

# NEWS AT SEVEN

ENERGY EFFICIENCY NEWS FROM THE CZECH REPUBLIC

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## Support for heat production from RES

*The National Action Plan for development of renewable energy sources until 2020, which the Czech Republic submitted to the European Commission in connection with the meeting of the EU's objectives defined in the Climate and Energy Package, anticipates continuous support for their use, especially of biomass, for electricity and heat generation. Between 2010 and 2020, the total production of "green" electricity in plants processing biomass and biogas should increase by more than 4 TWh, which, given the current prices, means additional costs amounting to CZK 10 to 15 billion.*

The association of biomass-utilising organisations, headed by CZ Biom, has come up with the idea of modifying this development in favour of greater use of heat by means of introducing operating support in the form of premiums to the market price of the supplied heat, the "green bonus". Only more significant heat producers, holders of a licence for its generation and sale pursuant to the Energy Act, would be entitled to receive this financial support.

SEVEN was addressed by the submitters of this proposal and asked to verify its advisability and practical feasibility. The conclusions of the drawn-up analysis reveal that the suggested support really is feasible in practice, not to mention beneficial – it would be less expensive than supporting the further development of

plants generating electricity from biomass and biogas, even if it would be accorded to the existing producers. In their case, a considerable motivating role could be played by the seeking of meaningful use of the today frequently wasted heat (the average actual efficiency of the current plants (co-)burning biomass is between 50 and 60%). Using solid biomass and biogas for heat generation can lead to attainment of energy efficiency surpassing 80%, i.e. 1.5 to 2 times more.

The proposed support was therefore recommended for implementation and the association intends to strive for its inclusion in the new bill on supported energy sources, which is expected to be adopted this year (2011).

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## SUPPORT FOR ENERGY SAVINGS AND RENEWABLE SOURCES WITHIN THE ECO-ENERGY PROGRAMME

*The Operational Programme Enterprise and Innovation (OPEI) makes it possible to draw money from the EU for, among other things, reducing the high energy intensity of industry in the form of energy savings and for the development of small and medium-sized enterprises (SME) in the area of utilisation of renewable energy sources (RES). Within the OPEI, there is an independent priority axis, No. 3 – Efficient Energy (the ECO-ENERGY programme), within which subsidies for the implementation of projects pertaining to energy efficiency can be granted to small and medium-sized businesses, as well as large companies, for projects aimed at energy saving. The following article focuses on the implementation of the programme's Call III and the expected benefits arising from the supported energy-saving and use of renewable sources projects within the previous calls.*

The minimum subsidy for a single project is CZK 500,000. Owing to the high demand, the Ministry of Industry and Trade decreased the original maximum possible subsidy (CZK 250 million) per application within Call III to CZK 100 million. In lin-

kage to this presumption, the resulting total required investment subsidies amounted to approximately CZK 7,564 million.

The projects were evaluated according to the selection criteria within

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## Efficient lighting does not only apply to light sources in households

*At the beginning of September 2011, another stage in the gradual phasing out of incandescent lamps was launched. As of 1 September 2011, traditional clear 60W incandescent lamps cannot be placed on the market. It is a result of the European Regulation No. 244/2009, which pertains to incandescent lamps mainly used in households. However, there is another regulation in force, namely No. 245/2009, which relates to a wider scale of light sources and luminaires that are above all applied in the service sector, industry and public lighting. What is its aim and what are the consequences in practice?*

Commission Regulation 245/2009 (supplemented by Regulation 347/2010) is a comprehensive document pertaining to the efficiency and labelling of linear and compact fluorescent lamps without integrated ballasts, HID lamps, ballasts and luminaires. The aim of the regulation is to curb the growth of consumption and reduce the use of mercury in light sources. The most significant » cont. » page 2

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## « EFFICIENT LIGHTING DOES NOT ONLY APPLY..., cont.

changes brought about by the regulation are as follows:

### Fluorescent lamps

The sale of fluorescent lamps with inefficient phosphor material (halophosphate) with low colour rendering index was reduced back in 2010. These lamps have a suitable replacement in the form of more efficient fluorescent lamps with three-band phosphor with good colour rendering ( $R_a \geq 80$ ). Other significant changes include a ban on inefficient linear fluorescent lamps with the diameter of 32 mm (T10) and 38 mm (T12), which comes into force in April 2012. Nevertheless, these fluorescent lamps can be relatively easily replaced by common linear fluorescent lamps with the diameter of 26 mm (T8). From April 2012, only efficient fluorescent lamps with good colour rendering index ( $R_a \geq 80$ ) will be available.

