Initiative EnergieEffizienz – Energy Efficiency Pays Off.

By Steffen Joest

1 The *Initiative EnergieEffizienz* - a strong alliance for energy-efficient electricity in Germany.

The challenges of energy politics are manifold: security of supply, profitability and environmental compatibility. In this context, energy efficiency plays a key role – resources can be preserved, the consumer's energy bill decreased, competiveness among companies strengthened and, finally, carbon dioxide emissions reduced.

The national initiative for energy efficiency (*Initiative EnergieEffizienz*) launched by the Deutsche Energie-Agentur GmbH (dena) is both informational and motivational.

dena is Germany's competence centre for energy efficiency and renewable energies. Its main objectives are the rational and thus environmentally friendly production, conversion and use of energy, and the development of sustainable energy systems, with a particular emphasis on increasing the exploitation of renewable energy sources. To this end it initiates, coordinates and implements innovative projects and campaigns at a national and international level, and provides information to end consumers. It works with all social groups active in politics and the economy and develops strategies for the future supply of energy.

Addressing end consumers in all sectors, dena's *Initiative EnergieEffizienz* offers comprehensive tools and information which aim to raise awareness of and increase energy efficiency.

Designed as a public private partnership, the initiative is supported by dena and the energy suppliers EnBW, E.ON, RWE and Vattenfall Europe, as well as the Federal Ministry of Economics and Technology (BMWi).

Active since 2002, the *Initiative EnergieEffizienz* aims to encourage intelligent purchasing decisions and better habits where the use of electricity is concerned with a great variety of products for end consumers in private households, industry and production, and the services sector.

Existing potential to save energy in industry and production, in the services sector and public institutions and in private households must be tapped rigorously and without any loss of quality. The *Initiative EnergieEffizienz* campaign was established as an umbrella to provide decision makers and protagonists in all consumer sectors with information and thus to create a market for energy efficiency and increase transparency within the market. With its comprehensive activities, the initiative has successfully created a strong network of opinion leaders in politics, industry and associations. The highlight each year is the annual *Stromeffizienz* conference held under the patronage of the German Minister for Economics and Technology, which provides the many stakeholders with a discussion and networking forum. This year's *Stromeffizienz* emphasised the importance of energy efficiency as an economic factor. More than 300 participants and high-level speakers exchanged their knowledge of aspects and trends in the efficient use of electricity.

Additionally, three to four expert workshops (technical discussions) on current mechanisms and measures for, and trends in the efficient use of electricity are organised every year. 30 to 40 experts discussed the following topics in the most recent one-day workshops:

The next generation of energy-efficient lighting, energy-efficient technologies and approaches in the field of ventilation and cooling, increasing dynamic energy efficiency markets, and the way forwards in the use of electricity in private households, to mention just a few examples.

The Initiative is also active when it comes to addressing and informing members of the German and the European parliaments. Members of the parliament are invited to a breakfast or dinner debate once a year, the last event being held in Brussels in October 2008 in cooperation with EUFORES.

To complete its activities, all of the initiative's products and tools can be accessed on its German-language website www.initiative-energieeffizienz.de, which functions as a portal for tips and facts on the efficient use of energy in all sectors.

2 The *Initiative EnergieEffizienz* - energy efficiency in private households.

A private household can quite easily save up to a quarter of its energy consumption without any loss of comfort simply by using modern, energy-efficient appliances in a smart way.

Providing background information in information brochures and leaflets with tips for consumers on the purchase of energy-efficient equipment and lamps and their intelligent usage, detailed facts and comprehensive advice on energy efficiency, and information materials such as calculation disks for energy-efficient lighting and white goods, the initiative encourages the end consumer to use electricity more efficiently. The German-language website www.stromeffizienz.de is the central information platform for private end consumers, offering selection tools for large household appliances, sample calculations, lists of top appliances, and databases of the most efficient appliances currently available on the market.

The initiative cooperates closely with retailers, consumer advice centres and consulting institutions. The nationwide network covers more than 8,500 electric and electronic retailers, department stores, do-it-your-self stores and discounters, as well as 1,500 centres and institutions. The activities of the campaign are supported by information days and promotional activities in stores such as IKEA or MediaMarkt carried out by regional project partners. An interactive exhibition on energy efficiency is available for hire for use in shopping malls or at fairs.

