



**EXPERT EVALUATION NETWORK  
DELIVERING POLICY ANALYSIS ON THE  
PERFORMANCE OF COHESION POLICY 2007–2013  
YEAR 1 – 2011**

**TASK 1: POLICY PAPER ON RENEWABLE ENERGY AND  
ENERGY EFFICIENCY OF RESIDENTIAL HOUSING**

**CZECH REPUBLIC**

**VERSION: FINAL**

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**A report to the European Commission  
Directorate–General Regional Policy**

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## LIST OF ABBREVIATIONS

- EEN – Expert Evaluation Network
- ERDF – European Regional Development Fund
- ESF – European Social Fund
- OP – Operational Programme

## 1. EXECUTIVE SUMMARY

In the Czech Republic strong national policies exist for both increasing the energy efficiency of residential housing and for renewables.

While in case of renewables the main instruments are guaranteed prices, in case of increasing energy efficiency of residential housing direct support predominates (i.e. grants from a special national fund).

Support to renewables by guaranteed prices is highly differentiated according to the type of energy (wind, photovoltaic etc.) reflecting different production costs of different types of installations.

Excessive support to photovoltaic (given by the fact that guaranteed prices have not been properly adjusted to the falling costs of photovoltaic panels) lead to an extreme boom of these plants (in addition mostly built on greenfield locations) resulting in a huge cost to the Czech society and economy in the order of several hundred billion CZK over the period of the next 20 years for which these excessive prices were guaranteed by the state.

Consequently, the target for green energy from photovoltaic for the year 2020 has been already exceeded in 2010 (1,695 MW envisaged in 2020 versus 1,820 MW installed by the end of 2010).

National policies in both spheres suffer from a high rate of instability (changes in the rules governing the programme “Green light to energy” focused on residential housing and dramatic but belated changes in the rate of support via guaranteed prices in case of renewables).

The EU support for renewables is channelled via OP Environment (support to renewables in case of public sector bodies) and via OP Innovation and Enterprise (support to renewables which is often combined with energy efficiency measures in case of firms).

The EU support to private firms in case of renewables is much stronger than the national policy in case of direct support, but much lower than indirect support provided by the Czech state via guaranteed prices.

The increase of efficiency of residential housing is almost exclusively supported via national programme “Green light to savings” while the EU support to residential housing is provided only within integrated projects on urban regeneration via Integrated OP.

Neither the support to renewables nor to the energy efficiency of residential housing is regionally differentiated. The same types and rates of support apply across the whole country.

In case of Prague (Objective Competitiveness – OP Competitiveness) support is provided to renewables only in conjunction with the energy saving measures in case of public sector buildings. However, the volume of support is rather limited (EUR 9 million).

The rate of implementation of projects in both investigated spheres has not been accelerated by the authorities to counter the crisis, the crisis rather slowed down the implementation due to generally higher perception of risks (both by applicants and by the banking sector).

## 2. NATIONAL POLICY

### Renewable energy

The share of renewables on total production of electricity can be estimated at 10% in 2011 (i.e. in the first year when the new plants completed with the vigorous indirect public support often just at the very end of 2010 will be in operation for the whole year) in contrast to 6.1% in 2005 and 13.5% estimated in 2020 (National action plan, 2010).

National policy is using several different types of instruments to support construction or modernisation of installations using the renewable sources of energy. These are grants and soft loans from “the State programme for support of energy savings and using renewables”, exemptions from the property tax, 6 years tax exemptions from the profit tax (in case of hydro power stations this exemption applies only to small hydro stations up to 1 MW) and most importantly, either guaranteed prices or green bonuses. Green bonuses apply in cases where the producers of renewable energy find themselves their customers to whom they sell electricity at market prices.

Therefore, the support system is designed in such a way that in theory it bears no direct cost to state budget but all costs with these forms of public support of renewables should be transferred to all final consumers of energy. However, unprecedented increase of photovoltaic plants witnessed in the Czech Republic in 2010 would lead to such a jump in energy prices that the government decided to intervene and to provide special one-off support in the amount CZK 11.7 billion (EUR 478 million) in 2011 to moderate the price increase.

The weight given to direct public expenditure (subsidies or grants) to renewables as opposed to support through other instruments (e.g. the prices or tariffs set, tax incentives) can be only estimated but the relation is extremely unbalanced in favour of support via indirect support (for example in 2009, direct support was provided to only 9 projects in total EUR 404 thousand).