Commission Regulation 245/2009 contains a table specifying the minimum luminous efficacy for individual types of linear fluorescent lamps (with the diameter of 26 mm/T8 and 16 mm/T5) and the most frequent types of compact fluorescent lamps without integrated ballast. Pursuant to the Regulation, from 2017 onwards two-pin compact fluorescent lamps used with magnetic ballast will be phased out. This will result in the replacement of the luminaires by new ones equipped with an electronic ballast.

In addition to the requirements for the fluorescent lamps' energy efficiency, which have been in force since 2010, from April 2012 the Regulation will also include qualitative requirements: lamp lumen maintenance factor, lamp survival factor and the life span.



### Discharge lamps

In April 2012, new requirements for the energy efficiency of high-pressure sodium and metal halide discharge lamps with E27, E40 and PGZ12 caps, which are primarily used in public lighting, will come into force. By this time, the least efficient HID lamps will have been withdrawn from the market, with only the highly efficient lamps remaining available. From 2015 on, high-pressure mercury discharge lamps, as well as their direct replacements (high-pressure sodium discharge lamps capable of working with the original ballast), will be phased out. In the Czech Republic, mercury discharge lamps are no longer used much – according to the 2010 public lighting research, they represent approximately 4% of light points. Nevertheless, as a result of the Regulation, it will be necessary to replace these – usually very old – luminaires and refurbish the public lighting system. From 2017, the requirements for the energy efficiency of metal halide discharge lamps will be even more stringent. As in the case of fluorescent lamps, the Regulation also stipulates the quality parameters of discharge lamps: lamp lumen maintenance factor, lamp survival factor and the life span.



### Ballasts and luminaires

Ballasts are an essential part of luminaires used with fluorescent or HID lamps. Commission Regulation

245/2009 classifies ballasts into groups in dependence on their efficiency and furthermore stipulates the minimum efficiency for individual periods until 2017. It also determines the maximum standby losses, which from 2012 onwards will be 0.5 W. The requirements for luminaires link up to this (labelling and the requirement for their being compatible with the future ballasts). As of 2012, only luminaires with electronic ballasts will be sold and from 2017 it will not be possible to use magnetic ballast even as a replacement in an existing lamp.



### Product information

Commission Regulation 245/2009 does not only pertain to energy and quality requirements, it also prescribes that manufacturers should precisely label and inform of their products' properties. Accordingly, from 2010 manufacturers must provide information relating to the nominal and rated wattage, the luminous flux, the efficacy, the lamp lumen maintenance factor, lamp survival factor, the mercury content, the colour rendering index, the colour temperature, and other information.

In 2005, the annual electricity consumption of the products to which the Regulation pertains was estimated at 200 TWh. If the respective measures were not adopted, by 2020 this consumption would increase to approximately 260 TWh. The energy saving resulting from the measures taken is expected to amount to 38 TWh.

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## CHALLENGE BIBENDUM 2011 IN BERLIN

From 18 to 22 May 2011, the 11<sup>th</sup> edition of the global forum on sustainable road mobility, organised by Michelin, took place at the former Tempelhof airport in Berlin. The event, named after the company's mascot, „Bibendum“, aimed to rally together various traffic specialists to discuss and share experience and voice their opinions of the problems resulting from global traffic development. This year's Challenge Bibendum was attended by approximately 5,000 specialists and journalists from all over the world.

The forum participants paid great attention to reduction of the energy intensity of transport and its general impacts on the environment. A special seminar devoted to bus transport indicated the direction in which this segment is heading – from using buses, which can, at a much lower cost, provide a similar transportation capacity to that of railway transport (metros, trains, trams), through modernisation of vehicles' design and interior (with a view to raising the attractiveness and travel comfort) to deployment of new technologies (hybrid, fully electrically driven vehicles).

The trend of „electromobility“ was omnipresent at the forum, especially when it comes to passenger cars. Visitors had the opportunity to try out all the known models of electromobility which have been or will soon be placed on the market, and test their fortes: quiet engine running and good pick-up. Yet the mass development of electromobility

depends on the progress in batteries – to become more competitive, their price has to decrease (below 300 EUR/kWh) and their specific capacity increase (above 150 Wh/kg). With regard to the extensive research and development carried out in this area, this would seem to be attainable within this decade.

