

Non-cost barriers to renewables – *AEON* study

Czech Republic

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- Confidential -

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Table of contents

1	Introduction	8
1.1	Summary of main barriers	9
2	Issue 1 Administrative Procedures	11
2.1	Introduction	11
2.2	Description of barriers & solutions	12
2.2.1	Detailed description of the barriers and solutions	12
2.2.2	Best practice elements and indicators	15
3	Issue 2 Technical Specifications	17
3.1	Introduction	17
3.2	Description of barriers & solutions	18
3.2.1	Detailed description of the barriers and solutions	18
3.2.2	Best practice elements and indicators	19
4	Issue 3 Building integrated technologies	20
4.1	Introduction	20
4.2	Description of barriers & solutions	20
4.2.1	Detailed description of the barriers and solutions	20
4.2.2	Best practice elements and indicators:	21
5	Issue 4 – Promotion of energy efficient renewable energy equipment	23
5.1	Introduction	23
5.2	Description of barriers & solutions	24
5.2.1	Detailed description of the barriers and solutions	24
5.2.2	Best practice elements and indicators	25
6	Issue 5 Information/awareness raising	27
6.1	Introduction	27
6.2	Description of barriers & solutions	27
6.2.1	Detailed description of the barriers and solutions	27
6.2.2	Best practice elements and indicators	29
7	Issue 6 Certification	31
7.1	Introduction	31
7.2	Description of barriers & solutions	31
7.2.1	Detailed description of the barriers and solutions	31
7.2.2	Best practice elements and indicators	32
8	Issue 7 Infrastructure Development	33

8.1	Introduction	33
8.2	Description of barriers & solutions	33
8.2.1	Detailed description of the barriers and solutions	33
8.2.2	Best Practice Elements and Indicators	34
9	Issue 8 Power Grid Issues	35
9.1	Introduction	35
9.2	Description of barriers & solutions	36
9.2.1	Detailed description of the barriers and solutions	36
9.2.2	Best Practice Elements and Indicators	37
10	Issue 9 Gas Network Issues	39
10.1	Introduction	39
10.2	Description of barriers & solutions	Error! Bookmark not defined.
10.2.1	Detailed description of the barriers and solutions	Error! Bookmark not defined.
10.2.2	Best Practice Elements and Indicators	Error! Bookmark not defined.
11	Issue 10 District Heating	41
11.1	Introduction	41
11.2	Description of barriers & solutions	41
11.2.1	Detailed description of the Barriers and solutions	41
11.2.2	Best Practice Elements and Indicators	42

1 Introduction

This document represents the contribution of Institute for Environmental Policy in corporation with ECORYS for the “Non-cost barriers to renewables – AEON study” and, as such, is focused on the Czech situation concerning those barriers.

The information provided in this document is based on the interviews with stakeholders, which were carried out in March and April 2010. In total over ten interviews with representatives of RES associations, RES developers, municipalities, NGOs and Ministry of Environment were held. The stakeholders were selected in order to represent all relevant renewable energy sources and technologies but also different levels of administration. However, in the end the interviews were carried out with the stakeholders, who have indicated their willingness to participate in the project and identify barriers, which they have experienced. Since the issue of barriers and listing concrete examples is sensitive, the interviewees wished not to be mentioned or even quoted with a reference.

In addition to the interview, the Ministry of Environment has provided an internal document, which identified RES barriers in the Czech Republic and their possible solutions. It was prepared within an ad hoc intra-ministerial working group on RES as a result of a survey and elaboration of possible solutions between June 2007 to March 2008. In June 2007, app. 20 questionnaires were distributed to RES developers asking them to identify barriers in the permitting process and support their answers with examples and relevant documents. The results collected in this phase were further discussed in the working group and possible solutions were drafted. Consequently, these were being consulted with RES associations and NGOs throughout February and March 2008. The resulting material includes a list of barriers accompanied by a possible solution (in a few cases alternative solutions are presented) with a deadline and a senior Ministerial official to be held responsible. Since most of the solutions concern legislative changes, successful adoption of these is outside the scope of competence of MoE. However, the Department of Sustainable Transport and Energy of MoE claims to be systematically working on minimizing those barriers. In order to back up this, a few reports and minutes from the intra-ministerial working group meetings indicating the progress made have been provided as well. Unfortunately, the new Minister of Environment Rut Bízková after her appointment on 15 April 2010, abolished the whole Climate Policy Section including the Department of Sustainable Transport and Energy.

1.1 Summary of main barriers

The further spread of renewable energy especially in the electricity sector is evident after the adoption of the Act on the Support of Electricity from RES in 2005 introducing the feed-in tariffs and green bonuses on RES electricity. As a consequence of a higher deployment especially of photovoltaic technologies, the prices have dropped and this sector became even more attractive for investors. Especially in the last years, there was boom of new PV projects, which applied for consent with the grid connection from the DOS. Some of them are just speculative, but according to the information of the Czech TSO CEPS, at the moment the reserved capacity of RES amounts to 8000 MW.

In general, all interviewed stakeholders indicated three main general barriers to further deployment of RES.

All interviewed stakeholders feel a discrepancy between the formal declared support to the RES and the actual actions of Czech Government. They indicated a conflict between the approach of Ministry of Environment, which has favoured RES and took actions to their promotion since the new Department of Sustainable Energy and Transport was constituted and between the Ministry of Industry and Trade, which favours biomass and this has been happening only in the last years. There have been no public awareness campaigns on RES conducted by the central state administration until the MoE finally launched a relatively large campaign in 2009, which was still not observed by all interviewed stakeholders. On the other hand, in public speeches by **official state representatives RES mentioned mostly in a negative connotation** with increasing the energy prices. Due to the **strong lobbying and influence of the biggest Czech electricity producer and DSO, ČEZ**, the official position of the Government emphasizes the need of further development of nuclear power plants and steady utilization of coal. Photovoltaic energy and wind energy on top of these are presented as unsteady sources of energy.

The third most important barrier to RES, which has been at place only since February 2010, is the **ban on connecting new RES power plans (especially wind and PV) to the grid**. Officially, the TSO CEPS, which is in charge of maintaining the reliability and stability of the electricity network, announced that the network cannot accept more unsteady electricity source without risking black-outs. Unofficially, the stakeholders indicated that it is due to the high feed-in tariff on solar electricity. This means that the consumer energy prices are being raised every time new RES is connected to the grid; especially the PV power plants, which are, however, mostly owned by foreign investors and not CEZ. The stakeholders indicated that due to the slight decrease in its profits, its interest is to build a new nuclear power plant and maintain its operation of coal power plants. However, as new RES power plants are being operated and run by mostly foreign investors, they fear their plans might be challenged, as the Czech Republic already has a surplus of electricity production.