There has been a significant increase of public support for renewable energy since 2006. With the exception of photovoltaic and wind power, the guaranteed prices were more or less steadily increasing (e.g. small hydro stations from 76 EUR/MWh in 2004 to 125 EUR in 2010). In case of wind power, the tariffs were steadily decreasing (from 131 EUR/MWh before 2005 to 93 EUR/MWh in 2010). On the contrary, the development of tariffs for photovoltaic was rather turbulent (285 EUR/MWh in 2005, 598 in 2006, 506 in 2010 and 224 since 2011). These developments were mainly driven by changes in relevant technologies and by lobbying, rather than by economic downturn.

At the end of 2009 the solar power installations equalled to 463 MW, while at the end of 2010 it equalled to 1,820MW. In contrast, the national strategy for renewables expected reaching 1,695 MW by the end of 2020. It has been estimated by the former director general of Czech Energetic Company that by fixing the prices for photovoltaic for the period of 20 years the state committed the Czech society to financial burden equal to CZK 500 billion which nearly equals to the amount of EU support via Cohesion policy in the whole programming period 2007–2013. Therefore, continuing such a policy would have a devastating effect on the Czech economy and on public finance. Additional argument for putting the brakes to further construction of photovoltaic plants is the danger of instability of the energy grid due to an increase of the share of these unstable and poorly regulated sources of energy.

Therefore, the guaranteed prices for new installations that would be put into operation since 2011 were set significantly lower (see Table B) and secondly a special tax on solar energy for a period of 3 years (starting from 2011) was introduced in 2010 (in the rate 26%).

There is no regional variation in public support given small size of the country and given limited tradition with provision of regionally differentiated support within the Czech policies.

### **Energy efficiency of residential housing**

The national policy for increasing energy efficiency of residential housing has been launched in 2009 by the State Environmental Fund (subordinated to the Ministry of Environment) via programme called “Green light to savings”. This programme aims at energy efficiency of residential housing via direct support to replacements of old windows, isolation of roofs and walls, exchange of heating systems for more ecological ones and using renewable sources of energy for heating etc. One of the motives of launching this programme has been countering the dramatic drop of construction activity as a consequence of the global economic crisis. The financial resources for this programme are channelled from a special national fund which is financed by the sales of the emission certificates in line with the Kyoto Protocol – CZK 19.5 billion, i.e. EUR 796 million. Currently, it is estimated that  $\frac{3}{4}$  would be allocated for projects concerning to residential housing and the remaining  $\frac{1}{4}$  to public buildings.

No indirect forms of support for energy efficiency of residential housing are used. Nevertheless, the building code specifies the required parameters for energy efficiency of all new and reconstructed buildings.

The support to energy efficiency of residential housing has not been affected by constraints on public financing due to crisis as the support is channelled from a special fund (see above).

In the sphere of energy efficiency of residential housing the support is provided uniformly across the state territory, so it does not differentiate among the regions.

### 3. ERDF AND COHESION FUND SUPPORT AND CONTRIBUTION TO NATIONAL POLICY

In the Czech Republic, there are two OPs that support of all types of renewables in the Convergence Objective. The first is the OP Environment supporting renewables and all sorts of improving energy efficiency of buildings in public sector, the second is OP Enterprise supporting the same spheres but in case of firms. In case of OP Environment, the measures aiming at improving energy efficiency and renewables are financed by the Cohesion Fund. The allocation on priority 3 – “sustainable use of energy sources” (EUR 673 million) represents 13.7% of the OP Environment. The main measures (providing direct support) in the OP Environment are captured in the following table:

**Table A –The CF support to renewable sources of energy via OP Environment**

| Measures/spheres of support   | Type of renewables                           | Financial allocation (EUR million) | Financial allocation (in %) |
|---|--|------------------------------------|-----------------------------|
| Construction/reconstruction of sources of renewable energy for production of electricity and heat | Photovoltaic's                               | 44.4                               | 6.6                         |
|   | Wind power                                   | 6.7                                | 1.0                         |
|   | Small hydro stations and geothermal stations | 44.4                               | 6.6                         |
|   | Biomass                                      | 155.7                              | 23.1                        |
| Energy savings in public sector   | Energy savings                               | 421.8                              | 62.7                        |
| Total   | Sustainable use of energy sources            | 673.0                              | 100.0                       |

Source: OP Environment, 2007

From Table A it follows that direct support to renewables via OP Environment amounted to EUR 251.2 million. This contrasts with zero national direct public support to renewables in case of public sector bodies. However, EU cofinanced direct support is a mere fraction of indirect national public support to renewables.