Sustainable mobility can also have synergic effects for sustainable energy use, as was indicated by the innovative concept presented by AUDI. Within the next 2-3 years, the automobile manufacturer intends to roll out a pilot wind-power plant project and use the electricity generated in it not directly for vehicles but (through electrolysis) for production of hydrogen which will be transformed into methane in a catalytic reactor utilising airborne CO<sub>2</sub>. This methane will serve as the fuel for the automobile that AUDI plans to launch (the TCNG model). The benefit of this solution lies in the fact that it removes the problems connected with building up the necessary hydrogen infrastructure – instead, the existing infrastructure using natural gas will be made use of. The solution thus has the potential to offer automobiles with very low CO<sub>2</sub> emissions (their precise level is not yet known) and help in tackling the problem with intermittency of electricity generated from wind.

For more information, visit:  
[www.michelinchallengebibendum.com](http://www.michelinchallengebibendum.com)



[www.eumayors.eu](http://www.eumayors.eu)

## THE COVENANT OF MAYORS

The Covenant of Mayors is a European project entailing co-operation between individual local governments and communities that have pledged to protect the climate and want to create energy conceptions at the local level. This should lead to significant improvement in efficient use of energy and increased energy self-sufficiency.

In the Czech Republic, promotion of the Covenant of Mayors has been dealt with by SEVEN, The Energy Efficiency Center, which can, within the Come2CoM project, offer advice and cooperation on the creation of the Sustainable Energy Action Plan, needed in order to become a member of the Covenant.

For more information, visit [www.svn.cz/pakt](http://www.svn.cz/pakt) (in Czech), or write to the contact email address.

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# The world's first renewable heat incentive to be launched in Great Britain

*The United Kingdom is set to become the first EU member state to introduce operational support in the form of tariffs paid per unit of heat generated from renewable energy sources, within the Renewable Heat Incentive.*

This support is expected to meet the British government's ambitious goal of increasing the share of heat generated from renewable energy sources (RES) in the total heat supplies in the UK from the current 1.5% to 12% in 2020. This should significantly contribute to attaining the target of a 15% total share of energy produced from RES in the UK's gross final consumption in 2020.

The first phase of the Renewable Heat Incentive (RHI) entails payment of the tariffs to sources in industry, the service and public sectors from 2011, while the second phase will include support for households too. Within the scheme, the British government plans to outlay a total of 860 million pounds between 2011 and 2014/15. During the first phase, households will be entitled to an investment subsidy for installing selected technologies that apply RES for heat generation. Approximately 15 million pounds will be allocated for this Renewable Heat Premium Payment.

The tariffs paid within the RHI fulfil the function of **bonuses, extra payments to the price** producers of heat from RES will receive from their consumers. The tariffs have been calculated in such a manner as to cover the additional costs which will be incurred on the part of those producing heat from RES as against heat generation in sources burning fossil fuels. The tariff thus covers the difference between the investment and operating costs of technologies using renewable sources and the costs of traditional technologies. What's more, it includes costs for overcoming non-financial barriers to using RES and return on the capital that was invested in addi-



tion. The tariffs are expected to give an investment return amounting to 12%, with the exception of solar sources, in the case of which the figure is much lower – about 5%.

The supported heat must not be wasted and has to be used for the prescribed purpose. The subsidy's recipients are owners of facilities generating heat from renewable energy sources.

The table below shows the tariffs for sources beyond households (RHI for industry, businesses and large organisations), which will be paid by the British regulator, Ofgem, quarterly over the period of 20 years.

The scheme is interesting owing to the division of the tariffs in the category of biomass use in small and medium sources into two tiers. The first, higher tariff will only be paid for as long as the source does not exceed 15% of the annual installed capacity (equivalent to 1,314 hours). It is focused on payment of additional capital costs for installed technologies. The second, lower tariff will be paid when production exceeds this limit and should only offset the increased fuel costs. This system will prevent excessive support being granted to the sources that have above-average annual use of capacity, as well as eliminate motivation for artificial overproduction of heat which would subsequently be wasted.