Considering the administrative procedures there are significant differences between the different RES and different authorities (individual officers). The former has to the with

the lack of political will but also different legal requirements and the latter reflects the low awareness of RES and politicians influencing the administrative decision-making. On one hand the biomass/biogas, geothermal (heat pumps) and solar heat sector have no serious deployment barriers, on the other hand the situation in small hydro, photovoltaic and wind sector is difficult.

The interviews with RES stakeholders conducted in March and April 2010 identified the following main barriers:

In the **small hydro** sector is the main problem obtaining the exclusive permission for the certain locality of the river issued by the state river basement management authority. The issue lies in the fact that there are certain minimum residual water flow (*minimální zůstatkový průtok*) are these are not clearly defined. Also, the opposition from the fishermen union is a significant barrier. The procedure is so time consuming due to the fact, that several separate administrative procedures are necessary in order to have the power plant as a whole permitted.

A barrier for building **photovoltaic power plants** have occurred just recently and it is the official ban on connecting new PV plants to the power grid due to the risk of blackouts. However, this sector had been up to now developing quite rapidly due to the high feed-in tariff. On the other hand, small **solar thermal installation** on roofs of houses have been experiencing now barriers. There is a grant scheme opened to support this and the process is not complicated – it requires only simple notification to the planning and building authority.

Barriers for building the **wind** power plants are similar to other technologies. The lack of political will and conflict of interest is probably even stronger for this technology. As a result, some regions adopted decrees or regional spatial plans, which *de iure* (which is illegal) or *de facto* (which is challengeable) ban construction of wind turbines on their territory. In addition, the EIA statement is in majority cases negative and at present, they are refused connection to the grid.

In the **biogas** sector the most significant barrier lies in the lack of information of officials and thus negative approach to them, which leads to full EIA being prescribed and negative statement issued. Also, some have been refused connection to the grid as well.

The **biomass** sector, apart from the main barriers, which are stated in the first part of this section, reported only the scarcity of fuel and utilization of cheap wood pallets, which are not seen as sustainable. They fear there will be need of importing the biomass, which will make the sector unsustainable.

2 Issue 1 Administrative Procedures

2.1 Introduction

In the Czech Republic, the administrative procedure concerns a number of different authorities and bodies. In general, the planning and building competence is executed at the local level and in specific cases can be done by a different municipality (only the so-called municipalities with extended competences can be also planning and building authorities). This is also true for spatial planning. Although the right to adopt a spatial plan is a right of every single municipality, the technical side of the process is carried out by the relevant planning and building authority. The principles and national-wide projects have been laid down in the “Czech Spatial Development Policy” (*Politika územního rozvoje*), which does not deal specifically with renewable energy sources. All regions have their own regional spatial plans (*Zásady územního rozvoje*), which are to be respected by municipal spatial plans.

All power plants do require both a planning permission (*územní rozhodnutí*) and a building permit (*stavební povolení*) but small installations are exempted from the full procedure, although the exemption is never full. Solar thermal systems up to 5 kW or wind power plants not higher than 10 metres do only require a simple notification to the building authority. As part of the planning permission, most of the power plants require a qualified positions of the nature protection authorities according to the Act on Nature Conservation and Landscape Protection, which concern especially the position according to Section 12 of the Act (on the so called “landscape character” *krajinný ráz*) and decision according to Section 56 of the Act (on the exemption from the general protection conditions for specially protected species). On top of this process, the power plants do need to have a so called consent with grid connection (*souhlas s připojením do sítě*) from the DOS, which is in most cases CEZ, in southern parts of CZ e-on and in the Capital City of Prague a company called PRE if they want to be connected to the grid and receive the feed-in tariff price or normal price + green bonus for their electricity, and a license from the Energy Regulation Office. Upgraded biogas producers, who want to be connected to the gas grid, do need a similar consent obtained from the gas network operator, which is mainly RWE. However, the gas network operator is not obliged to connect them.

Although, more than two authorities are involved in the permitting process, the division of competencies has not been identified as a barrier. Only in two cases (geothermal and small hydro) unclear division of competencies was seen as a barrier.

Administrative requirements as laid down by law cannot be considered a barrier as long as the political decision makers and in consequence also the responsible civil servants show a favourable attitude towards RES. However, exactly the opposite has been identified and politicians together with individual officers are seen as the biggest barrier to RES.

When it concerns small **solar** installations up to 5 kW, the building permit is not required and therefore the procedure takes 4-5 months. Instead of a building permit, a position from the authority needs to be obtained declaring that the building permit is not necessary, which does not seem to pose a barrier. Larger rooftop installations from 100-200 kW or even surface installations with the output of 1MW when changes of spatial plan are sometimes at stake last 1 to 1,5 years.

Smaller **biogas stations** could be permitted in 3-5 months and smaller biomass plants in half a year whereas **larger biomass** heat power plants take up to a year.

Wind onshore plants take approximately 4- 6 years to permit but there are projects pending for even 9 years.

The longest time concerns **small hydro power** plants where standard time is up to 10 years but there are projects, which have been open for 20 years.

Geothermal technologies are new and not frequently used in CZ. There is a new pilot project on geothermal heat and power plant, which is at present in the phase of a monitoring bore hole. It is expected to take a few years before the actual construction happens. Air-to-liquid **heat pumps** may be permitted even in a month, liquid-to-water heat pumps do require a building permit so the procedure may take longer.

2.2 Description of barriers & solutions

2.2.1 Detailed description of the barriers and solutions

The length of permitting procedure was identified as the biggest barrier by all respondents. This is not only due to the number of permits required by law but is mainly caused by the *individual officials, who either do not have sufficient knowledge or are in opposition to a certain renewable energy source. Often, the antagonism is shared by local politicians.* The length is also dependent on the technology and the scale of the project.

Vysočina region was named as a **region, which does hinder development of RES**. The region adopted a decree, which put construction of wind power plants on its territory on ban. This decree was abolished by the Supreme Administrative Court in 2009. Such decree is being prepared by Moravian-Silesian region as well. Olomouc and South Bohemian regions have adopted regional spatial plans (so called *Zásady územního rozvoje*), which have such limits on both the height and landscape character of their territory that they in fact do not provide conditions for planning wind power plants anywhere within the their territory of the region. The regional political representatives

argue that these projects can massively invade the landscape and thus significantly change its unique character.

Such decrees as well as the regional spatial plans can be challenged at the Supreme Administrative Court and they are likely to be abolished since they are discriminatory and there is no legal base for such a measure. However, the procedure is not open to everyone and qualified legal counsel is required by law.