The implementation of this priority (at least according to the share of allocation that was contracted by the end of 2010) was the highest of all priorities of the OP Environment (i.e. over 26%). Therefore, the implementation of this priority is in line with expectations. No specific problems have been encountered.

Within the OP Enterprise and Innovation there is just one relevant sphere of intervention namely “Energy savings and renewable sources of energy” aimed especially at small and medium size enterprises (sphere of intervention 3.1). The division of financial resources among these two subspheres was expected 50:50. However, according to the Ministry of

Industry and Trade the share of the energy efficiency subsphere is currently much higher, in addition these two subspheres are often combined within a single project (e.g. installation of a pot for biomass burning plus energy saving measures). Therefore, the precise data are not available.

The allocation on priority 3 “effective energy” within OP Enterprise and Innovation has been several times increased due to strong demand from businesses (from EUR 286.2 million to EUR 454.5 million) which represents over 12% of this OP. The support is provided in the rate of 30% of the eligible costs of particular projects. These measures (spheres of interventions) support (like the state support programme) the development of all types of renewable energy.

The support from the EU resources is thus several hundred times higher than support from national sources. For example, in 2009, the Ministry of Industry and Trade via its state programme for energy efficiency and renewables oriented at businesses allocated CZK 29 million. (EUR 1.2 million) of which only CZK 9.9 million (EUR 0.4 million) was the direct support to renewables (in contrast to EUR 454.5 million provided via OP Enterprise and Innovation), though a majority of this amount went to energy efficiency projects which are outside the scope of this report.

The spending is in line with expectations, however, the demand for support exceeds the supply (currently approx. 3 times), despite the fact that significant resources has been reallocated within the OP Enterprise and Innovation to this priority. Therefore, currently, nearly the whole available allocation will be shortly committed to particular projects.

Neither in case OP Enterprise nor in case of OP Environment has the spending been used to counter the effects of the global crisis. Likewise, in both these OPs there is no regional differentiation in the scale or nature of the support.

### **Support to energy savings via Integrated OP**

Support to measures enhancing energy efficiency of residential housing is provided via Integrated OP but only within the integrated programmes for revitalization of (both publicly and privately owned) housing estates endangered by physical deterioration and social exclusion. Several dozens of cities over 20 thousand inhabitants are participating in these programmes. Among the conditions for granting support is a condition that energy efficiency of the buildings has to increase on average at least by 20%. Altogether, EUR 192 million has been allocated to this priority (10.3% of this OP) and spending is in line with the plans.



### **Competitiveness Objective (Prague)**

In case of Prague, of the two selected spheres only renewables are supported via the sphere of intervention 3.2 “Economical and sustainable use of energy and of natural resources” within the OP Prague Competitiveness. This sphere of intervention represents 3.2% of total allocation for this OP. Under this sphere of intervention, direct support is channelled to public sector actors (schools, cultural centres, townhalls of Prague boroughs etc.). However, the supported projects have to use renewable sources of energy and implement energy saving measures as well. Therefore, the exact amount of resources allocated to support of renewables cannot be given. Altogether, 12 (out of 21) projects of around EUR 9 million have been selected and contracted, which means that currently the whole allocation to this sphere has been contracted to project applicants. No significant problems have been encountered during implementation of this sphere of intervention except the fact that in about half of projects the target values for production of renewable energy have not been met during the first year of the projects due to a need to learn how to operate the technology properly to achieve maximum effect. The spending is – due to strong demand – ahead of plans. The projects are supported at the rate of 85%.

Concerning complementarities of interventions financed by the national and ERDF programmes it should be stressed that in case of measures aimed at energy savings of residential buildings there is practically no overlap of these interventions. While there is a large-scale national programme for this sphere, the ERDF programmes finance these projects only as a part of complex revitalization of housing estates endangered by social marginalization. Therefore, a reasonable synergy between national and EU programmes exists. However, the situation is different in case of renewable sources of energy. In this case exists both strong national support system via feed-in tariffs and ERDF support covering a significant share of investment costs of business projects aimed at renewables. Under these conditions, it might be suggested that the future ERDF support should be provided only to energy saving measures but not to construction of new sources of renewable energy.