Payment of the tariffs is financed from government funds, unlike the British tariff scheme valid in the case of electric power generated from RES, within which costs are transferred to electricity end consumers.

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## GREEN PROCUREMENT: SMARTER AND CHEAPER

*Green procurement is a form of purchasing entailing the inclusion of energy efficiency and other environmental criteria in tenders for supplies of products and services in both the public and private sectors.*

Total public procurement in the European Union accounts for approximately 16% of the EU's gross domestic product. When it comes to the Czech Republic, the share of public organisations' expenses in GDP is estimated at 20%, totalling at least CZK 550 billion. Public institutions in our country can significantly contribute to meeting sustainable development principles by bringing to bear their purchasing power when selecting goods and services that respect the environment and thus reduce their operating costs.

Green public procurement can become the driving force for innovations on the Czech market, thereby increasing the competitiveness of Czech manufacturers on advanced markets.

One of the main tools of green purchasing is decision-making on the basis of the product life cycle costs, which in practice equals the sum of investment costs and operating costs from using the product throughout the time of its service life. For selected products, it is possible to download calculation tools and other guidelines within the Buysmart project at [www.buy-smart.info/ke-stazeni3/ke-stazeni2](http://www.buy-smart.info/ke-stazeni3/ke-stazeni2). This website also presents an example of using a calculation tool for the most economical purchase of energy-efficient fluorescent lamps. It shows that if we choose an energy-saving lamp on the basis of the life cycle criterion, we will select a higher-quality lamp at a price higher than the price when making a decision merely on the basis of the lamp's purchase price.

Since November 2010, the "Rules for applying environmental requirements in public procurement and purchases by public administration and local government", which were adopted by the government with the aim to support green procurement in the public sector, have been in force in the Czech Republic. The Rules link up to the European Union's "Sustainable Consumption and Production Action Plan" and were primarily drawn up for organisations governed by Act No. 137/2006 Coll., on public procurement, yet they can also be applied voluntarily in the private sector. The Rules merely set the basic parameters, i.e. for whom they are binding and in what manner and when their fulfilment will be evaluated. Selected product groups are then regulated by means of more detailed methodologies. At the present time, central public administration bodies are obliged to adhere to the methodologies for purchase of furniture and office computing technology. The Czech Ministry of the Environment plans to present the methodologies for other product groups by the end of 2011.

These documents can be downloaded from the website devoted to green procurement [www.zele-nakupovani.cz/](http://www.zele-nakupovani.cz/) (in Czech).

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### Tariffs for heat from RES paid within RHI (July 2011),

Category	Output [kWt]	Tariff [pence/kWh]	Tariff duration [years]
<b>Solid biomass, municipal solid waste (including CHP)</b>			
Small source	< 200	Tier 1: 7.6	20
		Tier 2: 1.9	20
Medium source	≥ 200; < 1000	Tier 1: 4.7	20
		Tier 2: 1.9	20
Large source	≥ 1000	1	20
<b>Heat pumps (ground, water)</b>			
Small source	< 100	4.3	20
Large source	≥ 100	3	20
<b>Solar thermal</b>	< 200	8.5	20
<b>Biomethane injection</b>	Unlimited	6.5	20
<b>Biogas combustion (excluding landfill gas)</b>	< 200	6.5	20

Source: Ofgem 2011



# Support for EPC in the Czech Republic

*The EPC method is not only increasingly applied, it is now receiving support from public bodies.*

Energy Performance Contracting (EPC) has been provided for more than two decades in the Czech Republic. Yet to date its development has above all been initiated "from the bottom up" – owing to the activities pursued by energy-service companies and consultancy firms assisting their customers within project preparation. Notwithstanding the not overly substantial support, this method has been applied in the Czech Republic more than in any other former Eastern Bloc country, and when it comes to the number and extension of the implemented projects it even surpasses the majority of Western European states.

The EPC method has of late aroused greater interest in the public sector on the part of some of the ministries, at the European Union level, as well as on the part of the media.

At the general level, within a programme of environmental education and training the Ministry of the Environment of the Czech Republic is support-

ing a long-term project (2011 and 2012) aimed at promotion and media coverage of the EPC method as an effective tool for energy savings in the public sector. The project preparation has been entrusted to SEVEN, which has drawn up a number of presentation materials and organised several information events and seminars (the next of which is set to take place on 1 December 2011 in Prague).