Possible solution: Ministry of Environment planned to elaborate a study with the delimitation of zones which are favourable and less favourable for the development of RES power plants, especially wind power plants and its distribution to regional political representatives, who could use it as a background study for drafting regional spatial plans. Also, the issue is closely connected with raising the awareness of RES (see more information in Chapter 6)

Apart from political representatives, antagonism or lack of awareness concerning RES is not uncommon to local officials that are to issue certain permits or positions. This is relevant especially for the qualified decisions (so called binding positions) of nature protection authorities according to the Act on Nature Conservation and Landscape Protection, which are the position according to Section 12 of the Act (on the so called “landscape character” *krajinný ráz*) and decision according to Section 56 of the Act (on the exemption from the general protection conditions for specially protected species). The stakeholders reported that when it concerns wind power plants, the position according to Sect 12 has been negative as a matter of fact. Also, the costly studies proving the impact on the landscape character are often required by certain officials.

On the other hand, biogas stations are not favoured by officials as they claim to be smelly or attract flies, which transmit several diseases. The smell was the case of 3-4 biogas stations, which have been permitted without a proper plan of operation with regard to waste management, water protection and air protection. The stakeholders reported that these were exceptional examples permitted negligently.

A rather funny example, which shows that the lack of information about a certain technology can be a barrier in administrative procedure, is, that the Czech Environmental Inspection Authority gave negative position to the geothermal power plant since the investor did not submit the amount of coal to power it.

Possible solution: MoE issued several methodical guidelines on what shall be the scope of the study to be submitted by the investor and which aspects the authority is to take into consideration when issuing the position but further promotion of these is necessary. Also, one stakeholder indicated that their quality is not good and the text requires revision although the MoE claims that the draft has been circulated to all stakeholders and there was a long-enough time given for their comments.

MoE also issued a methodical guidelines on the conditions for approval of biogas stations operation. This document has not been commented by the respondents.

Another barrier of RES power plants development namely wind power plants, photovoltaic power plants, small hydro power plants and also biogas and biomass power plants is costly, prolonged and unclear guided EIA. There are two barriers associated with this.

The first one is that de facto the same project assessment is required in case of SEA done for the changes of spatial plan as for the EIA for the planning permission. Also, the same

qualified positions are submitted for SEA as are for the planning permission. One stakeholder reported, that sometimes the authority might change its, although the state of play or the project have not changed in the meantime.

Possible solution:

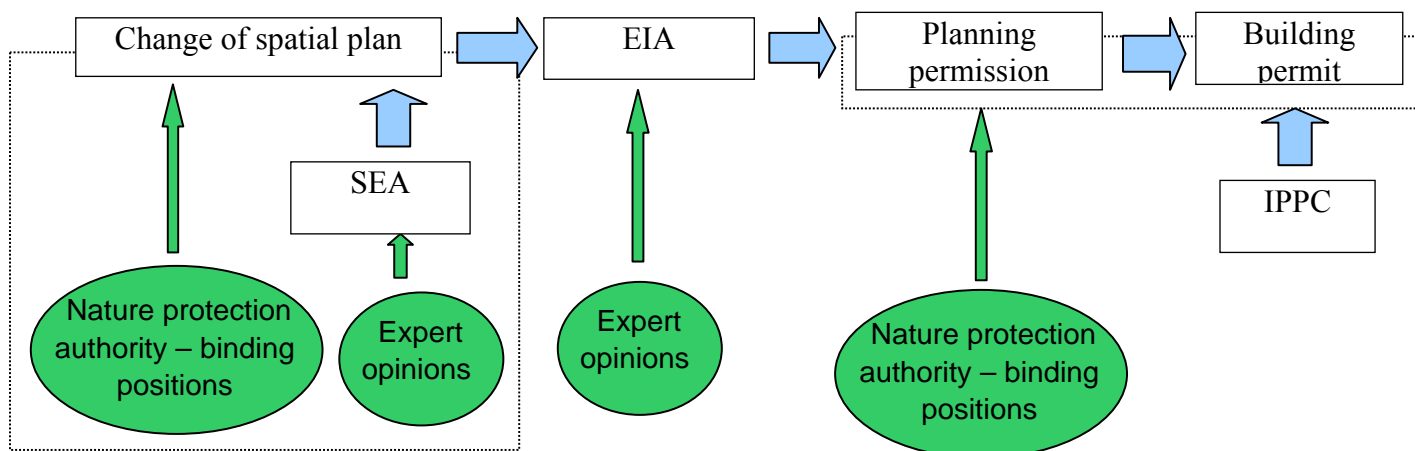
1. Respecting the partial decisions and positions from SEA in the consequent EIA and possibly further when the project remains the same. This solution is being examined by the MoE.
2. Ministry of Regional Development in May 2007 issued a methodical guidelines on the New Planning and Building Act (Act no. 183/2006 Coll.), which, apart from other issues, enables the planning and building authorities not to require change of spatial plan for projects of small hydro power plants or wind power plants when they are to be located outside the built area of the municipality. The solution could be to list solar power plants in the guidelines as well and maintain and promote them further among the officials. However, methodical guidelines are not legally binding.

The second barrier is that almost all projects have to enter the screening procedure and the relevant authorities, who do not favour the technology, prescribe to conduct full EIA. This is the case for all wind power plants, small hydro power plants but also some biogas stations. The threshold is in some cases rather low, for eg. all wind power projects with turbines higher than 35 metres or total output of more than 500 kW are subject to screening procedure.

In cases of EIA concluded with the EIA statement, most often the statement is negative. For example, in one case of wind power plant, the negative statement was reasoned by the protection of bird species although the relevant species do not nest or even fly through the region but the precautionary principle was used as an argument to back the statement.

Possible solutions: To define less high threshold values for screening and to define stricter guidelines for officials to decide in which cases the full EIA is to be undertaken and what arguments/principles are to be taken into account for the statement.

Diagram no 1: Scheme of the project permitting procedure (note: consent with the grid access can be applied for at any time during the procedure as well as the energy licence)



Source: MoE, 2008

Competing public interests have been identified as a barrier to the development of all technologies. The opposition towards RES is not coming from the general public but from regional politicians and responsible officers. The public interests at stake are nature and landscape protection, species and biodiversity protection, water sources protection and ambient air and health protection. This is evident even among individual officials of the Ministry of Environment, who have been failing to unanimously communicate RES development as its high priority.

Possible solutions: Presentation of the common position of MoE towards RES development, organisation of focus group tailored information campaigns and workshops, methodical guidance by MoE but also Ministry of Regional Development, which is responsible for spatial planning.

