

Non-cost barriers to renewables – *AEON* study

Poland

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Table of contents

1 Issue 1 Administrative Procedures	8
1.1 Introduction	8
1.2 Description of barriers & solutions	8
1.2.1 Detailed description of the barriers and solutions	8
1.2.2 Best Practice Elements and Indicators	13
1.3 Literature	13
2 Issue 2 Technical Specifications	15
2.1 Introduction	15
2.2 Description of barriers & solutions	16
2.2.1 Detailed description of the barriers and solutions	16
2.2.2 Best Practice Elements and Indicators	16
2.3 Literature	17
3 Issue 3 Building integrated technologies	19
3.1 Introduction	19
3.2 Description of barriers & solutions	19
3.2.1 Detailed description of the barriers and solutions	19
3.2.2 Best Practice Elements and Indicators	21
3.3 Literature	21
4 Issue 4 – Promotion of energy efficient renewable energy equipment	23
4.1 Introduction	23
4.2 Description of barriers & solutions	24
4.2.1 Detailed description of the barriers and solutions	24
4.2.2 Best Practice Elements and Indicators	24
4.3 Literature	25
5 Issue 5 Information/awareness raising	27
5.1 Introduction	27
5.2 Description of barriers & solutions	27
5.2.1 Detailed description of the barriers and solutions	27
5.2.2 Best Practice Elements and Indicators	28
5.3 Literature	28
6 Issue 6 Certification	31
6.1 Introduction	31
6.2 Description of barriers & solutions	31
6.2.1 Detailed description of the barriers and solutions	31

6.2.2 Best Practice Elements and Indicators	32
6.3 Literature	32
7 Issue 7 Infrastructure Development	33
7.1 Introduction	33
7.2 Description of barriers & solutions	33
7.2.1 Detailed description of the barriers and solutions	33
7.2.2 Best Practice Elements and Indicators	36
7.3 Literature	36
8 Issue 8 Power Grid Issues	39
8.1 Introduction	39
8.2 Description of barriers & solutions	40
8.2.1 Detailed description of the barriers and solutions	40
8.2.2 Best Practice Elements and Indicators	42
8.3 Literature	42
9 Issue 9 Gas Network Issues	43
9.1 Introduction	43
9.2 Description of barriers & solutions	43
9.2.1 Detailed description of the barriers and solutions	43
9.2.2 Best Practice Elements and Indicators	44
9.3 Literature	44
10 Issue 10 District Heating	45
10.1 Introduction	45
10.2 Description of barriers & solutions	45
10.2.1 Detailed description of the Barriers and solutions	45
10.2.2 Best Practice Elements and Indicators	46
10.3 Literature	46

1 Issue 1 Administrative Procedures

1.1 Introduction

The administrative procedures in Poland are generally considered as favourable to renewable energy sources (RES). However, on many points areas of improvement have been identified. The main obstacles to the development of RES installations in Poland are legal regulations, assessment of the investment's impact on the environment and other arrangements of public nature.

The main administrative barriers in development of RES energy plants in Poland are mostly long lasting and troublesome procedures:

- changing the legal status of land – poor coverage of the country area with local spatial development plans;
- obtaining the building permits e.g. for installation of masts for wind measurements and development of wind farms);
- incompetent officials at local authorities;
- lack of guidelines on EIA procedure including Natura 2000 areas.

1.2 Description of barriers & solutions

1.2.1 Detailed description of the barriers and solutions

Barrier 1.1 – Inefficient general administrative procedures

In Poland, the RES sector is not regulated by means of a single act dedicated to RES. The Act on Energy Law (1997, with numerous amendments to implement provisions of EU directive 2001/77) outlines the general administrative requirements for energy producers and suppliers, technical conditions for connection to the network, energy prices calculation, etc. More detailed regulations on renewables are provided in executive orders to the Energy Law.

The regulatory framework has been perceived as a barrier for the development of some RES facilities e.g. small biogas facilities (Ministry of Economy 2009) however this law has lately been amended (enforced in 8 January 2010) and administrative barriers have been minimised. A single act dedicated specifically to RES regulations could reduce the administrative barriers as identified below. A draft of a new Renewable Energy Source Act is expected to be published in Poland by the Ministry of Economy by the end of 2010.

The following general administrative barriers were identified:

Long lead time to obtain necessary permits. Long lasting and troublesome procedures for obtaining the building permit, e.g. obtaining a building permit for installation of wind monitoring masts prior to development of investment is identified as a barrier (EC BREC IEO 2009b). This barrier is particularly present in case of applying for building permits for small hydropower plants, wind farms or photovoltaic installations. The permitting procedure is outlined in Building Law Act (building permit) and Environmental Protection Act (environmental impact assessment necessary to obtain the decision on environmental conditions needed for the building permit). The procedure often is slowed down by public consultations stage (questions on environmental impact) and there is a time lag in decisions of local authorities. An example of the multiple steps to be undertaken in the administrative process is the photovoltaic installation where a building notification or a building permit is required. The building permit requires the following steps: checking geodetic maps, preparing a building design, notifying local authorities on date of starting construction works, obtaining construction journal and hiring a construction manager. The later proves the complexity of the process of obtaining a permit and the reasons for a long lead-time.

Lack of knowledge and benefits on RES for authorities. The time lag in decisions of local authorities might be caused by the insufficient knowledge on RES of local level officers. The lack of competence of some of the administrative officers is noted as a significant barrier. Officers are said not to be sufficiently trained to make the decisions of the impact on the landscape, protected nature areas, wild animal habitats and migration routes, etc, and are questioning the results of the environmental impact assessments. This is mostly valid for stand-alone investments e.g. photovoltaic installations and large facilities e.g. wind farms and hydropower plants.

Discriminative administrative procedures. The administrative procedures are discriminative between traditional plants and RES plants, in terms of detailed scrutiny of studies and procedural steps. There is a lack of clear guidelines for environmental impact assessments for sites located in the vicinity of Natura 2000 areas or the reference to the Water Framework Directive in case of small hydropower plants (Malicka 2010a). This is considered to be a problem both for investors and authorities responsible for making the decision. As there are no specific guidelines what should be included in EIAs for aforementioned areas, the same document can be questioned by one authority and accepted by another.

The complexity of procedures for obtaining the environmental decision approving the execution of the investment is perceived as a barrier especially in case of wind farms (EC BREC IEO 2009b) and biogas facilities.

In case of wind farms the issues pertaining to the assessment of the wind farm's hazardous impact on natural environment, particularly in the context of protected bird species migration is reported to be a barrier (TPA/DZP 2009).

With reference to the biogas technology, there is no distinction in terms of legal requirements for large biogas plants >1MW (use of waste from animal production) and small biogas plants. Both categories have the same legal requirements for obtaining the

environmental decision. As a result the environmental procedures pose a barrier for the development of small-scale plants. Investment capital is large and it is unattractive financially to farmers.

Authorities in different regions apply common regulations in a different way.