A further approach is the provision of qualified energy savings consultations at home or at the point of sale, a service which is backed up by special guides and interactive calculation tools. This professional advice helps consumers to recognise ways of saving electricity. enabling them to take action and strengthening the demand for the most energy-efficient products. A special focus on young people rounds off the initiative's approach to all target groups. Special materials for schools are provided and competitions are run which encourage school pupils to use energy more efficiently. The most recent example is the CO_2nnection film contest for pupils aged 12-18, in which short films

on energy saving can be submitted via the online platform YouTube. Winners will receive energy-efficient notebooks and camcorders.

All of the *Initiative EnergieEffizienz* private household activities are accompanied by continuous and intensive press and media work. The communication activities include press releases with tips on saving energy, articles in professional journals and cooperation with selected magazines. Around 14,250 articles were published in newspapers and magazines or broadcast on TV and radio between October 2002 to August 2009.

3 The *Initiative EnergieEffizienz* - energy efficiency in industry and production.

In many areas of production, costs and energy consumption can be reduced by up to 50%. This arm of the initiative is aimed primarily at small and medium-sized enterprises, offering information on the realisation of measures and ways of increasing energy efficiency. The initiative's tools and materials were devised for decision makers at all relevant corporate levels. Outstanding projects for the efficient use of energy in industry and production are awarded the status of 'reference project' and can be viewed in a best practice database at the initiative's German-language website www.industrie-energieeffizienz.de. Additionally, fact sheets on these reference projects are produced in electronic and paper form for distribution and promotion at events, conferences and trade fairs. Information on the reference projects is also communicated through the press to ensure that other enterprises are informed of these outstanding projects and third parties given ideas on how to realise an energy-efficient project with a particular technology or within a certain industry.

dena

Industry & Production

1st Award: Energy Efficiency Award 2009.

ebm-papst Mulfingen GmbH & Co. KG – construction of new energy-efficient production plant in Holleebach.

The Deutsche Energie-Agentur GmbH (dena) – the German Energy Agency – is presenting the International Energy Efficiency Award under the scope of its initiative EnergieEffizienz together with Deutsche Messe. The 1st award goes to ebm-papst Mulfingen GmbH & Co. KG.

Project description.

At the end of 2007, ebm-papst Mulfingen GmbH & Co. KG completed construction of a new production plant in Holleebach. The plant is 13,600 m² and consists of five separate building units: Production, battery, administration with canteen and goods in and out. During construction of the new plant, the concept was to cover the industrial building's entire heat requirement of around 750,000 kWh per year by optimally using waste heat generated in the production process. A large proportion of the heat is generated from lathes, robots and compressors.

Due to the regulated displacement ventilation, the air under the roof of the hall is kept at a temperature that can be used to heat adjoining building parts. Excess heat is stored in an 11,000 ltd sprinkler container. This also serves as a heat sink for the heat pump. The stored heat is used efficiently to heat the remainder of the building. If the external air temperature rises above 24 °C, the building can be cooled using the heat pump. Electricity consumption for the cooling system, compared to a conventional system, has been reduced by 19 percent from 83,300 kWh to 67,750 kWh thanks to the use of energy-saving technology.

Energy efficiency measures.

- Waste heat recovery from work machines.
- Optimised heat distribution.
- Use of a heat pump with a coefficient of performance greater than 4.
- Displacement ventilation via source air outlets.
- Optimal dimensioning of the piping.
- Use of heating and cooling water pumps with energy efficiency class A.
- Use of energy-saving EC fans.
- Use of a 155-kWp photovoltaic system.

Figures that speak for themselves.
(heating, cooling and ventilating system)

	New constructions with waste heat recovery	New constructions without waste heat recovery[2]	Savings through waste heat recovery
Energy costs[1]	€17,728	€95,213	€67,485
Power consumption	67,750 kWh/year	83,300 kWh/year	15,550 kWh/year
Thermal energy consumption	2,400 kWh/year	750,000 kWh/year	747,600 kWh/year
CO_2 emissions[3]	43 t/year	340 t/year	297 t/year
Investment	€1,000,000	€940,000	Additional costs from waste heat recovery €60,000

Annual energy cost savings[1]	€67,485
Energy savings (total)	91%
Electricity savings	19%
Savings on thermal energy	99%
Return on investment[4]	140%

Another focus of the campaign is on the optimisation of interdisciplinary technologies such as pumping, compressed air, cooling and ventilation technologies. The brochure “Successful Record for Pump Systems: Energy Efficiency Pays Off.“ presents successful examples for the increase of energy efficiency in companies. The average energy saving potential is as high as 30% per company, and 70 consultancies have been carried out so far. The majority of the companies could save between EUR 2,500 and 5,000 each year (assuming an electricity tariff of 10 cents per kWh).