2.2.2 Best practice elements and indicators

No.	Technology	Benchmark/comments	Result
1.1		Is one stop-shopping possible?	
	Wind onshore, 2MW, 80m height		No
	Biogas plant < 2MW		no
	Biomass < 2MW		no
	Biomass > 10MW	N/A	No
1.2		Amount of money to be invested in administrative process (including cost of work and costs like fees) (in EURO)	
	Wind onshore, 2MW, 80m height	N/A	From 50 000 to 100.000 € but can be even higher
	Biogas plant < 2MW		App 8000 EUR
	Biomass < 2MW		App 8000 EUR
	Biomass > 10MW		Ranges between 70.000 to 120 000 EUR
1.3		Time to be spent for administrative permission process (duration in months)	
	Wind onshore, 2MW, 80m height	N/A	Ranges between 4-6 years but some projects are pending for 9 years
	Biogas plant < 2MW		3-5 months if not full EIA

No.	Technology	Benchmark/comments	Result
	Biomass < 2MW		Up to 6 months if not full EIA
	Biomass > 10MW		12 months
1.4		Number of all permits that need to be obtained (#)¹	
	Wind onshore, 2MW, 80m height	This usually concerns change of spatial plan and exemption according to the Nature and Landscape Protection Act. However, exemption from noise limits obtained from the hygienic authority and a position to the landscape character (krajinný ráz) are seen as the most demanding although they are issued within the planning permission procedure.	7
	Biogas plant < 2MW	this is a minimum no. , there are more permits, which serve as a base for the "main" permit	5
	Biomass < 2MW	this is a minimum no. , there are more permits, which serve as a base for the "main" permit	5
	Biomass > 10MW	This no. does not include interim positions of various authorities, which serve as a basis for planning permission and building permit. Also, there is usually a change of spatial plan necessary and a specific exemption from the Nature and Landscape Protection Act if some protected species are concerned. Also, a specific administrative decision (permit) is required for cutting of trees.	5

¹ All the numbers include consent with the grid connection and energy license

3 Issue 2 Technical Specifications

3.1 Introduction

This chapter analyses if the provisions of the renewable Directive 28/2009/EC concerning technical requirements are fulfilled in the Czech Republic.

Notably, the following preamble:

“National technical specifications and other requirements falling within the scope of Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and rules on Information Society services, relating for example to levels of quality, testing methods or conditions of use, should not create barriers for trade in renewable energy equipment and systems. Therefore, support schemes for energy from renewable sources should not prescribe national technical specifications which deviate from existing Community standards or require the supported equipment or systems to be certified or tested in a specified location or by a specified entity.”

And mainly Article 13 (2):

“Member States shall clearly define any technical specifications which must be met by renewable energy equipment and systems in order to benefit from support schemes. Where European standards exist, including eco-labels, energy labels and other technical reference systems established by the European standardisation bodies, such technical specifications shall be expressed in terms of those standards. Such technical specifications shall not prescribe where the equipment and systems are to be certified and should not impede the operation of the internal market.”

As for the support schemes mentioned in Art 13 (2), Czech Republic has several support schemes applied on the central level by the Ministry of Environment and Ministry of Industry and Trade. These are:

- The feed-in tariff for electricity from renewable energy sources
- Programme EFEKT of the Ministry of Industry and Trade to promote RES and energy savings <http://www.mpo-efekt.cz/cz/programy-podpory/18696>
- *Zelena usporam*- grant scheme of MoE supporting energy savings and RES in households. The eligible technologies are RES-H technologies namely heat pumps, biomass boilers and solar thermal collectors. <http://www.zelenausporam.cz/sekce/501/na-co-je-mozne-zadat/>
- Programme Eko-energie (priority axis no. 3) from the Operational Programme Business and Innovations. Eligible applicants are SMEs but also large corporations. <http://www.czechinvest.org/eko-energie-vyzva-iii>

- Priority axis no 3 of the Operational Programme Environment. Eligible applicants are private entrepreneurs as well as non profit bodies.
<http://www.opzp.cz/clanek/11/1231/xviii-vyzva-opzp-podpora-v-ramci-prioritnich-os-2-a-3---vyzva-na-velke-projekty/>

On the other hand, the grant schemes only apply to certain technologies, mostly biomass, biogas, solar thermal and heat pumps. Photovoltaic panels have been excluded in the last years since the high feed-in tariff was seen as a sufficient incentive. Another specific fact for most of the programmes and calls within specific grant schemes is, that they apply to both RES projects and also energy savings projects such as insulation.

Regional and local grant schemes are not regulated or supervised so its difficult to track them, for eg. the municipality of Litoměřice granted support to its citizens for installation of solar panels.

3.2 Description of barriers & solutions

3.2.1 Detailed description of the barriers and solutions

Barrier 2.1 – Specifications not clearly defined (weak definitions)

No barriers detected.

The support schemes analysed present clear definitions. Stakeholders do not report difficulties with unclear or weak definitions of the products considered eligible for support.

One stakeholder reported that in one case, State Environmental Fund required additional filter to be installed on biomass heat plant, which was subject to a support, and this has doubled the overall costs.

Barrier 2.2 – Specifications not expressed in terms of EU-standards or specified locations for testing and/or certification required

Apart from the Certificate of Compliance, which the technologies supported within the *Zelená úsporám* grant scheme require, there are no technical specifications or norms applied for any technology. However, the Certificate of Compliance (*prohlášení o shodě*) is required for all imported goods and is a sole responsibly of the importer.

3.2.2 Best practice elements and indicators

No.	Technology	Benchmark/comments	Result
2.1		Are the technical specifications to be eligible for subsidies / building obligations expressed in terms different than European standards (including eco-labels, energy labels and other technical reference systems), though such European references exist?	
	PV		No
	ST (domestic hot water)		No
	Heat pumps		No
	Biomass boilers		No

4 Issue 3 Building integrated technologies

4.1 Introduction

In the strict sense, no **renewables obligations** exist in the Czech Republic so far. On the other hand, there are several support schemes for installation of RES heating systems (solar thermal panels, biomass boiler or heat pumps) in households.

Where the **exemplary role of public buildings** is concerned, a rather negative picture can be drawn. There are no systematic policies to integrate RES in public buildings. No estimates on the percentage of RES in buildings are available, but this percentage would be marginal. However, the Directive 28/2009/EC states in Article 13 (5):

“Member States shall ensure that new public buildings, and existing public buildings that are subject to major renovation, at national, regional and local level fulfil an exemplary role in the context of this Directive from 1 January 2012 onwards. Member States may, inter alia, allow that obligation to be fulfilled by complying with standards for zero energy housing, or by providing that the roofs of public or mixed private-public buildings are used by third parties for installations that produce energy from renewable sources.”

Tenancy and ownership rights may constitute a barrier since a number of apartment buildings in cities and towns is owned by the municipality and the tenants are not encouraged to convey such an investment.

4.2 Description of barriers & solutions

4.2.1 Detailed description of the barriers and solutions

None of the stakeholders indicated any legal norm, which promotes building integrated technologies. On the other hand, a few stakeholders pointed out that Directive 28/2009/EC is also aimed at their further spread and therefore changes in the negative state of play are expected after its transposition deadline.