Problems in the handling of regulations in practice, typically by regional or local authorities are perceived as a barrier. Due to a lack of national guidelines, authorities in different regions or with other responsibilities sometimes apply common regulations in a different way. It has been reported that the regulations are unclear and dependent on the attitude of the local authorities towards RES.

Resistance of local authorities to RES. On some occasions resistance of local authorities towards the RES is observed. This might be caused by unfavourable tax conditions.

In the recent years there has been a proposal for increasing the property tax on wind farms to a level as much as fivefold of current tax. The change has not been approved hence this limits economic drivers for local authorities to support wind farms. Local authority resistance to wind farm investments might also occur due to loss of subsidies by low income councils. The current tax situation is unfavourable for low-income villages because they lose public subsidies due to increase of local tax income if wind farms are developed (EC BREC IEO 2009b). The two later points are economic barriers for local authority support hence is not in the area of focus of this study.

Generally tax arrangement are perceived as a barrier in motivating local authorities to be proactive towards RES however this is likely to be discussed whilst assessing cost barriers in RES development.

Lack of comprehensive information on the RES investment process. Comprehensive information on the process of authorisation and statistical information on the number of entities undergoing the process of authorisation is not available. This is an obstacle in planning individual investments because there is no confirmed and reliable data on the state of investments in a particular RES technology, in a particular region at a particular time. Different authorities i.e. local authorities URE, DSOs and TSOs provide contradicting information on the number of planned RES investments approved for grid connection. This is a barrier hindering the planning of infrastructure development and RES investments which require grid connection. Clear official guidelines and official guidance for grid connection authorisation procedures and a transparent and integrated system of tracking ongoing authorisation are recommended (EC BREC IEO 2009b).

Barrier 1.2 – Competing public interests

Competing public interests represent another barrier related with the administrative procedures issue. During the administrative procedure, different competing interests must be balanced, for example environmental protection, neighbours interests, etc. During the administrative process, the interest to develop a RES installation may compete with other public interests.

The following public interest barriers were identified:

Competing public interests at strategic policy level. Based on the Polish Energy Policy for 2030 (PEP 2030), published in November 2009 by the Ministry of Economy and enacted by the Council of Ministers, the target share of the energy generated from renewable energy sources for 2020 is 15% of total generated energy. For the following years (2020-2030), further development of RES is foreseen, but no numbers/ goals are specified.

In general, the PEP 2030 is considered more favourable for atomic energy and large hydro-electric power stations, especially those state-owned. It is also considered favourable for coal-fired power plants used for the generation of both heat and electric energy rather than RES. The PEP 2030 has been widely criticised by various non-governmental organisations as not sufficiently promoting RES. Some interests e.g. coal-based energy generators are said to be protected in a disproportionate manner.

Environmental protection. Public interests in the area of environment protection have come across as a barrier mainly in case of small hydropower plants (Malicka 2010a) and wind farms (TPA/DZP 2009).

In case of wind farms, environmental protection interests hinder the environmental decisions process which results in very restrictive environmental decisions and e.g. require from investors to change the status of farm land and designate large areas to environmental purposes as an equivalent for the land approved for power investment (TPA/DZP 2009). The decisions issued by environment conservators are occasionally perceived as bias.

In case of small hydropower plants in Poland the presence of protests proves competing interests with reference to environmental protection. Protests comprise both local community and fishing associations protests on specific investment as well as general public protests against the use of the hydropower technology in Poland. There are groups advocating for changing the legislation as to hinder the development of small hydropower plants in Poland. Advocating pressure groups base their reasoning on requirements for implementing the Water Framework Directive. It is noted that the government authorities responsible issuing permits are pressurised to greatest extent hence further administrative barriers arise (Malicka 2009a).

The inclusion of areas in the NATURA 2000 programme is perceived as a barrier for the establishment of RES investments. Decisions for establishing some of the NATURA 2000 areas (especially the ones assigned shortly after Poland joined the EU) are perceived by some interviewees to have been taken without consideration of regional development. A major portion of areas especially on the Polish coast has been excluded from wind power development or encounter formal and legal obstacles. It is against the law in Poland to build e.g. a wind turbine in the area of NATURA 2000 or in the vicinity of such area due to environmental concerns. Research done by the Polish Wind Energy Association found that the impact of wind farms on bats and birds in the NATURA 2000 area is minimal however this has not changed the views of the decision-makers. The later proves that there are ongoing public discussions between wind sector representatives,

ecologists and the Ministry of Environment and developing RES projects in the vicinity of protected areas is perceived as an area of competing public interests.

NIMBY effect. NIMBY is the acronym of the expression “not in my back yard”. Social opposition of neighbours during RES installation is not significant as compared to other barriers present in Poland. Protest of local communities take place rarely however tend to appear in case of wind farms, small hydropower plants and biomass combustion facilities. Most of the opposition is a result of insufficient or inexistent information dissemination and consultation with the local community.

Barrier 1.3 – Inexistent or insufficient spatial planning

A significant barrier in Poland is the inexistence of local spatial plans (EC BREC IEO 2009b). At the moment, only approximately 20% of the area of Poland is covered with local spatial development plans. Based on the Act on Spatial Development of 2003, on the areas, where spatial development plans are not in place, the investor is obliged to obtain a “conditions on the site’s development” decision which defines what facility and on what terms can be implemented on a real property. This process prolongs the initiation phase of the project and is perceived as a major barrier (TPA/DZP 2009).

In case when a local spatial plan is developed, rarely RES is taken into consideration in the local spatial planning documentation (PIGEO 2010). This increases the importance of the barrier as the investor encounters a prolonged process of authorisation despite the fact that the spatial plan is in place.

As a result in practice the RES investor at present (particularly for large RES facilities) often must obtain a “conditions on the site’s development” decision for developments in Poland (TPA/DZP 2009).

This barrier is more common for local administrations in villages and small towns. Officials in small localities have limited knowledge on RES hence the installation of RES technology units with reference to spatial planning may be assessed incompetently. However this is not perceived to be a barrier in large towns and cities.

Barrier 1.4 – Other Barriers

Offshore wind power industry. In Poland offshore wind power industry is not present. The development of offshore wind power industry is hindered by a number of obstacles, including among others the legislative barrier, absence of approved land development plans for sea areas, absence of power grid prepared to collect the produced energy, absence of sufficient quantity of transmission lines or power balancing problems. The Polish Energy Policy for 2030 (PEP 2030) does not include coastal grid development as a priority (EC BREC IEO 2009b). The investment costs in case of offshore power plants are higher than the costs of investing in land-based wind farms (TPA/DZP 2009). It is assumed that the development of the offshore wind power industry in Poland will be initiated in year 2018.