Enterprises in industry and production implementing outstanding energy saving measures are also invited to participate in the international Energy Efficiency Award. The Award was first introduced in 2007 to single out energy efficiency pioneers. The prizewinning projects demonstrate just how effective energy efficiency measures can be in industry and production. The competition entries are

assessed by a competent jury on the basis of their energy savings, environmental impact, economic viability, transferability to other companies and the degree of innovation. Prizes worth EUR 30,000 are awarded to the winners during the WORLD ENERGY DIALOGUE at the HANNOVER MESSE. In 2009, the following enterprises received the award:

- 1st prize: ebm-papst Mulfingen KG und Co. (construction of a new, energy-efficient production plant in Hollenbach)
- 2nd prize: Brauerei Bosch GmbH und Co. (use of a new and energy-efficient boiling process for brewing beer)
- 3rd prize: Evonik Industries AG (innovative efficiency measures within the scope of a company-wide energy management plan)

The newest of these comprehensive information and service products is a handbook on operational energy management and an accompanying web special. Both products address all levels of energy management decision makers: executives, controllers, production specialists and energy managers. The handbook shows how effective energy management can be implemented in business and each chapter includes precise steps for the corresponding actions. Successful examples show how

energy management can be implemented in companies. The web special uses testimonials to highlight the different facets and advantages of an energy management system.

With its varied portfolio, the initiative for industry and production functions as a gateway for energy service providers, consultants and planners, helping to develop the market for energy efficiency.

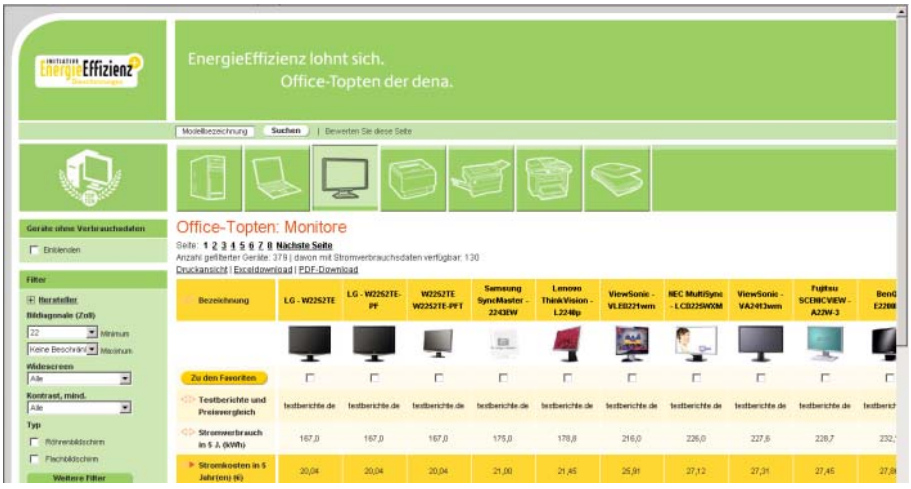
4 The *Initiative EnergieEffizienz* - energy efficiency in the services sector and public institutions.

The campaign for the services sector and public institutions initiated by the *Initiative EnergieEffizienz* provides decision makers with practical information on how to lower operating costs in offices, public organisations and service enterprises on a permanent basis. The initiative brings consultants and the producers of efficient solutions together with end users in the institutions.

75% of the energy costs in data processing centres can be saved by using efficient equipment and a modern cooling and ventilation system. A special guide shows the energy saving potential and discusses concrete measures.

Another critical aspect in the saving of energy in the services sector and institutions is the encouragement of energy-efficient end user behaviour. Brochures, posters, placards, postcards and stickers on ICT, lighting and ventilation can be used to make employees aware of energy efficiency, and energy costs can be reduced with little effort. The materials can be used for special promotion days in the institutions.

The amount of office equipment run on electricity is growing continuously in the services sector. Not only its use by the employees, but also the intelligent procurement of the equipment is therefore crucial. Consumption levels differ enormously from machine to machine and it is therefore worth checking energy efficiency before deciding to purchase. The most efficient machines can quickly be identified on the basis of individual requirements with the online selection tool 'Office TopTen'. This database provides not only the top ten appliances for each category, but also functions as a general database for the procurement process. Additional tools and functions assist the purchaser in the tender process.