Possible solution: Initiate a discussion and lay down detailed rules for integrating RES technologies into new buildings, adopting a strategy for existing public buildings

4.2.2 Best practice elements and indicators:

No.	Technology	Benchmark/comments	Result
3.1		Is this installation type in normal cases exempted from an authorization procedure (building permit)?	
	PV rooftop 1-3kW	Neither planning permission nor building permit are required by the law requires simple notification to the planning and building authority.	Yes
	Solar thermal ~9m² collectors	Neither planning permission nor building permit are required by the law requires simple notification to the planning and building authority.	Yes
	Geothermal heat pump < 10kW	A simplified planning permission, a so called planning consent (<i>územní souhlas</i>), from the planning and building authority is necessary for air-to-water heat pumps. For liquid-to-water heat pumps a standard planning permission and building permit, which are issued in a joint procedure, is required.	Yes and No
3.2		Are legal-administrative requirements adequate for this installation type?	
	PV rooftop 1-3kW		positive
	Solar thermal ~9m² collectors		positive
	Geothermal heat pump < 10kW	Adequate since liquid-to-water heat pumps pose certain risks for ground water. All the heat pumps may emit noise and some ground works are necessary some kind of planning notification is seen as an adequate administrative requirement.	positive
3.3		Number of administrations that must be contacted (#)	
	PV rooftop 1-3kW		1
	Solar thermal ~9m² collectors		1
	Geothermal heat pump < 10kW		1

5 Issue 4 – Promotion of energy efficient renewable energy equipment

5.1 Introduction

Purpose of this chapter is to verify if following provisions of article 13 (6) of the Directive are fulfilled in Czech Republic or if any other efficiency criteria are applied with regard to RES technologies:

"With respect to their building regulations and codes, Member States shall promote the use of renewable energy heating and cooling systems and equipment that achieve a significant reduction of energy consumption. Member States shall use energy or eco-labels or other appropriate certificates or standards developed at national or Community level, where these exist, as the basis for encouraging such systems and equipment.

In the case of biomass, Member States shall promote conversion technologies that achieve a conversion efficiency of at least 85 % for residential and commercial applications and at least 70 % for industrial applications.

In the case of heat pumps, Member States shall promote those that fulfil the minimum requirements of eco-labelling established in Commission Decision 2007/742/EC of 9 November 2007 establishing the ecological criteria for the award of the Community eco-label to electrically driven, gas driven or gas absorption heat pumps.

In the case of solar thermal energy, Member States shall promote certified equipment and systems based on European standards where these exist, including eco-labels, energy labels and other technical reference systems established by the European standardisation bodies.

In assessing the conversion efficiency and input/output ratio of systems and equipment for the purposes of this paragraph, Member States shall use Community or, in their absence, international procedures if such procedures exist."

Biomass and heat pumps are not subject to any energy efficiency requirements on top of European standards.

Solar Thermal panels do not need to comply with any certain efficiency criteria in order to be installed. However, in order to qualify for the financial support within the *Zelená úsporám* programme, the solar panels do need to meet a certain efficiency coefficient. The annual solar gain must be at least 350 kWh per m² of the absorption area of the solar collector and in total 1500 kWh per one installation on the family house or 1000 kWh per one apartment unit in the apartment building with the solar installation.

5.2 Description of barriers & solutions

5.2.1 Detailed description of the barriers and solutions

Since no efficiency criteria are at place (with the exception of *Zelená úsporám*), this was not seen as a barrier by any stakeholder.

The Ministry of Industry and Trade recently announced preparation of a new Decree on the efficiency of energy use. The primary aim of this decree is allegedly efficient use of primary energy sources. The decree is to be applicable for all energy sources producing electricity including the fossil fuelled ones. Every category is to use BAT for their installations – a certain efficiency percentage is set. The efficiency of PV panels is to be above 20%, which the stakeholders claim is unreasonably high. Also, the whole notion of setting efficiency on RES technologies does not seem correct to the stakeholders, since eg. the solar power is not a primary resource, which could be measurable. What is measurable is the ratio between the price per m2 and energy output and for this reason the solar panels and PV are being priced based on their output (in watts). Stakeholders stated that the draft decree is seen as nonsense and they have doubts about what is the real aim of the Ministry.

On the other hand, stakeholders would favor some efficiency criteria. Maybe with the implementation of the Directive 2009/28/EC, there will be some specific standards adopted. Up to date, even the cheap and worse quality technologies from China are allowed and put to operation.

Possible solution: Withdraw from the intention to adopt a decree on the efficiency of electricity production. Instead, adopt certain criteria for specific RES technologies, which would be well studied, non-discriminatory and providing for sustainable development of this sector.

5.2.2 Best practice elements and indicators

No.	Benchmark	Result
4.1	Are the requirements of Art 13 (6) of the Directive concerning the promotion of efficient bioheat and heat pumps fulfilled?	No

6 Issue 5 Information/awareness raising

6.1 Introduction

In the Czech Republic **information on support measures** is generally provided in a well-structured and easily accessible way. National grant schemes have a specially designated websites with online information service and even hotlines (*Zelena usporam*). Comprehensive information can be found at the website of the Ministry of Industry and Trade <http://www.mpo-efekt.cz/cz/programy-podpory/>.

Information and awareness levels on renewable energy sources in the Czech Republic is quite low and there are frequent myths and prejudice against RES. This is especially a problem of certain officials and politicians; public opinion polls on the level of awareness of the general public have not been carried out recently. The programme EFEKT of MoIT enables to finance RES awareness raising campaigns. MoE has launched an information campaign in April 2009 lasting until December 2010 with the costs of more than 400.000 EUR. The campaign consists of the four main segments:

1. preparation of a series of leaflets and brochures on RES
2. organisation of workshops for regional and local officials
3. Promotional campaign
4. Hotline and website

For several years prior to the MoE campaign, partial information and promotional campaigns have been carried out by several NGOs, such as:

- Czech FoE did organize the first Wind Turbine Open Day in 2006 and ran an information campaigns breaking the myths about wind energy. <http://www.hnutiduha.cz/vitr/povery.php> The event is at the moment organized by the Czech Wind Power Association during the Global Wind Day on 15 June.
- The League of Ecological Alternatives has been organizing the Solar League <http://www.solarniliga.cz/>. Since 2009, the winners have been competing in European RES Champions League.

Also producers and RES operators have led campaigns promoting their technology.

6.2 Description of barriers & solutions

6.2.1 Detailed description of the barriers and solutions

All the interviewed stakeholders indicated that information and awareness is one of the key barriers of RES. Insufficient information and awareness is at all levels, which means

- at the regional political level
- at the regional/local administrative level
- at the public level

RES associations and operators reported that no information campaigns led by the ministry (either MoE or MoIT) took place although they would be welcome. Financial support schemes (i.e. EFEKT scheme, programmes of State Environmental Fund) is mainly for awareness raising of experts but is desirable for the general public as well.