The Ministry of Industry and Trade of the Czech Republic has considered the possibility of promoting the propagation and use of the EPC method and it is likely that within the EFEKT programme it will include among the supported activities in 2012 the preparatory phase of projects implemented through EPC in the form of an introductory inquiry that would determine whether the selected buildings are suitable for the application of EPC.

The EPC method has been most frequently applied at the municipal level, with the public tender in-

viders being medium-sized towns and large cities. Of late, great interest in EPC has been shown by regions, while the interest on the part of organisations partly financed from the public purse has increased too. A significant milestone for the further application of the EPC method is the Decree of the Government of the Czech Republic dated 19 October 2011, on the basis of which the methodology for making use of EPC in public administration buildings should be drawn up. This methodology is expected to serve as a guideline for application of EPC primarily in state organisational bodies (former governmental agencies fully financed from the public budget).

The application of EPC is currently increasing. At least three big new public tenders for energy services through EPC were in progress in the summer and autumn, and by the end of 2011 another handful of similar public tenders are expected to be invited.

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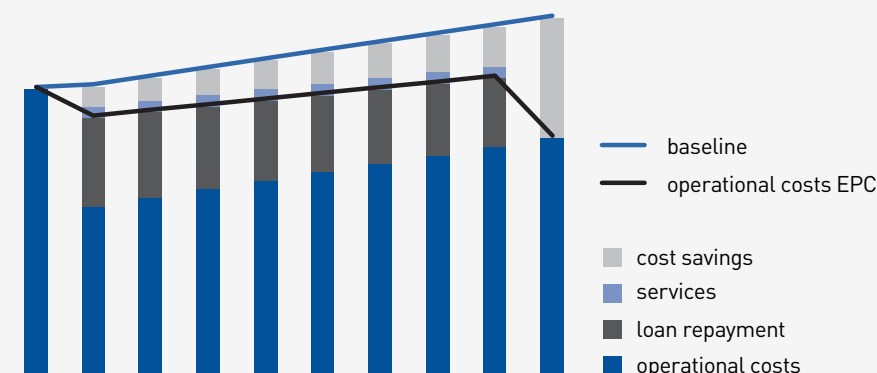
## Invitation to a seminar on EPC and best EPC project preparer awards

On 1st December 2011 (Friday) from 9:30am a seminar entitled "EPC method – instrument for energy and financial savings" will be held. The seminar will take place in the premises of Prague City Hall (Marianske square).

The invitation and programme can be downloaded from [www.epc-ec.cz/aktuality-1](http://www.epc-ec.cz/aktuality-1). There is no admission fee, but it is necessary to register for the seminar.

During the seminar, the winners of the competition for the best preparer of projects implemented through the EPC method will be awarded.

### Structure and development of costs in EPC



## AWARDS FOR THE EPC METHOD

*EPC projects have this year received awards both internationally and in the Czech Republic.*

Projects implemented through the EPC method have received the European Energy Service Award, which appraises innovative energy service providers and promoters within the European Union. This year, the award was granted for the sixth time. In the Best Project category, three projects received prizes – the Sello department store in Finland, the municipality of Middelfart in Denmark, and the Jewish Museum in Berlin. France's ICF Group was voted 2010's Best Energy Service Promoter and Romania's SERVELECT the Best Energy Service Provider. In addition, Bernward Janzing received an award for his promoting EPC in the media.

Moreover, this year the third EON Energy Globe Award was conferred upon energy-efficiency projects too. The winner in the "Fire" category was the project

pertaining to increasing energy-management efficiency through EPC at the Psychiatric Hospital in Jihlava, Czech Republic (following last year's victory of the project implemented at the National Theatre in Prague, this is a repeated success of an EPC project). For more information about the project, visit [www.epc-ec.cz](http://www.epc-ec.cz) or [www.european-energy-service-initiative.net/cs/ke-stazeni/priklady-dobre-praxe.html](http://www.european-energy-service-initiative.net/cs/ke-stazeni/priklady-dobre-praxe.html).