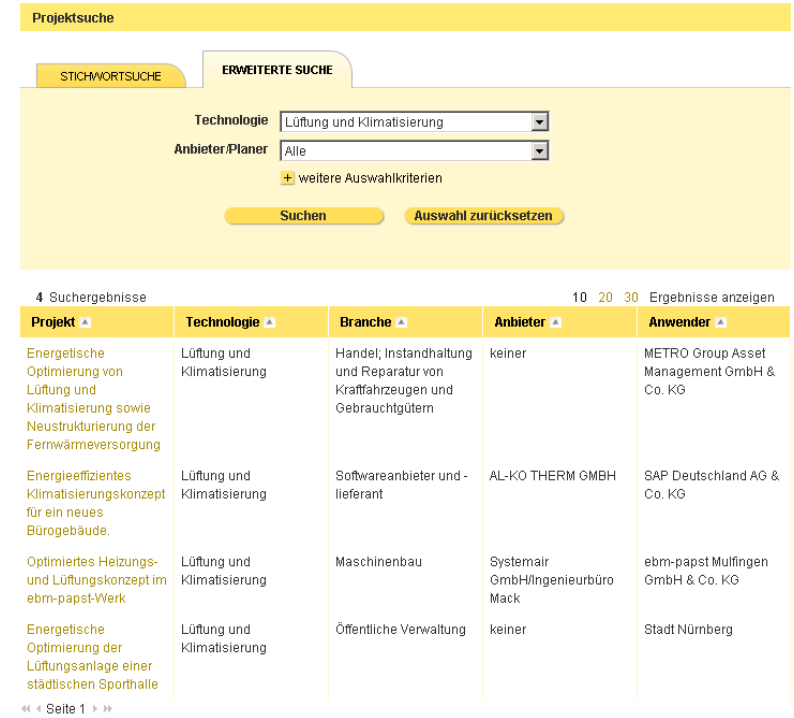


Comprehensive information on the procurement process can be found in the purchasing guide "Energieeffiziente Bürogeräte professionell beschaffen.", which can be downloaded free of charge

from www.energieeffizienz-im-service.de. Seminars and training on the procurement of energy-efficient devices round off the initiative's procurement products.

The campaign's portfolio is vast, and also covers energy-efficient lighting in offices. Up to 75% of the cost of lighting could be saved if obsolete lighting was replaced with modern systems. The initiative's website and its information brochures list valuable solutions for successful modernisation. Online databases help the end user to find lighting consultants close to home.

Energy-efficient ventilation and air-conditioning is another area in which energy can be saved in the services sector, especially as around two-thirds of non-residential buildings are equipped with such systems. The initiative estimates that up to 40% of the cost of energy could be saved by using modern technologies and by planning and using systems to their full potential.