The awareness of officials is a problem, which as a result affects the whole administrative procedure (see Chapter 2). According to the stakeholders, well-informed officials can be found as well as officials who are prejudiced or believe in myths they have read/heard somewhere. This mostly concerns opposition towards wind turbines (destroying the landscape characters) or biogas stations (smelling and polluting the area). On the other hand, Czech Republic has a tradition in small hydro power plants, therefore there is no negative position to them at the level of general public or regional politicians or local officials. However, the investors face strong opposition from the Fishermen Union.

Possible solutions: Ministry of Environment published methodical guidelines for all officials on biogas stations, which should make them aware of all the relevant aspects of the technology as well as on the assessment of landscape character (see Chapter 2) MoE stated that in their experience the officials have general awareness but sometimes, they lack background information and linkage to related issues.

The opinion of the general public is primarily formed through media and media frequently publish PR information of CEZ. CEZ is the biggest electricity producer, which owns almost all coal and nuclear power plants; RES form only a marginal part of their energy portfolio. The company has expanded to other countries of CEE region, where it has been investing in coal and nuclear power plants. Also, the company intends to build a new nuclear power plant in CZ. It has been for long the most profitable Czech company with the netto profit of almost 2 billion EUR (in 2009). However, this number is slightly below the estimates and shows the recent downward trend. According to the stakeholders, this is the reason why CEZ pushes for construction of new nuclear power plant and promotes fossil fuels. The broad (economic) power CEZ, the wealthiest company in CZ, which also owns most of the distribution systems, has been indicated as the biggest barrier to the development of RES. The company, although formally owned by the state, even executes control over political decisions and political heads have been seen on holidays with CEZ lobbyists and top managers. Through legislative initiative in the Chamber of Deputies, CEZ lobby even managed to push through an amendment of the Emission Trading Act, which provide the company with free emission credits even in the next trading period.

Possible solution: All the stakeholders were very sceptical to solving this issue.

Lack of research capacity is also significant barrier. One stakeholder stated that the Czech Technical University, Department of Nuclear Energy curriculum still includes information such as that solar panels will never produce more energy than the process of their manufacturing consumes. Also, there is no research institution focused solely on renewable energy sources. Grant Agency of the Czech Republic opens calls for research

projects in two separate categories: nuclear energy and non-nuclear energy, which includes all the other sources competing for funding. Also, another separate funding category is nuclear waste management.

Another barrier to RES research projects is that they are inter-disciplinary and there is an imminent lack of qualified experts to carry out evaluation of such project documents although they are highly needed and beneficial (in order to solve the competing public interests issues).

Due to the lack of funding and the lack of qualification, the existing research projects are not independent and they often show the results favouring the concrete donor eg. showing that this company's technology is the most efficient.

Possible solutions: More balanced distribution of resources in research, reconsideration of research priorities and categories, founding of independent state academic research centre, promotion and strengthening inter-disciplinary approach

There is a lack of RES authority. Although the Ministry of Environment promotes RES, the energy policy incl. the competence to prepare State Energy Policy lies with the Ministry of Industry and Trade, which was identified as not favouring or promoting development of RES. The stakeholders indicated, that recently the MoIT has been showing positive attitude towards biomass but with regard to other RES, its reluctance or even opposition remains.

Possible solutions: Uniform promotion and positive approach towards RES at the central level.

6.2.2 Best practice elements and indicators

The town of Litoměřice is one of the best examples of integrated approach towards implementing RES technologies. The success of the municipality lies in the combination of financial support together with efficient information campaigns and pro-active approach (RES installations on public buildings). It was triggered by the local ambient air pollution having peaked in winter months, which was caused by burning fossil fuels and diverse unsuitable "fuel" in households. After 90% penetration of natural gas for heating, the grant scheme on solar thermal panels and PVs was opened but faced a total lack of interest by the citizens. In order to stir it up, the municipality organised information campaigns with on-spot demonstration of operation of solar thermal panels. It also started putting solar thermal panels on public buildings and construction of citizens PV plants. The municipal authority premises are heated by a heat pump and the municipality supports projects of two small hydro power plants. On top of that, it carries out a pilot project on the first geothermal power plant in CZ (at the moment it is only in the phase of a monitoring bore hole, which cost app 2.7 million EUR) with the expected production of electricity (5MW) and heat (50 MW). It has also prepared a project of electro-bikes as an alternative mode of public transport.

On the other hand, the worst practice example is the recent lecture of the CEZ CEO Martin Roman at the University of Economics in Prague. His lecture to be held on the 29th April was promoted also through an internet competition. The introductory information basically diminished the discussion on electricity to the lowest possible not to say that the state guarantees on nuclear power plant counting to billions EUR or the

external costs of ambient air pollution (and diseased or dead people) in the vicinity of coal power plants. The competition consisted of three “questions”. The first one was to count how much money the operator of a solar power plant receives on subsidies this year and in 20 years of operation on top of the market price. The other question was to estimate the actual value of CEZ shares/stocks on the stock market. The third “question” was only to fill in a questionnaire with personal data. Three successful winners will be handed the prize by the CEO himself.

No.	Benchmark	Result
5.1	Is sufficient information on support measures available?	Positive

7 Issue 6 Certification

7.1 Introduction

The issue of certification is not dealt with by the Czech legislation. Therefore, practically anyone is allowed to install the RES technology – no specific authorization is required - although in practice it is always done by qualified engineers. The stakeholders indicated that the practice for imported technologies, such as wind or solar, is that the (head) installers have been foreigners as well delegated by the producer or exporter of the technology.

Currently there are no guidelines for planners, architects and others responsible for planning and design available and neither there is support for courses for planners, architects and others responsible for planning and design.

Also, there is no systematic training or courses on RES for engineers although some ad hoc trainings organised by technology importers might happen.

7.2 Description of barriers & solutions

7.2.1 Detailed description of the barriers and solutions

No barrier was indicated.

7.2.2 Best practice elements and indicators

No.	Technology	Benchmark/comments	Result
6.1		Are certification schemes or equivalent qualification schemes available for installers?	
	PV	N/A	No
	Solar thermal	N/A	No
	Heat pumps	N/A	No
	Biomass boilers		No
6.2		Is sufficient training on RES provided during the standard education curriculum of installers?	
	PV		negative
	Solar thermal		Negative
	Heat pumps	N/A	Negative
	Biomass boilers	N/A	Negative
6.3		Number of certified installers.	
	PV		
	Solar thermal	N/A	
	Heat pumps	N/A	
	Biomass boilers		

8 Issue 7 Infrastructure Development

8.1 Introduction

The Czech electricity network has been constructed for large centralised installations, which were the only electricity source until the 1989.