At the beginning of December 2011, the winners of the competition for the best preparer of projects implemented through the EPC method in the Czech Republic will be announced. The competition is organised by SEVEN and ENVIROS, with significant support from Siemens. The prize-winners in two categories (projects that have already been announced and projects currently being prepared) will be an-



*The winner in the "Fire" category was the project pertaining to increasing energy-management efficiency through EPC at the Psychiatric Hospital in Jihlava, Czech Republic*

nounced on 1 December at an awards ceremony within a conference at Prague City Hall (again see [www.epc-ec.cz](http://www.epc-ec.cz)).

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# EU DRAFT ENERGY EFFICIENCY DIRECTIVE

The European Commission has drawn up a new Energy Efficiency Directive. This proposal links up to the EU's energy-efficiency plan issued in February 2011. The draft directive does not stipulate either compulsory or indicative energy saving targets. Instead, the document sets forth a list of obligatory measures which, should the directive enter into force, will have to be taken by EU member states. The main measures are as follows:

## ■ The legal obligation to implement energy-saving systems in all EU member states

Energy distributors or retail energy sellers will have to save annually 1.5% of the energy sold by means of energy efficiency and end-use measures, e.g. through higher efficiency of heating systems, installation of double-glazed windows and roof insulation. Instead of energy-saving systems (such as, for example, the "white certificates"), the member states will have the possibility to propose other energy-saving mechanisms, for instance, programmes of financing or voluntary agreements.

## ■ The public sector to set an example

Public bodies will promote energy-efficient products and services on the market on the basis of their legal obligation to procure energy-efficient buildings, products and services. Moreover, they will be obliged to gradually reduce energy consumption in their own premises by means of annual renovation of at least 3% of the total area. This measure will apply to buildings with the floor area above 250 sq. m.

Note: According to the European Commission, at the present time in the EU renovation has already been carried out in 3% of public buildings per year, yet only half of the measures actually pertain to energy savings.

## ■ Energy savings for consumers

Energy billing should be based on the current consumption, accurately reflecting the data on meters. Pursuant to the draft directive, easy and free access to the energy consumption data in real time and in

the past will make it possible for consumers to improve regulation of their energy consumption owing to more precise individual metering.

## ■ Support for small and medium-sized enterprises

Small and medium-sized enterprises should be motivated to undergo energy auditing and promote the application of tried-and-tested methods. Large businesses will be obliged to carry out an audit of their energy consumption, which will help them to reveal the potential for reducing their energy consumption.

## ■ Efficient energy generation

The draft directive requires energy efficiency improvements in energy generation. This includes monitoring of the efficiency of new production capacities and implementation of national heating and cooling plans as the basis for planning efficient heating and cooling infrastructures, including recovery of waste heat.

## ■ Energy transmission and distribution

Higher efficiency will be attained when during their decision-making the national regulatory bodies will take into account energy-efficiency criteria, especially when approving network rates.

The critics of the proposal claim that it is not ambitious enough and that it will fail to lead to the required savings of 20% by 2020. According to non-profit organisations the draft directive is just a sort of update of the current legislation. Moreover, the draft directive presents a set of measures without an overarching strategy. Problematic too would appear the manner of measurement, verification and reporting of the attained savings and the lack of measures aimed at supporting the financing of investments in energy savings.

For more information about the draft directive, visit the European Commission's website: [http://ec.europa.eu/energy/efficiency/eed/eed\\_en.htm](http://ec.europa.eu/energy/efficiency/eed/eed_en.htm). Further information, including opinions and viewpoints, is available at [www.eceee.org/EED/](http://www.eceee.org/EED/).

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## Supporting the implementation of energy-efficient buildings legislation in Belarus

*In tandem with Germany's KEMA Consulting GmbH and local experts, SEVEN is analysing the current overarching European legislation and regulations of selected EU member states and helping to seek ways to efficiently bring to bear suitable knowledge from these documents in the legislation of Belarus. This co-operation is part of the European Commission project titled "Support to the implementation of a comprehensive energy policy of the Republic of Belarus".*

The project entails evaluation of the currently valid legislation throughout the EU, issued by the European Commission, and the laws, regulations and legal rules that are valid in selected EU member states (e.g. the Czech Republic, Lithuania, Latvia, Poland). The Belarusian experts involved in the project are preparing an analogous analysis of their country's legislation with the aim to compare the respective approaches of the EU and Belarus. Subsequently, the approaches of selected countries will be compared and further necessary processes assessed with a view to making the implementation of suitable parts of the legislation as effective as possible.