## **4. RATIONALE FOR PUBLIC INTERVENTION**

In case of renewable energy and energy savings, the main arguments used for public support are:

- i) the high dependency of the Czech Republic upon imported energy sources (unstable prices and uncertain future supply) and the need for diversification of the energy sources
- ii) low energy efficiency of the Czech Republic, increase of efficiency would also contribute to higher competitiveness of the Czech industry.

- iii) environmental costs connected in particular with extraction and with burning of fossil fuels conflicting with principles of sustainable development.
- iv) the accession treaty where the Czech Republic committed itself to an increase of renewable sources of energy up to 8% on total production of electricity by the year 2010.
- v) in case of support to energy efficiency of residential housing provided within integrated revitalization plans for housing estates endangered by urban decay, the rationale is to prevent socioeconomic marginalization of people living in these areas.

The high capital costs and low profitability of investment into renewables are used for justification of a direct support from EU resources along with the indirect public support via guaranteed prices in case of the public sector bodies via OP Environment.

The differences in production costs of energy via various renewables sources of energy are the basis for setting different levels of guaranteed prices for different types of renewables by Czech Energy Regulatory Authority. In addition, in case of the OP Enterprise and Innovation, the Managing Authority analyses the economic soundness of submitted projects via involvement of expert firm that provide independent economic/financial analysis of profitability of submitted projects.

Given the excessive support to photovoltaic in recent years (contrasting with the drop of prices in photovoltaic technology) and given the fact that the cost of this public support is directly transferred onto final consumers of electricity it is not surprising that this topic is frequently debated within public and is attractive for media. The case of photovoltaic is often given as example of mismanagement from the public authorities and as a result of intensive lobbying of pressure groups such as Czech Association for Photovoltaic. This association provided during year 2010 clearly misleading information to the public in order to limit or to postpone the remedying measures of public authorities (see e.g. MFD, 2010). Consequently, the image of photovoltaic in the public is a sort of a synonym for an excessive and unjustified public support to one group of entrepreneurs.

In contrast, the discussion over programmes aiming at improvement of energy efficiency of residential housing concentrated not on the substance of the public support which is considered mostly rational but rather on frequent changes of rules governing this support programme.

## 5. RATE OF SUPPORT AND PROFITABILITY

In the Czech Republic, the rate of direct public support via the OP Enterprise and Innovation to renewables is set at 30% of eligible costs in case of firms, in case of public sector projects via OP Environment and via OP Competitiveness (Prague) at 85%. Energy efficiency of residential housing is supported only within integrated revitalization projects of housing estates endangered by physical deterioration and social exclusion via Integrated OP at the rate of 40%–50%.

The rate of indirect support (via prices guaranteed by the state) to renewables is differentiated according to three main dimensions to guarantee the return of the investment costs in 15 years. In other words, estimated profitability does play a key role in determining the rate of indirect support. The following three dimensions differentiate the rate of support:

- i) according to type of renewable energy
- ii) according to size of installation
- iii) according to year when the installation has been put into operation (reflecting the cost of the technology used).

Moreover, the guaranteed prices or green bonuses are guaranteed on different time span to reflect different lifespan of the technology used (see Table B).

The support to energy efficiency of residential housing is not differentiated according to returns from improving the energy efficiency. Likewise, during the examined period, the rate of support was not adjusted for changes in costs of fossil fuels or for changes in the cost of electricity.

**Table B – The public support to renewable sources of energy in 2010.**

| Type of renewables                 | Guaranteed price (EUR/MWh) | Green bonuses (paid in addition to the market price) (EUR/MWh) | Time-span of the guarantee (years) |
|------------------------------------|----------------------------|--|------------------------------------|
| Photovoltaic's up to 30 kW         | 480/306*                   | 451 /245*  | 20                                 |
| Photovoltaic's over 30 kW          | 476/241*                   | 438/200*   | 20                                 |
| Wind power                         | 89                         | 72   | 20                                 |
| Small hydro stations (up to 10 MW) | 118                        | 80   | 30                                 |
| Geothermal stations                | 177                        | 138  | 20                                 |
| Biogas                             | 162                        | 124  | 20                                 |
| Biomass                            | 180                        | 142  | 20                                 |

Note: \*New prices applicable for installations put into operation since January 1, 2011 to end of February. For installations over 100kW even lower rates apply since January 1, 2011: guaranteed price – 224 EUR/MWh,

green bonus 184 (exchange rate used for 2010 was 25.5 CZK/EUR, while for 2011 is 24.5 CZK/EUR). Since March 1, 2011, the state is not providing any price support to new photovoltaic plants except small installations on the roofs with a maximum capacity up to 30kW.