1.2.2 Best Practice Elements and Indicators

No.	Technology	Benchmark	Result
1.1		Is one stop-shopping possible?	No
1.2		Amount of money to be invested in the administrative process (including cost of work and costs like fees) (in €)	25k
1.3		Time to be spent for the administrative process (duration to get all the main permits) (in months)	6-30
1.4		Estimated number of permits required (#)	4

1.3 Literature

Ministry of Economy (2009) Innovative Energy Programme – Energy and Agriculture. Warsaw.

Kurowski (2010) Kurowski, K., solar, Institute for Fuels and Renewable Energy, interview on 23.02.2010.

Kostrzewa (2010) Kostrzewa Mariusz, BBI ZENERIS NFI S.A. interview on 26.02.2010.

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Kunikowski (2010) Kunikowski, Grzegorz, biomass, Institute for Fuels and Renewable Energy, interview on 23.02.2010.

Gajowiecki (2010) Gajowiecki Janusz, Polish Wind Energy Association interview on 26.02.2010.

Bogacki (2010) Bogacki Mariusz, buildings, Polish Foundation for Energy Efficiency interview on 24.02.2010.

TPA/DZP [TPA Horwath and Domański, Zakrzewski, Palinka] (2009) Wind energy in Poland. Warsaw.

PIGEO [Polish Economic Chamber of Renewable Energy] (2010) National map for Renewable Energy Sources for Poland. 15% to 2020.

Polish Society of Photovoltaic, Pietruszko (2010) Presentation on Poland. Research on Legal Administrative Procedures & Barriers. Research Review Meeting, Intelligent Energy Europe.

Polish Wind Energy Association, Mroczek (2010) Presentation on Wind power sector in Poland. Wind barriers workshop, EWEA conference 22 April 2010.

2 Issue 2 Technical Specifications

2.1 Introduction

This chapter analyses if the provisions of the renewables Directive 28/2009/EC concerning technical requirements are fulfilled in Poland. 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.

Below are the main support schemes available in Poland (TPA/DZP 2009):

- Regional operational programmes - aid for RES through a portion of public fund development funds. Eligible expenses, i.e. expenses partially refundable with public aid, include costs related to construction works and infrastructural facilities, purchase or lease of machinery and equipment etc.;
- National Programmes (Infrastructure and Environment Operational Programme) - Aid activities are dedicated to projects aimed at energy generation from renewable sources, as well as development of transmission and distribution infrastructure directly related to connecting this type of sources;
- The preferential loans programme offered by the Environmental Protection and Water Management Funds (NFOŚiGW and WFOŚiGW) constitutes a non-subsidy aid form for RES sector. In this case, aid is offered to low-capacity investments, e.g. wind power plants of up to 10 MW, biomass facilities up to 3MW or building integrated technologies.

For programmes supporting the development of RES in Poland there are technical specifications on the equipment that may be used and is eligible for financing in the scheme. In Poland technical specifications generally do not create barriers in the internal market operations. The technical specifications are very broad and do not give definitions or reference to European standards.

Taking the example of wind farms; technical specifications are quite general and refer to the technology used e.g. the specific technology of the equipment has to be present on the market for more than 3 years. They do not give specific definitions or detailed requirements with reference to European standards. European standards are referred to in Polish construction regulations that give details of specifications for construction and are applicable in further stages of the development. These however need to be complied with at construction stage.

2.2 Description of barriers & solutions

2.2.1 Detailed description of the barriers and solutions

Barrier 2.1 – Weak definitions

Technical specifications which must be met by renewable energy equipment and systems in order to benefit from support schemes are not clearly defined however this is not perceived as a barrier by support programme applicants.

Barrier 2.2 – no EU standards applied

Technical specifications are usually not expressed in terms of European standards (including eco-labels, energy labels and other technical reference systems), though such European references exist however this is not perceived as a barrier by support programme applicants.

Barrier 2.3 – Specified locations

These specifications prescribe, explicitly or de facto, where the equipment and systems are to be certified, for instance because that specific certification is de facto only available in that specific country. This barrier is not present in Poland.

Technical specifications do not set a necessity of introducing certified equipments or systems however it is common in Poland that investors choose to use certified systems because then the investor is more likely to get a grant from the support scheme.

Barrier 2.4 – Barriers to trade

These specifications generally do not impede the operation of the internal market in any other way. Technical specifications are generally not perceived as a barrier by support programme applicants however in some cases barriers have been reported.

In case of national support schemes e.g. projects financed by NFOŚiGW and WFOŚiGW, only small-scale investments (in case of biomass technology <3MW units) are eligible for support. This poses a barrier for development of medium size projects. The national and regional funds (NFOŚiGW and WFOŚiGW) do not provide technical specifications in the support programme requirements. The funds mostly take into account economic factors of the investment (if it is financially accountable) and the decrease in air emissions that the project will invoke.

2.2.2 Best Practice Elements and Indicators

No.	Technology	Benchmark	Result
2.1		Are specifications expressed in terms of European standards (including eco-labels, energy labels and other technical reference systems), though such European references exist?	No

2.3 Literature

TPA/DZP [TPA Horwath and Domański, Zakrzewski, Palinka] (2009) Wind energy in Poland. Warsaw.

Kowalski (2010) Kowalski, Łukasz, wind, Institute for Fuels and Renewable Energy, interview on 23.02.2010.

Cecerko (2010) Cecerko, Marek, Grupa Polish Energy Partners S.A.

Bogacki (2010) Bogacki Mariusz, buildings, Polish Foundation for Energy Efficiency interview on 24.02.2010.

3 Issue 3 Building integrated technologies

3.1 Introduction

Integrated building technologies are a rapidly developing RES sector in Poland. There are a number of support schemes available however deficiencies have been observed in the area of legal regulations. The lack of renewables obligations (RO) and of guidelines on building integrated RES technologies are perceived as the most significant barriers.

3.2 Description of barriers & solutions

3.2.1 Detailed description of the barriers and solutions

Barrier 3.1 – Inefficient general administrative procedures

Administrative procedures are only a barrier in case of building integrated RES technologies that need to go through the permitting process e.g. heat pumps, photovoltaic installations and biomass combustion facilities. In case of solar panels this is not perceived as a barrier in Poland. Authorities in different regions or with other responsibilities sometimes apply common regulations in a different way hence prolonging the process. The administrative regulations have been reported to be unclear. No official guidance and guidelines on building integrated RES technologies are available and as a result local authority officials cannot apply a common approach.

See further discussion on administrative procedures in Section 1.

Barrier 3.2 – No/insufficient specific rules for building integrated/small scale RES installations

Official rules on building integrated RES technologies have not been developed in Poland to date. Electricity created at building level is rarely fed into the grid system. It is more financially beneficial to use the electricity in-house rather than sell to the grid and benefit from the green certificate tariffs. This point is an economic barrier hence is not in the area of focus of this study.

Barrier 3.3 – Competing public interests

The RES equipment is installed only on new buildings or buildings that are undergoing major renovation works. In Poland rarely are other buildings e.g. historic buildings considered hence public interests are limited to community and environmental concerns.