One of the project's core objectives is to establish an electronic web database of documents and regulations which in a user-friendly manner will compare the possible approaches to energy-efficient solutions to new and reconstructed buildings, and provide the general public with information about potential energy savings in buildings, with the possibility of easy comparison with other countries.

The basic document for this project is the European Directive on Energy Performance of Buildings (EPBD II), which is currently being implemented in the Czech Republic through the amendment to Act 406/2000 Coll., on energy management, and Regulation 148/2007 Coll., on energy performance of buildings, on whose drawing up SEVEN is participating too.

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## NEW SUBSIDY FOR ABSORPTION HEAT PUMPS

The heat pump is a device that allows for conversion of low-potential energy to energy with a higher potential. Accordingly, it makes it possible to utilise energy that is otherwise unusable in heating systems. In the same time, different types of heat pumps have different environmental impacts.

The heat pump works on the principle of cooler circulation. The active medium is thus the cooler and its phase changes (vaporisation, condensation). Circulation of the cooler is provided either by an electrically driven compressor (electric heat pumps) or the cooler is ejected from a boiler further into the circuit by the thermal energy supplied, most frequently from gas (absorption, gas heat pumps).

One of the main quality indicators of heat pumps is the Coefficient of Performance (COP) factor. The COP expresses the ratio between the heat acquired and the heat recovered (supplied for the heat pump drive). Therefore, the higher the COP value, the more efficient the heat pump, which supplies more energy with the same quantity of energy required for the heat pump drive. The absorption heat pumps available on the Czech market have a COP of approximately 1.5 (A7/W35), whereas electric heat pumps usually have a COP of 4 (5), yet related to electric energy. When converted to primary energy, their COP is 1.2 (1.5).

Electric and absorption heat pumps thus attain

similar COP factors. The difference, however, lies in their environmental benefits. Whereas absorption gas-driven heat pumps work with the emission factor of 0.2 t CO<sub>2</sub>/MWh of fuel (natural gas) efficiency, electric heat pumps work with the emission factor of 1.17 t CO<sub>2</sub>/MWh of electric energy (pursuant to Regulation 425/2004 Coll.). The installation of absorption heat pumps instead of electric ones results in replacing electric energy generated largely (58.91%, according to the 2010 Energy Year Book) in steam power stations combusting coal with the total production efficiency of approximately 30%, which brings a substantial reduction of CO<sub>2</sub> and other pollutants emissions.

The difference in the emissions from heat production (environmental benefit) has induced the State Environment Fund of the Czech Republic to include absorption heat pumps in the supported area of sustainable use of energy sources, specifically in Priority Axis 3.1.1 – Construction and Reconstruction of Heat Sources Using RES. SEVEN participated in the preparation of the necessary evaluation criteria for projects accepted within Priority Axis 3.1.1 within Call XXVIII.

Obtaining a subsidy for the installation of absorption heat pumps is conditioned on the replacement of an existing boiler that is more than 10 years old. Accordingly, it concerns the replacement of a heat source working with the long-term efficiency of approxima-

tely 80-90% by a heat source possessing the efficiency of approximately 140% (A3, W50, HT). The gas saving can amount to 50-60%, with a commensurate reduction of CO<sub>2</sub> and other pollutants emissions.

Several projects for which SEVEN has drawn up the energy audits have confirmed the expected benefit resulting from the installation of absorption heat pumps and that this measure is an extremely suitable alternative for the replacement of gas boilers nearing the end of their service life. With regard to the fact that an absorption heat pump with the output of only about 40 kW (depending on ambient conditions) and its multiples (in heat pump sets) is available on the market, absorption heat pumps can be recommended for installation in medium-sized residential units, schools, as well as in places where heat is also needed beyond the heating season, e.g. swimming pools, sports complexes, etc.

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## « SUPPORT..., cont.

Call III for the ECO-ENERGY programme by the respective activity. The projects can expect to receive support in dependence on the attained points in the sequence of individual activities until the money allocated for this Call has run out. With respect to the lack of finance within the already increased allocation of Call III of the ECO-ENERGY programme, projects relating to Activities Nos. 4 to 6 will not be supported within this Call.

### Evaluation of the I. and II. call

Hereafter, we present the results of the ex-ante evaluation of the supported projects of Calls I and II that will probably be implemented since the approved subsidy has already been paid or a subsidy is expected to be paid after their completion. This evaluation was carried out by SEVEN in tandem with the department of energy projects of CZECHINVEST on the basis of an agreement with the Ministry of Industry and Trade.