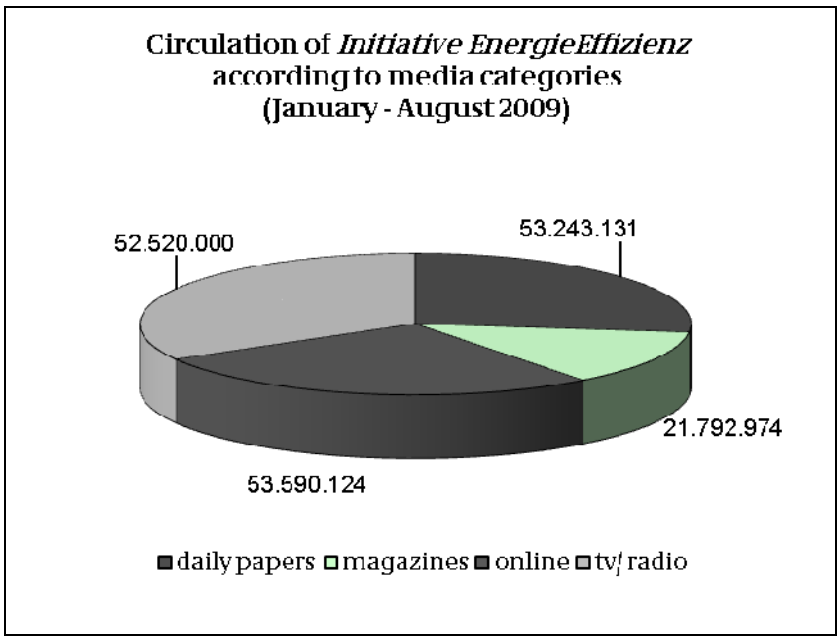


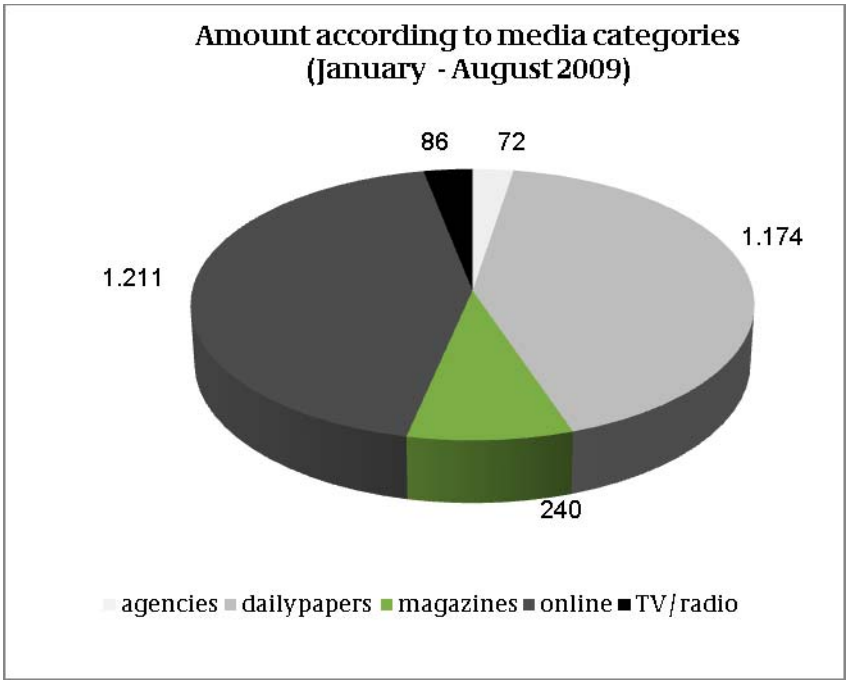
Projekt	Technologie	Branche	Anbieter	Anwender
Energetische Optimierung von Lüftung und Klimatisierung sowie Neustrukturierung der Fernwärmeversorgung	Lüftung und Klimatisierung	Handel; Instandhaltung und Reparatur von Kraftfahrzeugen und Gebrauchtgütern	keiner	METRO Group Asset Management GmbH & Co. KG
Energieeffizientes Klimatisierungskonzept für ein neues Bürogebäude.	Lüftung und Klimatisierung	Softwareanbieter und -lieferant	AL-KO THERM GMBH	SAP Deutschland AG & Co. KG
Optimiertes Heizungs- und Lüftungskonzept im ebm-papst-Werk	Lüftung und Klimatisierung	Maschinenbau	Systemair GmbH/Ingenieurbüro Mack	ebm-papst Mulfingen GmbH & Co. KG
Energetische Optimierung der Lüftungsanlage einer städtischen Sporthalle	Lüftung und Klimatisierung	Öffentliche Verwaltung	keiner	Stadt Nürnberg

5 Evaluations made by the *Initiative EnergieEffizienz* and their findings.

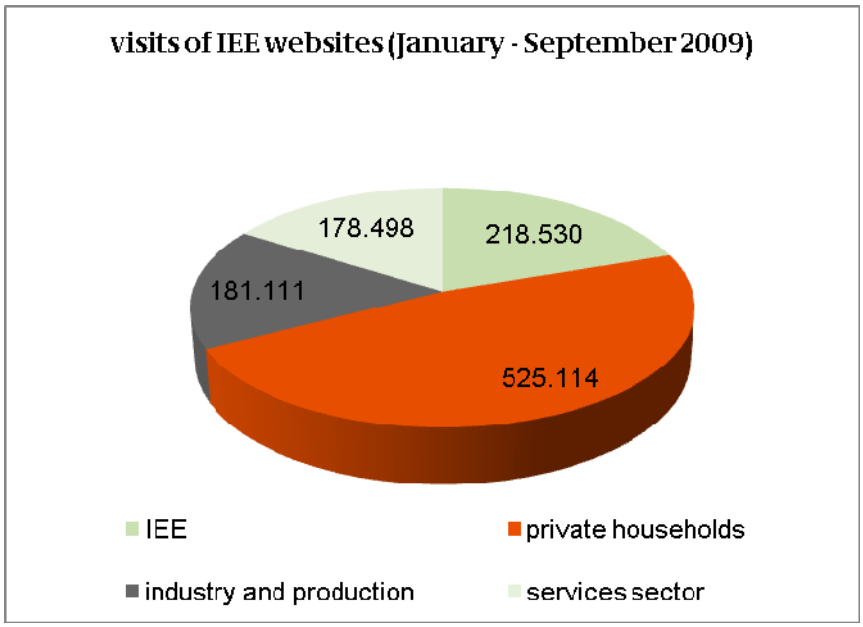
The above are examples of just a few of the various activities and products of the *Initiative EnergieEffizienz* and its campaigns. The materials provided and the initiative's portfolio are continuously evolving to meet the demands of the end consumer in all sectors and to pursue the goal of creating a market for energy efficiency.