Generally competing public interest does not come across as a significant barrier in most cases. Opposition of neighbours might be observed during the administrative procedures

in case of installation of biomass combustion facilities. The issue of biomass storage is of public concern on several occasions.

In case of heat pumps the requirements for the protection of the environment might impede or prevent the installations in some cases e.g. ground water protection laws or distance from neighbouring property.

Barrier 3.4 – Renewables obligations insufficient

In Poland there are no renewables obligations (ROs) for buildings on a national or on regional level. It would be beneficial to create and implement countrywide ROs with respect to new buildings, major refurbishments and historical and protected buildings. The regulation should set the minimal annual share of RES in energy supply for buildings (PIGEO 2010).

Barrier 3.5 – Exemplary role of public buildings neglected

Public buildings rarely fulfil their exemplary role concerning the integration of RES in buildings in a satisfying way. RES are not sufficiently used or are not sufficiently visible on public buildings. If RES installations is used on a particular building it is more likely that this is a public building (rather than private building) however information on the installation and promotion is rarely in place. The integration of RES in public buildings is not visible enough to the general public.

Barrier 3.6 – RES deployment hindered by spatial planning matters

This is a barrier that is more significant in the case of heat pumps, photovoltaic installations and biomass combustion facilities as compared to solar panels because in case of the first a permit or/and communication with local authorities is required. When authorities are contacted with this matter there appears to be lack of coordination between different authorities responsible for spatial planning. In general spatial planning is poor in Poland (see section 1). At the moment, only approximately 20% of the area of Poland is covered with local spatial development plans.

RES are also not fully considered in case of newly designed buildings. New buildings are not designed for an integration of RES at a later point in time (e.g. optimal orientation for the use of solar technologies, roofs/buildings designed to support additional weight). This is due to limited interest of the public in RES and limited demand for such design.

Barrier 3.7 – Tenancy law and ownership law impedes development of Building Integrated RES technologies

This is not a significant barrier in Poland yet.

In general the development of RES installations on buildings can affect other private parties e.g. neighbours and can therefore cause conflicts with other private stakeholders. In Poland the number of buildings with RES installations is insignificant and even solar panels are rarely observed. The tenant's approval for renovations which include the installation of building integrated RES systems is not a noticeable problem. It is mostly public buildings that have developed RES installations. The public body is usually the owner of the buildings and no conflicts are typically observed.

The tenancy and ownership legal regulations are also not perceived as a barrier. There is no public discussion yet on distribution of costs in tenancy law relating to RES and similar topics.

Barrier 3.8 – Other

Limited or nonexistent financial support for private entities (household owners).

Numerous support programmes exist for the business and public sector however this is virtually nonexistent for individual household owners who are willing to make use of building integrated technologies on their property. The cost at the development stage greatly exceeds maintenance costs throughout the lifetime of the equipment. In case of solar panels there are a few examples of funding schemes available for individuals i.e. Program Ograniczenia Niskiej Emisji (Programme Limiting Low Emission) in the Śląsk area and programme of the WFOŚiGW in Katowice. Lack of information on financial support and the small number of support schemes available for households has been reported as a barrier (EC BREC IEO 2009a). This is a cost barrier hence will not be further discussed in this study.

3.2.2 Best Practice Elements and Indicators

No.	Technology	Benchmark	Result
3.1		Is this installation type in normal cases exempted from an authorization procedure (building permit)?	yes
3.2		Are legal-administrative requirements adequate for this installation type?	yes
3.3		Number of administrations that must be contacted (#)	NA

3.3 Literature

Bogacki (2010) Bogacki Mariusz, buildings, Polish Foundation for Energy Efficiency interview on 24.02.2010.

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Polish Society of Photovoltaic, Pietruszko (2010) Presentation on Poland. Research on Legal Administrative Procedures & Barriers. Research Review Meeting, Intelligent Energy Europe.

4 Issue 4 – Promotion of energy efficient renewable energy equipment

4.1 Introduction

This issue is related to the provisions of article 13 (6) of the Directive:

“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.”

In Poland the Energy Law does not reflect the presented above provisions as set in the Directive 2009/28/EC. The Directive has created a necessity for further improvements of the national energy regulations. Despite recent amendments on the Energy Law agreed on 10 January 2010 further amendments need to be made in order to meet requirements of the Directive (PIGEO 2010). Currently (as of January 2010) there are attempts to implement the requirements imposed by Directive 2009/28.

4.2 Description of barriers & solutions

4.2.1 Detailed description of the barriers and solutions

Barrier 4.1 – Non-compliant promotion schemes

In some cases (an example is given below) Poland actively supports developments that do not fulfil the requirements of Art, 13(6).

Case study for biomass facilities in Poland. Under priority 9 (Environment-friendly energy infrastructure and energy efficiency) of the Operational Programme 'Infrastructure and Environment' 2007-2013, measures 9.1 and 9.4 are relevant to RES operators seeking for financial support. Measure 9.1 *Efficient energy generation* has been allocated a small budget and was addressed to high efficiency cogeneration i.e. combined heat and power plant (CHP) utilising biomass could apply for funding. Measure 9.4 *Energy generation from renewable sources* has been allocated a larger budget, however CHP utilising biomass cannot (as of January 2010) apply for financial support because they are not included in the scope of the measure.

CHPs utilising biomass achieve a conversion efficiency of approximately 70% and ought to be supported. Exclusion from measure 9.4 is not in line with Directive 2009/28 giving support to technologies that achieve a conversion efficiency of at least 85 % for residential and commercial applications and at least 70 % for industrial applications.

Barrier 4.2 – Lack of substitution of existing inefficient systems

In Western Europe there is for historical reason for a wide use of biomass or heat pumps that do not fulfil the requirements of Article 13(6), however this is not the case in Poland as most of the RES installations have been developed within the last 5 years in accordance with EU standards and by the use of modern technologies. No barrier has been identified in this area.

Barrier 4.3 – Use of national procedures

No information on assessing the conversion efficiency and input/output ratio of systems and equipment has been available at the time of this study for Poland. The Member State should use Community or, in their absence, international procedures for assessing conversion efficiency and input/output ratio.

Barrier 4.4 – Insufficient information

In Poland sufficient information about the availability of renewable energy equipment with different levels of efficiency is not provided to the relevant stakeholders or no information exists at all. This is perceived as a barrier.

4.2.2 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? (yes/no)	No

4.3 Literature

PIGEO [Polish Economic Chamber of Renewable Energy] (2010) National map for Renewable Energy Sources for Poland. 15% to 2020.

Cecerko (2010) Cecerko, Marek, Grupa Polish Energy Partners S.A.

5 Issue 5 Information/awareness raising

5.1 Introduction

Information and awareness campaigns on RES are organised and the financial support for such events is present, however the campaigns are mostly small-scale and do not bring visible results. There is a general level of support for RES use however the NIMBY (not in my backyard) rule comes to force once e.g. a biogas facility or a wind farm is to be built nearby.

