at about 21.7 PJ and 1.9 Mt respectively (Ziesing et al. 1997; see Table 1).

Table 1: CO<sub>2</sub> and energy savings in the household sector due to the KfW CO<sub>2</sub> reduction programme (first phase) for the old Federal states

<b>Ex-post evaluation</b>	1995	2000		
direct CO <sub>2</sub> (kt)				
Energy (TJ) (Fuels/Electricity)				
<b>Ex-ante evaluation</b>	1995	2000 <sup>1)</sup>	2005 <sup>1)</sup>	2020
direct CO <sub>2</sub> (kt)		1900	1900	
Energy (TJ) (Fuels/Electricity)		21700	21700	

<sup>1)</sup> CO<sub>2</sub> reduction and energy savings by the programme since January 1996, assuming a total credit volume of 2500 million Euro.

Source: Ziesing et al. 1997

For the period 2002-2004, an evaluation of the KfW CO<sub>2</sub> reduction programme was carried out by the Forschungszentrum Jülich on behalf of the KfW (Kleemann et al. 2003; Brockmann 2006). Methodologically, this evaluation was based on a technical space heating model, including 80 representative building types in the household sector in Germany. Between 2002 and 2004, the total volume of approved loans amounted to 2.4 thousand million Euro (205 000 living units) which is equivalent to a total investment volume of 5.4 thousand million Euro. **The resulting cumulated CO<sub>2</sub> reductions for the period 2002-2004 were estimated at 790 kt (net impact).**

The impact of the KfW CO<sub>2</sub> reduction programme during the period 2000-2003 was calculated by Prognos/IER (2004). During this period, loans with a volume of 3 thousand million Euro were granted, mainly for insulation measures and new boilers (since 2002 also for Energy Saving Houses). As a result of the measures financed between 2000 and 2003, final energy savings of about 1.9 TWh were achieved in the year 2003 (and in the following years). This means a reduction of CO<sub>2</sub> emissions by almost 0.6 Mt for the period 2000-2003 (see Table 2), which is a lower estimate compared to the two other evaluations described above. Apart from that, accumulation with other financial programmes could not be fully eliminated in this approach (Prognos/IER 2004).

Table 2: Yearly CO<sub>2</sub> and energy savings by the measures financed within the KfW CO<sub>2</sub> reduction programme between 2000 and 2003

<b>Ex-post evaluation</b>	2000	2001	2002	2003	2003 cumulated <sup>1)</sup>
direct CO <sub>2</sub> (kt)	100	180	140	150	580
incl. indirect CO <sub>2</sub>	100	150	120	140	500
Energy (TJ) (Fuels/Electricity)	1430	2030	1540	1840	6840
<b>Ex-ante evaluation</b>	1995	2000	2010	2020	
direct CO <sub>2</sub> (kt)					
Energy (TJ) (Fuels/Electricity)					

1) Total savings from the period 2001-2003 in the year 2003.

Source: Prognos/IER 2004

In Germany's NEEAP 2 the impact of the measure is quantified as in the following table:

<b>M05: KfW CO<sub>2</sub> reduction</b>				
<b>Measure in the sense of Article 10(2) of the Energy Performance of Buildings Directive</b>				
Promotion	Start: 1999	End: 2004	Amendment:	
Saving in energy	In total (1995-2016)	Early Action (1995-2007)	Current period (2008-2010)	Forecast (2008-2016)
Power coefficient = 1	13.9 PJ	13.9 PJ	-	-
Power coefficient = 2.5	15.3 PJ	15.3 PJ	-	-
Orientation of the measure:				
Activities associated with the measure	Low-interest long-term financing of CO <sub>2</sub> reduction measures in residential buildings.			
Sector:	Private households	Region:	Germany (total)	
Target group:	Home owners	Application:	Building envelope (GEB), technical building equipment (TGA)	
Promoter of the measure:	KfW	Activity:	On average (1996-2004) 6.3 million m <sup>2</sup> redeveloped living space per year	
Methodological details:				
Method:	Formula F2.5.5.4		Evaluation:	
Sources/References:	Prognos/GWS2009			

BMW i 2011

### Historical data

In the beginning, the programme was restricted to buildings in the old Federal states. Since 2001, it has become valid all over Germany. Since 2005, the KfW programmes to promote climate protection have been restructured.

## References

- BMWi 2011 (Federal Ministry of Economics and Technology) 2nd. National Energy Efficiency Action Plan (NEEAP) of the Federal Republic of Germany in accordance with the EU Directive on Energy End-use Efficiency and Energy Services (2006/32/EC) and the Act on Energy Services and other Energy Efficiency Measures (Energiedienstleistungsgesetz, EDL-G). July 2011 (<http://www.bmwi.de/Dateien/BMWi/PDF/zweiter-nationaler-energieeffizienz-aktionsplan-der-brd.pdf>)
- BMWi (Federal Ministry of Economics and Technology) (2011) 2nd. National Energy Efficiency Action Plan (NEEAP) of the Federal Republic of Germany - Methodological Accompanying Document - in accordance with the EU Directive on Energy End-use Efficiency and Energy Services (2006/32/EC) and the Act on Energy Services and other Energy Efficiency Measures (Energiedienstleistungsgesetz, EDL-G). July 2011
- Brockmann, L.: KfW-Förderung für Energieeffizienzmaßnahmen – Angebote, Daten. Presented at the Workshop for the Implementation of the Energy Efficiency and Energy Service Directive on 30./31. January 2006 in Berlin. <http://www.bmwi.de/BMWi/Navigation/Energie/Energieeinsparung/energieeffizienz-workshop-national.html>
- Kleemann, M. et al.: Klimaschutz und Beschäftigung durch das KfW-Programm zur CO<sub>2</sub>-Minderung und das KfW-CO<sub>2</sub>-Gebäudesanierungsprogramm. Evaluation of the Programmes on behalf of the Kreditanstalt für Wiederaufbau (KfW). Schriften des Forschungszentrums Jülich. Reihe Umwelt/Environment. Band/Volume 34. Forschungszentrum Jülich 2003 ([www.fz-juelich.de/zb](http://www.fz-juelich.de/zb))
- Kleemann, M.; Hansen, P.: Evaluierung der CO<sub>2</sub>-Minderungsmaßnahmen im Gebäudebereich. Study on behalf of the Bundesamt für Bauwesen und Raumordnung (BBR). Schriften des Forschungszentrums Jülich. Reihe Umwelt/Environment. Band/Volume 60. Forschungszentrum Jülich 2005 ([www.fz-juelich.de/zb](http://www.fz-juelich.de/zb))
- Prognos AG, IER: Analyse der Wirksamkeit von CO<sub>2</sub>-Minderungsmaßnahmen im Energiebereich und ihre Weiterentwicklung. Study on behalf the Federal Ministry of Economics and Labour. Basel, August 2004
- Ziesing, H.-J. et al. Politiksznarien für den Klimaschutz. Jülich, Forschungszentrum 1997