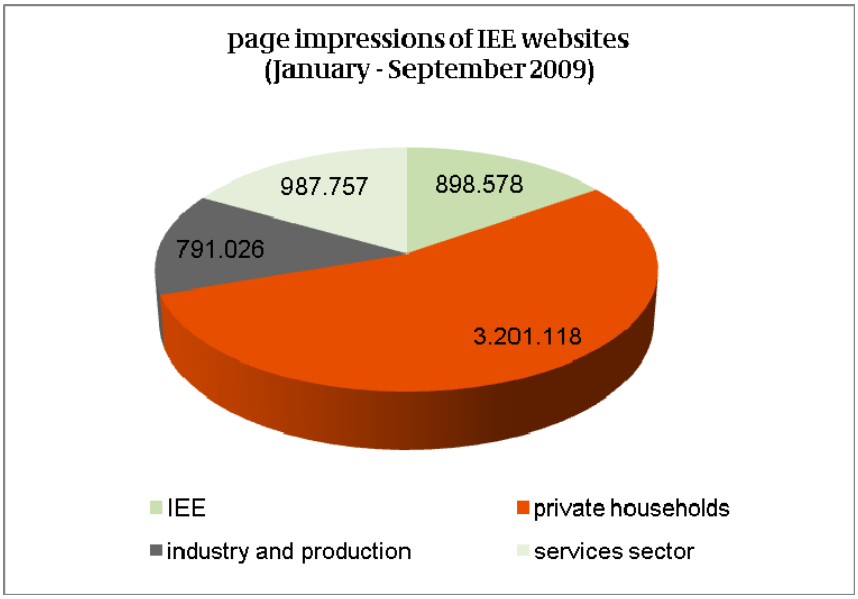
In addition, the activities and the impact of the *Initiative EnergieEffizienz* are continuously evaluated and measured. Web and media statistics are assessed on a monthly basis. In August 2009, 2,783 articles had appeared since the beginning of the year in daily papers, magazines, online and broadcasting media with a total circulation of 181,146,229 million.


Circulation of *Initiative EnergieEffizienz*
according to media categories
(January - August 2009)
52.520.000
53.243.131
21.792.974
53.590.124
daily papers
magazines
online
tv/ radio


Amount according to media categories
(January - August 2009)
86
72
1.174
1.211
240
agencies
dailypapers
magazines
online
TV/radio

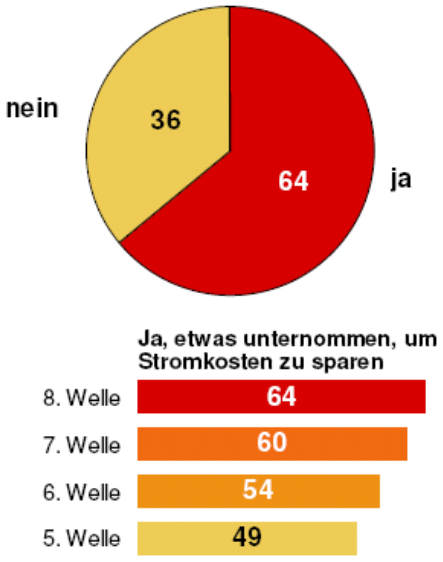
The number of visitors to the websites of the *Initiative EnergieEffizienz* emphasises just how great an interest is shown in the topic of energy efficiency, and the demand for information: 1,103,253 visits and 5,878,479 page impressions were recorded between January and September 2009.