Annually, CEPS (Czech Electricity Transmission System) publishes plans on the grid capacity growth (so far the two localities, which are to be strengthened, concern unrealistic RES projects, which are unlikely to be built). Also, the DSOs plan to connect their networks to foreign networks (eg. E.ON to Slovakia).

8.2 Description of barriers & solutions

8.2.1 Detailed description of the barriers and solutions

Barrier 7.1 - Problems concerning connection to existing electricity networks

The official statement of CEPS, the monopoly TSO and legally obliged “supervisor” of the electricity network, says that the network cannot bear more “unsteady” wind and solar power plants.

CEPS alleges that the wind and solar energy cannot be predicted and therefore the network is difficult to maintain with abundant wind and solar installations connected to it. However, there are no studies proving this statement. Interviewed stakeholders consider the approach of the Czech authorities a lack of political will for connection of the photovoltaic and wind energy to the grid rather than a technical problem

Possible solutions: The stakeholders claim that there are predicting models available on the market (the same on wind as the one for solar energy recently bought by CEPS) and based on their results, the network can be maintained.

An independent impact study (CEPS submitted a study to prove its statement but its independence is questionable) should be conducted in order to assess the existing grid capacity. As a result of the study the limits for the RES connected to the grid should be set.

Barrier 7.2 - Problems concerning development of electricity network infrastructures according to a long-term strategy

There is some long term strategy but some interviews stakeholders claim it is rather outdated and the whole network should be rebuilt in SMART NETWORK standard.

Barrier 7.3 - Problems concerning development of a Trans-European Electricity Network

No barriers detected.

Barrier 7.4 – Other Barriers

No other barriers identified.

8.2.2 Best Practice Elements and Indicators

Please fill in here the results of the Benchmark indicators:

No.	Technology	Benchmark	Result
7.1	All	Presence of an efficient (in terms of capability of achieving its stated objectives) plan for the reinforcement of the interconnection capacity with neighbouring countries.	No
7.2	All	Presence of an efficient plan for the reinforcement of the connection capacity within the country.	No

9 Issue 8 Power Grid Issues

9.1 Introduction

According to the Act on the Support of Electricity from RES , within the area they have a licence for, the transmission grid operator and the distribution grid operators are obligated to give priority connection to the transmission or distribution grid to those systems that generate renewable electricity. Wind-power stations that cover an area of 1 km² and whose total installed capacity is more than 20 MW are not eligible to this instrument. However, they are contractually entitled to connection to the grid according to the principle of non-discrimination as stipulated by the general provisions of energy law. The grid operator is entitled to refuse connection only if he can provide evidence of a capacity shortage or of the connection threatening the reliable operation of the distribution grid. He is exempt from this obligation only in these two cases. The refusal can be challenged at the Energy Regulation Office. The cost of the connection of a system to the grid is borne by the electricity producer.

Consent with the grid connection (*souhlas s pripojením do sítě*) is granted before the installation is built therefore after it is built the DSO should connect it without undue delay. The consent is valid for 6 months but can be easily prolonged. Distribution grid is owned and operated by CEZ Distribuce a.s, E.ON Distribuce a.s.(southern parts of CZ) and PREdistribuce a.s. (Prague City). The transmission system is operated by CEPS (Czech Electricity Transmission Network), a state owned monopoly, which is also in charge of even electricity transmission in the grid and the reliable operation of the electricity network.

Up to date, the consent was granted upon submission of a project not having to be supplemented by necessary permits or other studies. As a result, the projects have not been thoroughly examined by the grid operators. For these reasons even speculative projects were given the consent and now block the capacity of the grid. CEPS claims that by the end of January 2010, the consents were given to new installations with the total output of 8 000 MW. Stakeholders indicated that 60-80% of this output are speculative projects, which are very unlikely to be built.

The Act on the Support of Electricity from RES also laid down specific feed-in tariffs for “green” electricity in order to grant RES installations sustainable support for at least 15 years of operation. The feed-in tariffs differ by individual technology and are calculated from the initial costs of the installation. The actual prices are announced annually by the Energy Regulatory Office depending on the inflation ratio. Section 6(4) stipulates that the prices cannot be lowered by more than 5% from the prices that were counted in the first year (year 2007). Due to the technology development and penetration in the last years, the

costs of PV power plants have significantly decreased. Still, the feed-in tariff for this technology is quite high compared to standard market price of electricity and also to feed-in tariffs for other RES electricity. Once it is granted, the same price remains for 15 years of operation (as this is counted as a payback period). For this reason, there was a massive spread of PV plants in the years 2008 and especially 2009, which was reflected in the overall capacity of installations, which were granted a preliminary consent with the grid connection from the DSOs. As a result, CEPS announced in February 2010, that the reliable and safe operation of the grid is threatened and therefore no new RES installations shall be given the consent with grid connection. The position was in March 2010 supported by the Energy Regulation Office and is officially applicable on wind and PV installations. On the other hand, the projects, which have already obtained the consent, are entitled to be connected.

9.2 Description of barriers & solutions

9.2.1 Detailed description of the barriers and solutions

Barrier 8.1 - Problems concerning grid connection

At the moment, officially, no new wind and PV projects are given consent with grid connection. Although the ones, which had obtained the consent before should be connected without undue delay, the stakeholders reported significant delays especially caused by DSO CEZ.

The negative situation resulted in the fact, that the (speculative) investors, which had obtained the consent, are now selling it. The consent makes a reservation for a certain capacity in the grid and is not bound to concrete project details, therefore this is possible although done in disguise.

Moreover, some stakeholders indicated that the capacity of the grid is sufficient and it could reliably bear the connection of “unsteady” sources. An example was given: 1500 MW of electricity has been transmitted through Czech network from Germany to Austria and Poland in the summer and the grid maintained its stability. Another stakeholder indicated that the Czech network cannot “switch-off” the inflow of electricity from abroad, therefore some capacity has to be always reserved for such cases.

Possible solution: Adoption of clear and binding guidelines, which documents are to be submitted together with the application for the consent, only a fixed-term validity of the consent, construction of smart networks..

Barrier 8.2 - Problems concerning grid access

No barriers detected.

Barrier 8.3 - Problems concerning TSOs and DSOs

Again, stakeholders indicated that DSOs and TSO are all within the sphere of influence of CEZ, which hinders development of RES. The actual economic power of CEZ is so far-reaching, that even the Energy Regulation Office is not perceived as an independent body. Other DSOs (E.ON and PRE) own only a small percentage of power plants, therefore they are also dependent on the electricity produced by CEZ. Another problem is that they do not show interest in investing in the infrastructure.