5.2 Description of barriers & solutions

5.2.1 Detailed description of the barriers and solutions

Barrier 5.1 – Insufficient availability of information on support measures

This is generally not perceived as a significant barrier. In case of e.g. biomass, RES information on support measures is available for investors. It is usually disseminated and managed on local level hence varies from one location to another.

Information on support measures on a national and/or regional level has been made available on internet and from contact points at the institutions. The prevailing opinion amongst interviewees was that if an investor wants to find information on a support scheme and its requirements he/she may easily obtain them by calling the local authority or searching online. The later is an improvement as compared to historical information access in Poland hence it is not perceived as a significant barrier. However if one compares the availability of information on support measures in Poland to other EU countries, Poland's system still lags behind. For instance, it has been reported as a barrier in case of biogas development (Ministry of Economy 2009).

The main areas of improvement for the availability of information on support measures have been presented below in the form of bullet points:

- The provided data is incomplete:
 - Not all relevant data on the support measures is provided and only general technical specifications are present.
- The provided data is incomprehensible:
 - The provided data is presented in a too technical way as to allow for all target groups to understand its content. This case has been specifically noted for the solar energy technology There is sometimes the barrier that too many parameters are specified and defined in the technical specifications which makes the preparing the funding application documentation time-consuming.

- The provided data is outdated:
 - No regular update of websites and other information media. Changes throughout the year are not reflected;
 - Old information is kept on the website even though new data has been introduced; often confusion about the support measure in force.
- The provided information is hard to access/to find:
 - Information on support measures are not presented in a way as to allow for easy access;
 - Often no clear linking to information websites;
 - The direct contact with interested actors was not sufficient.

Barrier 5.2 – Insufficient funding for campaigns/programmes

The prevailing opinion amongst interviewees was that there are too few campaigns and that there is insufficient funding provided for information platforms/media or awareness raising campaigns and programmes.

Barrier 5.3 – Insufficient campaign-/programme-design

The prevailing opinion amongst interviewees was that the programmes/campaigns are not properly designed to fulfil the envisaged aim. As compared to other EU countries, the quality and quantity of campaigns for RES promotion is insufficient.

A number of regular events and high quality campaigns are present in Poland, however these are small-scale campaigns. Polish Foundation for Energy Efficiency or Polish Wind Energy Association are examples of organisations that carry out successful campaigns. Recommendations for large-scale campaigns addressed to authorities, communities and investors has been outlined by PIGEO and the Ministry of Economy (Ministry of Economy 2009). The recommendations cover dissemination of information including the following: on the use of RES in all sectors, on the benefits of RES, on cost of investment and on support schemes (PIGEO 2010).

5.2.2 Best Practice Elements and Indicators

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

5.3 Literature

Kunikowski (2010) Kunikowski, Grzegorz, biomass, Institute for Fuels and Renewable Energy, interview on 23.02.2010.

Malicka (2010b) Malicka, Ewa, Association for the Development of Small Hydropower Plants. interview on 02.03.2010.

Ministry of Economy (2009) Innovative Energy Programme – Energy and Agriculture. Warsaw.

Kurowski (2010) Kurowski, K., solar, Institute for Fuels and Renewable Energy, interview on 23.02.2010.

Gajowiecki (2010) Gajowiecki Janusz, Polish Wind Energy Association interview on 26.02.2010.

Bogacki (2010) Bogacki Mariusz, buildings, Polish Foundation for Energy Efficiency interview on 24.02.2010.

6 Issue 6 Certification

6.1 Introduction

In Poland certification procedures are not in place and there is very limited information and activities in this field as defined by Directive 2009/28/EC (PIGEO 2010).

6.2 Description of barriers & solutions

6.2.1 Detailed description of the barriers and solutions

Barrier 6.1 – Lack of a Certification body

There is one certifying body in Poland called Panel of Producers and Installers of Solar Energy Systems (*Panel Producentów i Instalatorów Systemów Energetyki Słonecznej*). It has been established in 2009. The institution initiated an information campaign on solar energy and is committed to undertaking tasks as defined in Directive 2009/28/EC for the solar sector in Poland and beyond. In particular the organisation is committed to preparing and carrying out training for installers and initiating a certification scheme for installers (EC BREC IEO 2009a).

In case of the remaining RES technologies e.g. biomass or hydropower there is no certification body that would be a centre for excellence, training and assessing the quality of the system or equipment in Poland. No procedure has been developed by the government for approval and certification of training programmes (PIGEO 2010). The main barrier identified here is the lack of a national appointed certification body in Poland.

Barrier 6.2 - Lack of guidelines

Another barrier in Poland is the lack of guidelines for planners, architects, etc. on optimising the use of renewable energy and energy efficiency.

There are no guidelines for planners and architects on how to use building integrated technologies in their designs however as a positive observation, there is a significant number of workshops organised for this group of experts especially in the area of increasing energy efficiency of buildings.

Recommendations for issuing guidelines have been outlined by PIGEO. The recommendations include issuing guidelines for heating and cooling systems and guidelines for planners on the use of RES in buildings (PIGEO 2010).

Barrier 6.3 Lack of training

Another barrier in Poland (which is actually a combination of the two barriers mentioned above) is the lack of (sufficient) training of RES during the education of installers, planners, architects, etc.

In Poland there is no system implemented for the certification and accreditation of installers of RES equipment as defined in **Regulation (EC) No 765/2008 and Definition from Commission of the European Communities, Brussels, 8 July 2006 SEC (2005) 957 – Commission staff working paper: Towards a European Qualification Framework for Lifelong Learning**. Installers and planners obtain varying training depending on the producers of equipment that ensures the training. Lack of training on efficient and rational planning for the use of RES equipment is perceived as a barrier (PIGEO 2010).

Recommendations for new training schemes have been outlined by PIGEO. The recommendations include training at university level and public training schemes. The training scheme ought to be established at national level and should follow the requirements of Directive 2009/28/EC. A database of certificated installers could therefore be developed (PIGEO 2010).

6.2.2 Best Practice Elements and Indicators

No.	Benchmark	Result
6.1	Are certification schemes or equivalent qualification schemes available for installers?	no
6.2	Is sufficient training on RES provided during the standard education curriculum of installers?	no

6.3 Literature

PIGEO [Polish Economic Chamber of Renewable Energy] (2010) National map for Renewable Energy Sources for Poland. 15% to 2020.

EC BREC IEO [Institute for Renewable Energy] (2009a) Summary report on the vision for the development of thermal solar energy in Poland and an action plan to 2020. Warsaw.

Rogulska (2010) Rogulska, Magdalena, Institute for Fuels and Renewable Energy, interview on 23.02.2010.

7 Issue 7 Infrastructure Development

7.1 Introduction

In the recent years there have been more applications for connection to the grid than the grid is able to accept. The outdated and overloaded grid infrastructure has become the most pressing barrier in the development of RES in Poland (TPA/DZP 2009).