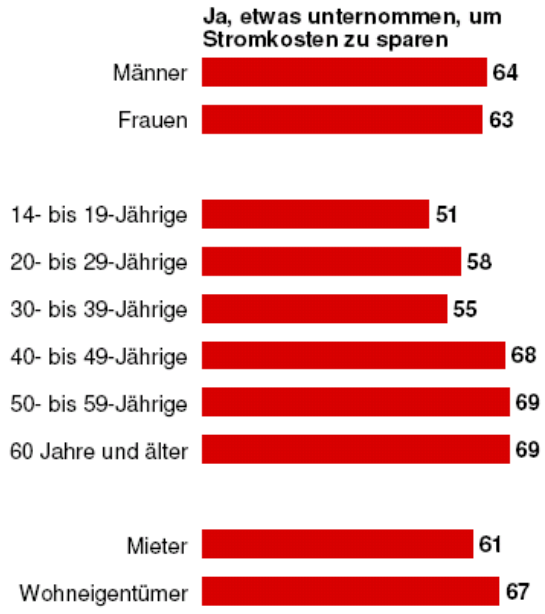




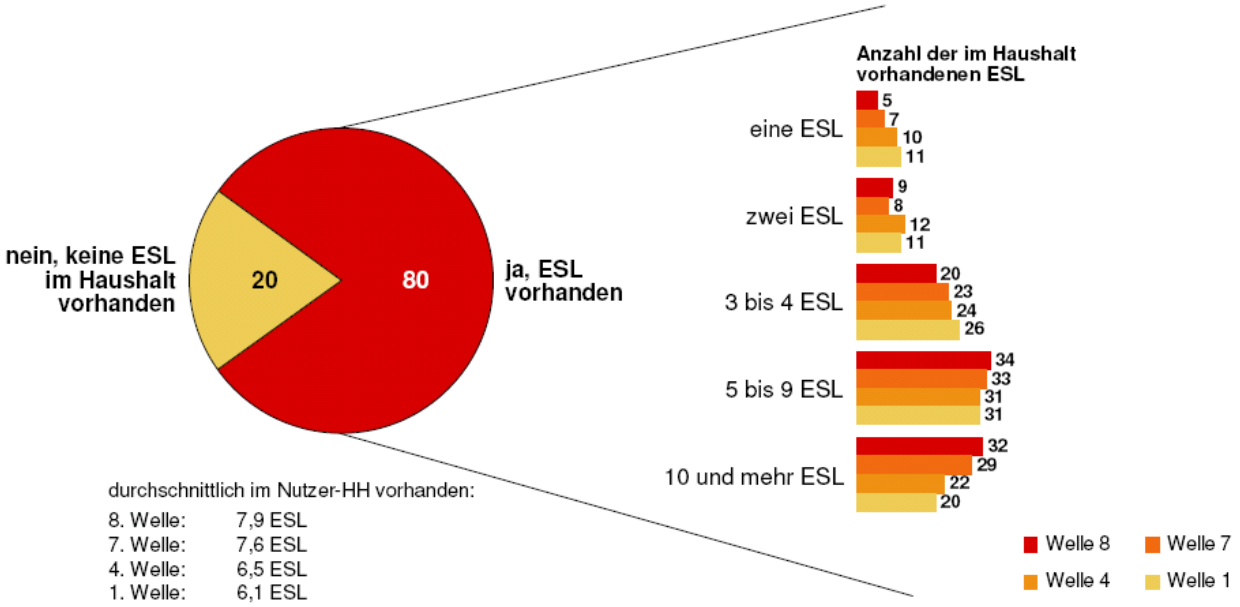
A biannual report on the activities and key figures of the initiative campaigns is published in German on www.initiative-energieeffizienz.de in order to increase transparency. In addition, dena defines annual operational goals, and each campaign defines project goals which are monitored on a three-monthly basis. This routine ensures that the output of the campaigns is of a high quality and facilitates appropriate and timely action if a goal should not be achieved.

The representative annual survey conducted by the campaign for private households examines the attitude, mindset and level of knowledge regarding the efficient use of electricity in private households. First conducted in 2003, the annual results are compared and carefully analysed. The focus of the survey lies on the buying behaviour of the relevant end consumers in the field of lighting, household appliances, ICT and consumer electronics and on the way they use the corresponding appliances. The survey has shown, for example, that a special line of communication is needed to address consumers under the age of 19. On the other hand, 64% of the people questioned in 2008 had taken action to save energy in their household. In 2005, this figure was only 49%.