Barrier 8.4 – Other Barriers

No barriers detected.

9.2.2 Best Practice Elements and Indicators

No.	Technology	Benchmark	Result
8.1	All	Are the rules on cost sharing and bearing of grid connection objective, transparent and non-discriminatory ?	Yes
8.2	All	Is the denial of grid connection by TSOs and DSOs a common problem, constituting an important barrier for RES development?	Yes, recently (as of 02/2010), officially for PV and wind
8.3	All	Number of months for getting grid connection (considering also approval of grid connection)	It varies. At the moment, no consents with grid connection are granted and the connection of the installations, which had obtained it before, is taking long. CEZ was reported to prolong it without any due reason to even 6 months.
8.4	All	Estimated connection costs in Euros (in case producer pays)	The connection costs are born by RES electricity producers.

10 Issue 9 Gas Network Issues

10.1 Introduction

Czech Republic has a well developed and dense natural gas network. Most of the infrastructure is owned by RWE, which is also importing natural gas from Russia. A small percentage of natural gas is exploited from domestic reserves.

According to the information of Czech biogas association, 222 biogas stations are in operation in the Czech Republic with the total installed capacity of 106.67 MW. They produce mainly electricity but also heat. Most of them are agricultural biogas stations. However, the process of upgrading biogas to green gas is not eligible to any legal support (feed-in tariff/green bonus) although it was identified as costly. There exist some pilot examples but none of them is in operation or under construction.

10.2 Description of barriers & solutions

10.2.1 Detailed description of the barriers and solutions

Barrier 9.1 – No encouragement for upgrading

Systematic support of green gas (upgraded biogas) is missing. There is no legal act similar to the one for RES electricity, which would grant preferential grid access and a feed-in tariff or green bonus on top of the standard price for green gas. The investment support is not needed as much as the running costs support (which would be covered by the feed-in tariff)

Possible solution: Introduction of a feed-in tariff and/or green bonuses on upgraded biogas.

Barrier 9.2 – Lack of information

Lack of awareness among biogas plants operators on the technology and support programs was reported.

Possible solution: If the process is made financially more viable, it could attract more operators who would then seek more information.

Barrier 9.3 – Authorisation procedures

No barriers detected. The Czech legislation does not know green gas production, therefore there is no authorisation required. The stakeholder indicated that it is highly probable there will be some administrative obstacles once legislation is adopted.

Barrier 9.4 – Lack of incentives for infrastructure owners to open to biogas

This was indicated as a barrier since the infrastructure owner has no statutory obligation to connect green gas into the network. The respondents stated, that infrastructure owners show no willingness to connect the green gas since their interest is to promote natural gas. They reported cases when they preliminarily refused the connection of biogas stations, which were interested in producing green gas.

Possible solution: Legal act providing for a mandatory connection of biogas stations producing green gas to the gas network.

Barrier 9.5 – Other Barriers

No barriers detected.

10.2.2 Best Practice Elements and Indicators

No.	Benchmark	Result
9.1	If green certificates and/or subsidies for biogas are in place, do they de facto make unattractive to feed green gas into the grid due to the high level of subsidy for biogas used for electricity generation?	n/a
9.2	Are the costs of grid connection for producers of gas from renewable energy sources objective, transparent and non-discriminatory?	n/a
9.3	Do transmission and distribution tariffs discriminate against gas from renewable energy sources?	No
9.4	Average time needed for grid connection approval (from application for grid connection to formal approval) in months (#).	n/a

11 Issue 10 District Heating

11.1 Introduction

District heating has been a major source of heating in larger municipalities since all apartment buildings were owned by the state till 1990 and thus connected to the central heating system. At the moment, almost 50% of population is heated by district heating. There are several big district heating players who control the market in the form of different partnerships and joint ventures with the local municipalities. At the same time the district heating prices are a subject of a strong state regulation. However, the present share of RES in district heating systems is very low and mostly comprises biomass. Due to the green bonus on CHP production, penetration of this system is higher.

11.2 Description of barriers & solutions

According to Section 80 of the Energy Act, the heating distribution system owner is obliged to connect and purchase heat produced from RES or heat pumps or CHP or incineration plants. However, this obligation is mitigated by the fact, that he can refuse if the heat demand is already satisfied, if the heat parameters are different from the parameters of the distribution system or if it would mean higher costs for consumers. Especially the last condition is so easily met, that basically this provision is obsolete.

11.2.1 Detailed description of the Barriers and solutions

Barrier 10.1 – Lack of positive conditions for the increase of the share of renewables in existing DHC systems

Current market situation in Czech Republic is not motivating for the RES investments in district heating systems. The current DH systems are in quite a good shape and produce relatively cheap heat although mainly from burning coal. The stakeholders indicated that when they built biomass-h plant, the fuel was cheap and available locally and currently, its price went high and instead of agricultural biomass, it comprises mainly wood pallets. Therefore, the stakeholders do not see it as a sustainable source of heat.

Possible solution: Introduction of a obligatory connection to the network and feed-in tariff or green bonus on green heat. Also, certain efficiency criteria should be set so that not all of the local agricultural biomass is consumed by the biomass-e plants.

Barrier 10.2 – Lack of positive conditions for the initiation and expansion of DH systems largely based on renewables

No barriers detected.

Barrier 10.3 – Other Barriers

Another specific barrier, or conflict of interests, can be stated here. Biomass heat producers do feel scarcity of fuel and higher prices and call for more incentives. Biomass electricity is supported through the feed-in tariff therefore the heat producers feel they are eligible for some operation support as well. To support their position, they claim that efficiency of production of biomass heat is between 60-80% whereas for biomass electricity it is only at 30%. This means that the biomass producers utilize the fuel (biomass) more effectively and should be therefore preferred or at least treated equally. The interviewer, however, stated that the heat cannot be transported on a larger distance, it has high losses in the network or the simply the network/infrastructure is expensive to build and maintain whereas electricity is a multipurpose power and grid losses are minimal when compared to the heat.

Possible solution: Introduction of the feed-in tariff together with some efficiency criteria but also setting a coefficient to calculate the actual contribution of heat and include it into the overall RES share. It is already applicable on biofuels.

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11.2.2 Best Practice Elements and Indicators

Electricity and heat biomass power plant in Jindřichův Hradec, which does not utilize cheap fuel (such as wood pallets) but takes fuel directly from local agriculture producers and apart from producing electricity it supplies the near-by factory with the left-over heat.

No.	Benchmark	Result
10.1	Are there policies to promote the increase of the RES share in existing DH networks? (yes/no)	No
10.2	Are there policies to promote the initiation / expansion of DH networks? (yes/no)	No
10.3	Percentage present renewable share (see ECOHEATTOOL)	3%
10.4	Percentage CHP share (idem)	59%