One of the reasons why there have been so many applications for connection to the grid is the presence of financial and regulatory drivers for investing in renewable energy. The regulatory driver is the Tradable Green Certificates system for RES electricity production in Poland. The Act on Energy Law (1997) commits the sellers of the energy (“suppliers of last resort”) to purchase a certain amount of energy from renewable sources. Green certificates, also called “certificates of origin”, are documents confirming generation of electricity using renewable energy sources. They are issued by the President of the Energy Regulatory Office upon the request of a business generating energy using renewable sources. Energy firms (DSOs) generating or trading in electricity are obliged to provide the Energy Regulatory Office with a specified number of green certificates to redeem them or pay a substitute charge. The financial drivers for the increased demand for grid connections in Poland are the following: the green certificate mechanism and moreover the 50% reduction of fee for connection of renewable energy sources to the power grid (TPA/DZP 2009).

Development for RES industry in Poland radically increased within the last decade and demands for rapid optimisation and expansion of the grid in the short term are observed. In reality, however, network optimisation or expansion planning has either not yet begun, or is behind schedule. This chapter looks at the most common origins of these delays. The main barriers in the development of the grid infrastructure are resistance of land owners and inefficiency in overall system management.

7.2 Description of barriers & solutions

7.2.1 Detailed description of the barriers and solutions

Barrier 7.1 - Problems concerning connection to existing electricity networks

Lack of grid access for the RES volumes. The most significant barrier in Poland has been reported to be lack of grid access for the volumes of energy produced from renewable sources. The existing condition of the transmission and distribution infrastructure does not make it possible to allow grid access for all RES applicants.

Works related to the construction and modernisation of the existing power grids are of priority importance in this context.

The current situation of the grid infrastructure in Poland is very poor. Existing electricity networks typically have insufficient grid capacity. The infrastructure has not been properly modernised in the last two decades and hence is heavily overloaded. In the recent years it is common in Poland that there are more investors applying for connection to the grid than there is actual capacity. The regional operators reject a significant number of applicants on yearly basis.

The national legislation on allocation of existing capacity is transparent and non-discriminatory however the regulations are not effective because there is a significantly limited capacity which can be allocated to new applicants.

In the last years the development of the grid infrastructure has become a pressing issue for wind farm operators in particular and will become even more pressing with the planned growth of renewables.

Competing private interests. In order to expand the grid infrastructure new overhead lines have to be constructed. These are strongly opposed by owners of the land through which these lines are planned to pass. Some community representatives fear that the value of their real estate decreases due to grid expansions. Others require high indemnity which is unrealistic hence lengthens the process. The land owner groups show the NIMBY attitude; in general they favour the expansion of the grid, however, at the same time they do not want to be the group, which has to suffer disadvantages of it. The national legislation in the area of regulating land property and the related obligations is not effective and hence land owners have the capacity of prolonging the process of grid expansion.

The Ministry of Economy is currently working on legislation addressing the above barriers. The act on public transfer corridors will focus on linearly network investment plans and their implementation. Moreover amendments to legal regulations on the management of real estate foreseen by the Ministry of Economy will ensure easier accessibility to estate for grid infrastructure investments (EC BREC IEO 2009b).

Bearing and sharing of costs. Bearing and sharing of costs of grid extension and reinforcement is not transparent and is perceived as a significant barrier. Sharing the high costs of grid infrastructure extension between the investor and the TSO/DSO varies on case by case basis. The transparency of this process is regulated on the local level. The individual arrangements between the particular investor and the DSOs (i.e. connection terms and conditions of grid connection) regulates this process hence differences in transparency of the process are observed.

The Energy Law (Art 7) gives ambiguous guidance on the cost of connecting to the grid. As a result the costs imposed by the operator to similar RES units of the same technology can differ even up to twofold of the cost as per MW units (PIGEO 2010).

Several cases have been taken to court relating to this issue. RES investors take DSO to court and/or formally complain to URE for disproportional sharing of costs of grid extension. In a number of cases it has been proven that with a high connection cost imposed on the applicant by the DSO intended to put the costs of grid extension which they were to bear on the applicant.

The lack of mechanisms that oblige TSOs and DSOs to provide (economically reasonable) solutions to the problems that led to the denial of grid connection is a significant barrier. The establishment of law that defines maximum costs of grid connection on the basis of plant size is generally perceived as a way forward. The fee for the connection of a RES unit specified in the terms and conditions for grid connection should be determined on the basis of actual expenditure incurred to construct the service line.

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

Weak coordination between grid infrastructure approval and other administrative planning procedures. In Poland insufficient long term strategic thinking and planning for grid development is a major barrier in grid infrastructure development. Spatial planning documents exist on local level (gmina) but have insufficient reference to national or regional level spatial planning documents in terms for grid development.

Preliminary spatial plans are adopted by local councils (gmina) before local spatial plans are agreed on. These provide general rules for local spatial development and include details on development and use of land as well as include guidance for development of the transportation system and technical infrastructure (TPA/DZP 2009). There are no procedures in place to ensure that the local guidance for development of technical infrastructure is consistent with regional or national level technical infrastructure priorities (EC BREC IEO 2009b).

The planning process is complex and non-transparent. This hinders setting priority areas and imposing the necessity to develop the grid infrastructure in particular localities (gminas) and on individual land owners. The NIMBY rule is typical in this case and might lead to increasing social opposition to new grid installations. As a result there is weak coordination between grid infrastructure approval and other administrative planning procedures. This is a significant barrier for grid development in Poland.

Lack of long-term strategy and forecasts. In addition to the aforementioned points, there are no forecasts to which extent the grid has to expand to cope with the expected rates of RES development. There is no official concrete long-term strategy, in terms of an overall master plan that takes all priorities into account. The extension of existing electricity networks and their development into smart networks is a key element for achieving a better integration of renewable electricity generation projects. A strategic plan for the transmission and distribution network development up to 2020 should be consistent with the national plan on use of RES (EC BREC IEO 2009b).

Lack of incentive for DSO investment in grid development. Another barrier is the lack of legal regulations that oblige the operators to modernise or expand the grids. TSOs and

DSOs (e.g. TAURON Polska Energia, ENEA and ENERGA) plan to develop the transmission and distribution assets during the period 2009-2012, however the issue is left at the discretion of management boards of the respective operators. The priority investment goals for all large energy groups focus on reconstruction and construction of new generation capacity and not on modernisation or construction of transmission / distribution infrastructure (TPA/DZP 2009). As a result, limitations arising from insufficient investments on the side of the distribution system operators are a barrier. The lack of incentives for TSOs and DSOs for developing electricity infrastructures (in terms of clear, appropriate and predictable rules on authorisation of new investments) has been observed as a barrier in Poland.

The grid operators have no financial incentive to invest in the construction of an innovative grid infrastructure from technical point of view. The grid operator has to bear the costs for the expansion, which will be distributed among all final customers by apportioning the costs to the grid usage fees.