56% of these end users say they primarily save energy by using energy-efficient lamps and paying more attention to the stand-by function on their appliances. The percentage of consumers using energy-saving lamps (ESL) has also increased steadily over the last four years:

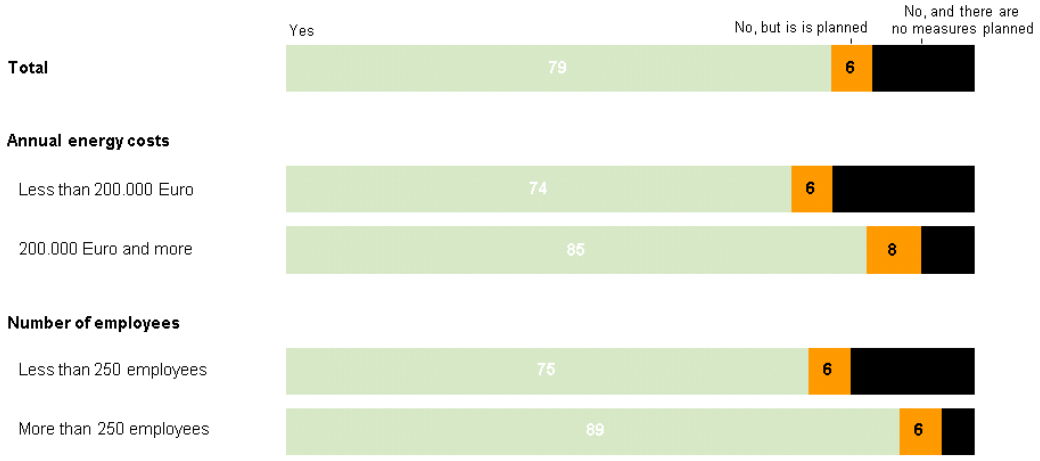


On the basis of these annual findings, the campaign focuses its activities on the “low interest” aspect of energy efficiency. The campaign's impact underlines the success of this approach. The change in public awareness and attitudes between 2002 and 2008 (according to a survey carried out by forsa) is significant: recognition of the EU Energy Label, for instance, has increased by 14%, the use of switched extension leads by 22%, appreciation of the cost-saving aspect of compact fluorescent lamps (CFL) by 11%, knowledge of the many varieties of CFL by 25% and the implementation of energy saving measures by 15%.

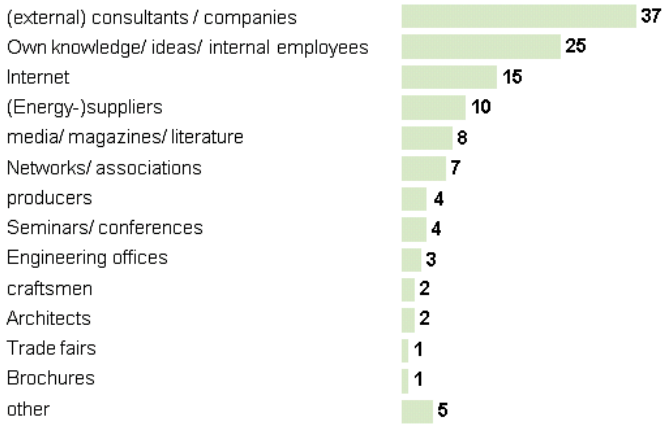
The campaign for industry and production also carries out surveys, but on a less regular basis. However, the central findings of such surveys are used to define new products such as the guide to energy management and meeting the needs of end consumers. The survey of 500 enterprises

conducted at the end of 2008 clearly showed that the majority of enterprises have carried out energy saving measures or are planning to do so:

Have you taken energy efficiency measures, meaning measures aiming at the decrease of energy usage, in the last years?



Which information sources have you used?



The survey also noted that most decision makers in charge of energy management in an SME are more likely to drawn on (external) consultants and service providers than on internal sources. However, a quarter of the companies call upon their own employees and internal knowledge. Seminars, conferences and brochures are hardly used at present, and the initiative would like to close this gap with its many products and services.

With its many years of experience, the *Initiative EnergieEffizienz* has been able to develop a profound knowledge of useful mechanisms and strategies to increase awareness of the importance of energy efficiency among end users in all sectors. The initiative has established itself as a major point of contact for information and tools supporting an increase in energy efficiency and thus the development of the market for energy efficiency.