Source: adopted from Price Decision (2010)

The support to energy efficiency of residential housing is not differentiated according to returns from improving the energy efficiency. Likewise, during the examined period, the rate of support was not adjusted for changes in costs of fossil fuels or for changes in the cost of electricity.

## 6. COSTS, PUBLIC SUPPORT AND PRICES

The current costs of producing electricity in various types of renewables are investigated by Energy Regulatory Authority (ERÚ) in cooperation with the Ministry of Industry and Trade which sets the guaranteed prices in such a way to guarantee 15 year return on investment in any type of renewable energy. Neither guaranteed prices nor the green bonuses reflect possible regional variation of the production costs (for example due to different average intensity of sunlight among the Czech regions).

There is no firm evidence that the market prices of residential housing include a premium for the energy efficiency of the building. However, in the case of panel houses, at least according to observation of market trends, there is a moderate price differential between flats in reconstructed and non-reconstructed houses (approx. 5–10% of the cost). However, the scale of this premium is of lower magnitude than the drop of real-estate prices induced by the global economic crisis.

In case of the impact of energy isolation of residential buildings on rent prices there is even less information as even higher number of factors is in play. Nevertheless, it can be reasonably expected that even if there is no differential in rents, the potential tenants would *ceteris paribus* prefer renting a flat in reconstructed building. The main motive behind is should not necessarily be savings in energy costs related to the housing, but rather better image of these buildings as well as consideration that the owners (often highly fragmented) are able to reach an agreement and therefore, that the running of these buildings is more likely to be without significant problems. Overview of public support to renewables provides Table C.

**Table C – Support to particular types of renewable sources of energy in 2010.**

| Type of renewable energy | Support (CZK billion / EUR million) |
|--------------------------|-------------------------------------|
| Small hydrostations      | 1.54 / 62.8                         |
| Photovoltaic             | 7.08 / 289.0                        |
| Wind                     | 0.90 / 36,7                         |
| Geothermal energy        | 0.00 / 0,00                         |
| Biogas                   | 1.94 / 79,2                         |
| Biomass                  | 2.07 / 84.5                         |
| Total                    | 13.52 / 551,8                       |

Source: ERU, 2011

## 7. CONCLUSIONS

In the Czech Republic, both investigated spheres are intensively supported either via national and/or EU cohesion policy. Therefore, the targets set for year 2020 will be most likely achieved sooner. Unfortunately, policies in both spheres are not assessed favourably by the public opinion due to instability of rules (in case of support to energy efficiency of residential housing via national programme “Green light to savings”) or due to excessive costs of indirect support via guaranteed prices to the Czech economy and society (in case of photovoltaic). Needless to say that these problems relate to national policies and not to the programmes co-financed by the European cohesion policy. Besides, the demand for direct support of projects from both national and EU resources within both spheres is strong and cannot be met by available resources. For example, an excessive financial commitments made by the state in case of indirect support to photovoltaic in the order of hundreds billions of CZK contrast with CZK 8 billion that are missing for satisfying the existing demand for energy efficiency measures in residential housing (and partly also of public buildings).

Therefore, the main challenge for the relevant policies in the future is to design a supportive framework that would be, on the one hand, sufficiently stable to guarantee fair access to all potential applicants to public support; on the other hand, the support policies should be designed in a much more flexible way to respond to changing conditions such as drop in prices of the technology used in a given sphere. Moreover, a serious question emerges, i.e. whether the combination of direct and indirect support is really justified given the current financial squeeze of public budgets. Finally, as a kind of transversal issue, the administrative burden upon applicants shall be reconsidered (as well as upon responsible authorities). (For example, the Czech media often criticise the programme “Green light to savings” for an excessive bureaucratic load). It has been rightly argued that instead of an excessive focus on the formal criteria the attention should be shifted to designing a proper strategic focus of the support programmes.

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## INTERVIEWS

**Author gratefully acknowledges insights gained during interviews with the following experts:**

Ing. Ondřej Tomšej, Ministry of Industry and Trade (Section of Structural Funds)

Ing. Petr Koleška, Ministry of Environment, head of monitoring unit,

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