On the basis of the first Energy Efficiency Action Plan of the Czech Republic pursuant to Directive 2006/32/EC, the national indicative energy savings target for 2016 has been set at the level of approximately 71,431 TJ/year from the total final energy consumption (FEC). The roll-out of energy-saving projects, supported by the ECO-ENERGY Programme is expected to result in an annual FEC saving amounting to approximately 3,468 TJ, of which according to our specialist estimate annual savings of approximately 2,000 TJ correspond to the FEC savings pursuant to Directive 2006/32/EC. This value corresponds to about 2.8% of the aforementioned indicative savings target set forth in the Energy Efficiency Action Plan of the Czech Republic.

### Statistics of projects evaluated within Call III of the ECO-ENERGY programme according to the selection criteria methodology

	Number of projects evaluated according to selection criteria	Required subsidy (CZK thousand)
Activity No. 1 – Energy-saving projects	516	5,892,154
Activity No. 2 – Small hydro-electric power stations	54	984,507
Activity No. 3 – Heat generation from RES (heating stations)	10	294,691
Activity No. 4 – CHP from RES (biomass, biogas,) and/or use of mixed municipal waste	44	1,884,896
Activity No. 5 – Heat pumps and solar thermal collectors (not photovoltaic cells)	2	7,226
Activity No. 6 – Electricity generation from biomass/biogas and mixed municipal waste without using waste heat	12	234,095
<b>Total</b>	<b>638</b>	<b>9,297,569</b>

The implementation of electricity generation from RES projects is expected to increase the installed electrical output from RES by approximately 107 MW and the incidental increase in annual net electricity generation from RES by approximately 674 GWh. The implementation of these projects could thus result in an increase in the net generation of electricity from RES by about 17.3%. The implementation of CHP projects and projects involving plants generating heat from biomass should result in an increase in the annual net generation of heat from RES by approximately 924 TJ.

In total, it concerns 352 projects within Call II, which were supported with the total investment sub-

sidies amounting to approximately CZK 4.1 billion, and 96 projects from Call I, which were supported with the total investment subsidies in the amount of approximately CZK 1.2 billion.

On the basis of our experience from the implementation evaluation of the ECO-ENERGY OPEI programme, we can conclude that this programme serves as a great impulse for the development of projects aimed at energy saving and electricity generation from RES in the Czech Republic in the sphere of small and medium-sized enterprises.

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## SEVEN new publications in 2011 – a selection



### New energy labelling of household electrical appliances

The publication aims to provide consumers with general information pertaining to energy labels, specifically the main

changes included in the new energy labelling legislation. The publication was compiled to coincide with these amendments coming into force in the autumn of 2011.



### Energy Performance Contracting – a cook book for customers

The publication provides orientation to potential customers in the EPC process and outlines its key points. It sets forth the individual steps within the implementation of EPC projects, their main content and gives specific, practical advice and tips relating to the EPC process.



### Instructions on the "Personal computers, notebooks and monitors" part of the methodology for purchasing computing technology

SEVEN co-created the publication, which presents the criteria for "green procurement" of computing technologies in public administration.



### Replacing linear fluorescent lamps with linear LED modules

The publication comprehensively maps the replacement of linear fluorescent lamps with linear LED modules and sums

up the basic recommendations for their application. It is intended for employees in the service sector who encounter offers of LED modules on a daily basis, as well as for the general professional public.



### Saving energy at home

Publication by SEVEN and Prague energy utility PRE outlines the main possibilities of saving energy in the household – from heating and service water heating to electrical appliances and lighting. The publication is partially based on results of sociological research in households.



### Transaction costs of energy-efficiency programmes

The study analyses the effectiveness of selected programmes aimed at supporting energy efficiency in terms of transaction costs. The study's results serve as the basis for evaluation of the effectiveness of the set-up of the existing programmes, as well as decision-making when preparing new programmes.

The publications are in Czech and are available for download at [www.svn.cz/cs/informacni-materialy-k-dispozici](http://www.svn.cz/cs/informacni-materialy-k-dispozici) or in SEVEN.



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The Prague office of SEVEN is using PREKO electricity tariff, contributing to the development of renewable energy sources.



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