Lack of objective, transparent and non-discriminatory criteria of the rules on cost sharing and bearing of grid connection has been observed in Poland.

Barrier 7.3 - Problems concerning development of a Trans-European Electricity Network
Discussions and plans for Trans-European Electricity Network in Poland are still at the initial stage of development and no concrete plans has yet been agreed on.

The plans for establishing a Trans-European Electricity Network along the Baltic Sea is considered as a key issue and ought to be prioritised in future plans and strategies (EC BREC IEO 2009b).

7.2.2 Best Practice Elements and Indicators

No.	Technology	Benchmark	Result
7.1		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		Presence of an efficient plan for the reinforcement of the connection capacity within the country.	no

7.3 Literature

Gajowiecki (2010) Gajowiecki Janusz, Polish Wind Energy Association interview on 26.02.2010.

Płachecki (2010) Płachecki, Paweł, Energy Regulatory Office interview on 2.03.2010.

Węgliński (2010) Węgliński, Jacenty, PSE Operator (TSO) interview on 23.02.2010.

TPA/DZP [TPA Horwath and Domański, Zakrzewski, Palinka] (2009) Wind energy in Poland. Warsaw.

EC BREC IEO [Institute for Renewable Energy] (2009b) Development vision for wind energy in Poland to 2020. Warsaw.

Polish Wind Energy Association, Mroczek (2010) Presentation on Wind power sector in Poland. Wind barriers workshop, EWEA conference 22 April 2010.

8 Issue 8 Power Grid Issues

8.1 Introduction

Most of the RES electricity connected to the grid in Poland is wind farms. It is about 95% is wind energy and most of it is produced in the north of Poland. The remaining 5% of RES connected to the electrical grid is biomass (in the majority cases combined with coal), solar, and hydropower however hydropower and solar are at an early phase of development and just a few facilities are operating currently in Poland.

Obtaining connection terms and conditions is one of most important stages of each RES investment preparation, because they warrant that within a specified time it will be possible to connect an RES development e.g. wind farm to the grid and they also indirectly define maximum power of facilities to be installed. Failure to obtain connection terms and conditions makes it impossible to obtain planning permission and makes it difficult to raise funds for the project (TPA/DZP 2009).

In order to get connected to the grid, the RES investor must apply to the DSO operating in the area where the unit will be constructed for defining the extent of the opinion on impact of the wind farm connection on the National Power System (the Opinion). The Opinion is prepared upon the investor's request and cost by a research institution. The extent and terms of the Opinion are determined by a DSO in consultation with PSE – Operator S.A. (TSO). After the Opinion is prepared the investor should apply for connection terms and conditions to the DSO operating in his area. The DSO issues its decision about determination of connection terms and conditions or refusal to determine them. Connection terms and conditions issued by the operator are valid for 2 years after they are issued (TPA/DZP 2009).

Moreover under Polish law, electricity generation from renewable energy sources is a licensed activity. Based on Energy Law of 1997, any entity that plans to generate the energy (also from renewable sources), is obliged to obtain a license issued by the Office for the Regulation on Energy Market. Such license can be sought by an investor that meets requirements specified in the Energy Law Act, i.e. in particular has financial, technical and organisational resources needed to perform the licensed activity. Licences are given by the Energy Regulatory Office (URE) for a fixed term not shorter than 10 years and not longer than 50 years unless the applicant applies for a licence for a shorter term (TPA/DZP 2009).

8.2 Description of barriers & solutions

8.2.1 Detailed description of the barriers and solutions

Barrier 8.1 - Problems concerning grid connection

In general the RES industry evaluates the conditions for the connection to the grid as very poor. RES plants are not discriminated as compared to conventional energy sources however they come across several barriers. One of the key requirements for the execution of a RES project in Poland is the approval of technical terms for power grid connection. The connection to the grid takes place according to an agreement between investor and DSO.

The procedure for grid connections is well defined by law, i.e. by rules and requirements presented in the introductory section above. Regulatory requirements for new infrastructure are clear, however the practical application of the administrative procedures is perceived as a significant barrier in Poland. Long average lead time for getting approval of grid connection is observed for most RES projects in Poland. Individual arrangements between the particular investor and the DSOs (i.e. connection terms and conditions) are what shapes this process hence differences in transparency of the process are observed.

Energy Regulatory Office (URE) is the independent authority that controls reasons for the denial of grid connection by DSOs. URE has well defined administrative procedures, however these procedures are not effective in practise due to the fact that there is an excessive number of rejection that are brought to URE. The system is overloaded and working with long average lead time.

Barrier 8.2 - Problems concerning grid access

Based on Act on Energy Law of 1997 and executive orders to this act, the seller of the energy (“suppliers of last resort”) is obliged to buy entire amount of energy generated in renewable energy sources connected to its network. Priority grid access for RES is ensured by law in Poland but there is no guaranteed privileged and preferentially connection to the grid (PIGEO 2010). RES plants face particular problems concerning grid issues as compared to conventional power plants due to the characteristics of some RES plants including for example the intermittency of power output (Wind, PV), smaller plant sizes or decentralized character. Biogas facilities and hydropower plants have faced less difficulties in grid connection as compared to wind farms.

A serious barrier, especially for small projects, is the insufficient transparency during the grid connection process. The applicant cannot review procedures and requirements of grid operators. Those are mainly internal and based on discretionary regulations, which are set up by the grid operators.

The distribution of costs for the connection of the RES plant is an important factor for the feasibility of the whole project. The plant operator bears the costs of connecting the plant to the most closely located point of the grid (connection point) as well as the costs of the necessary measuring devices. The grid operator bears the costs for the development of the

grid. Since the distribution of costs depends on the exact location of the connection point, this is a controversial issue.

Barrier 8.3 (former barrier 9) - Problems concerning TSOs and DSOs

In practice, RES investors depend prevalingly on the capacity of local distribution systems (DSOs), and to a lesser degree on the condition of high-voltage nationwide transmission (The TSO in Poland is PSE Operator).

A barrier has been observed with reference to administrative procedures at the level of DSOs. The operators appear to put excessive administrative burden on new investments. The communication between RES investor and DSO at project development phase is time consuming and prolongs the initial stage of project development. Lack of competency of DSO representatives has been observed. The requirements on grid connections issued by DSOs have been questioned in terms of their financial and technical relevance on several occasions.

Another barrier identified is inefficient management system and communication between TSO and DSOs. The institutions operate independently however they need to improve overall management and cooperation. The rules adopted by TSOs and DSOs on cost sharing and bearing of grid connection should be agreed on amongst TSOs and DSOs and published by them.

Barrier 8.4 – Other Barriers

Blocking of connection to the grid on large scale in Poland. According to Polish legislation the investor applies for connection terms and conditions to the DSO operating in his area. The DSO issues its decision about determination of connection terms and conditions or refusal to determine them. Issuing the connection terms and conditions means that the capacity is reserved for the investor for the period of 2 years (i.e. for the term of validity of the grid connection terms). Up to now the connection terms are issued free of charge. The investor incurred the costs of drafting the respective application. The connection fee was only due after the actual connection takes place. **During the recent years this situation resulted in an actual blockage of the connection potential by potential investors whose total installed capacity for the declared investments exceeded 11 GW.** There are nearly 70,000 MW in file applications to issue connection conditions (PWEA 2010). Hence, in practice, connection terms are not issued for any new applications, and examination of applications filed in historical periods is often suspended or delayed (TPA/DZP 2009).

The reaction of the government to the barrier is the amended legislation and introducing advances for connection fee when the application is filed. On 8 January 2010 a new amendment of Energy Law came into force. As a consequence, a portion of the connection capacity should be freed up in the following year. However the new amendment can bring a new barrier as introduction of advance fees may constitute a significant barrier for smaller investors. It has been reported by the Polish Wind Association that the newly amended law did not minimise the barrier to date (PWEA 2010).

8.2.2 Best Practice Elements and Indicators

No.	Technology	Benchmark	Result
8.1		Are the rules on cost sharing and bearing of grid connection objective, transparent and non-discriminatory?	no
8.2		Is the denial of grid connection by TSOs and DSOs a common problem, constituting an important barrier for RES development?	yes
8.3		Number of months for getting grid connection (considering also approval of grid connection)	36
8.4		Estimated connection costs in Euros (in case producer pays)	17k

8.3 Literature

Gajowiecki (2010) Gajowiecki Janusz, Polish Wind Energy Association interview on 26.02.2010.

Płachecki (2010) Płachecki, Paweł, Energy Regulatory Office interview on 2.03.2010.

Węgliński (2010) Węgliński, Jacenty, PSE Operator (TSO) interview on 23.02.2010.

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9 Issue 9 Gas Network Issues

9.1 Introduction

In Poland injection of biogas into the natural gas grid does not take place. The first development of this type is planned to be opened in 2011. This is a new technology in Poland (as of January 2010) and limited information on barriers is available since it has not developed yet. There is no biogas specific legal regulations in Poland and the gas network operators are not familiar with the RES issue.

9.2 Description of barriers & solutions

9.2.1 Detailed description of the barriers and solutions

Barrier 9.1 – Lack of legal baseline

There are no biogas specific legal regulations in Poland. The Energy Law defines that green gas injected to the gas network must have similar quality parameters as compared to natural gas. The green certificate principles shall also apply to the biogas market. The latter however is a very general requirement and gas network issues will be regulated in detail with an upcoming regulation. The biogas regulation has not been developed to date (PIGEO 2010). Detailed recommendations on changes in the individual legal documents have been put forward in a biogas report published by the Ministry of Economy. The recommendations include more specific definitions, quality parameters for biogas, simplifying the administrative procedures and procedures for support schemes (Ministry of Economy 2009).

Barrier 9.1 – Problems related to the upgrading process

This is not an identified barrier in Poland yet.

Grid operators have not come across the problem of requiring technical minimum standards concerning the biogas quality as a prerequisite for grid injection. Specific regulations need to be developed.

Barrier 9.2 – Lack of information

Biogas system operators are confronted with a lack of information on grid conditions because the technology is relatively new in Poland. This makes the planning phase of biogas systems ambiguous, as it is not possible to take the grid conditions into consideration for the choice of an location.

Barrier 9.3 – Inefficient authorisation procedures

No information is available on the authorisation procedures for grid access because local authorities are unfamiliar with this problem and operators in Poland do not have experience in this area. Guaranteed access and financial drivers should be ensured for investors in this area (PIGEO 2010).

Barrier 9.4 – Insufficient cooperation of grid operators

This is not an identified barrier in Poland yet.

9.2.2 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?	NA
9.2	Are the costs of grid connection for producers of gas from renewable energy sources objective, transparent and non-discriminatory?	NA
9.3	Do transmission and distribution tariffs discriminate against gas from renewable energy sources?	NA
9.4	Average time needed for grid connection approval (from application for grid connection to formal approval) in months (#).	NA

9.3 Literature

Kunikowski (2010) Kunikowski, Grzegorz, biomass, Institute for Fuels and Renewable Energy, interview on 23.02.2010.

Ministry of Economy (2009) Innovative Energy Programme – Energy and Agriculture. Warsaw.

PIGEO [Polish Economic Chamber of Renewable Energy] (2010) National map for Renewable Energy Sources for Poland. 15% to 2020.

10 Issue 10 District Heating

10.1 Introduction

District heating is well developed in Poland however combined heat and power plant (CHP) mainly run on coal. There are economic drivers (i.e. green certificates) to include RES in power generation however economic drivers are not in place for heat generation. Many power plants switched to including biomass in the combustion process (co-generation) but limited investments are observed in the heat generation sector. The regulations imposed by the Energy Law are not discriminative with respect to heat generation as compared to power generation. However, in practice including RES in district heating is hindered in the internal market in Poland.

It has been reported that a shift in the end-of -pipe use of RES has been observed in Poland. The total of RES use has remains constant since 2001. However, there has been an increase of RES in electricity production and a decrease of RES in heat production because of current RES promotion and support programmes (PIGEO 2010).

The main barriers identified in this chapter is the absence of a national strategy with the aim of initiation and expansion of DH systems largely based on renewables and the insufficient awareness of consumers in the area of RES in district heating. If the awareness amongst consumers was higher then the support for development of RES in district heating systems would also be greater.

10.2 Description of barriers & solutions

10.2.1 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

The Act on Energy Law (1997) commits the sellers of the energy to buy a certain amount of energy from renewable sources. In Poland, RES electricity production is covered by the Tradable Green Certificates system however heat production is not covered. This gives CHP no financial initiative to include RES in their technological process. In principle, Polish legal requirements encourage a share increase of RES in heat production however this is not implemented in practice

Case study for biomass facilities in Poland. Under priority 9 (Environment-friendly energy infrastructure and energy efficiency) of the Operational Programme 'Infrastructure and Environment' 2007-2013, measure 9.1 and 9.4 is relevant to RES operators seeking

financial support. The measure 9.1 *Efficient energy generation* has been allocated a small budget and referred to high-efficiency cogeneration i.e. combined heat and power plant (CHP) utilising biomass could apply for funding. The measure 9.4 *Energy generation from renewable sources* has been allocated a larger budget however CHP utilising biomass cannot apply for financial support because they are not included in the scope of the measure.

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

In Poland there is no national strategy with the aim of initiation and expansion of DH systems largely based on renewables.

10.2.2 Best Practice Elements and Indicators

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 e.g. ECOHEATTOOL)	0%
10.4	Percentage CHP share (idem)	60%

10.3 Literature

PIGEO [Polish Economic Chamber of Renewable Energy] (2010) National map for Renewable Energy Sources for Poland. 15% to 2020.

Cecerko (2010) Cecerko, Marek, Grupa Polish Energy Partners S.A.