

Non-cost barriers to renewables

– *AEON* study

Slovakia

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1 Introduction

The progress of renewable energy deployment in Slovakia is slow. Since September 2009 Slovakia finally has a new RES law that has been prepared for more than 6 years. But already in March 2010 it has been significantly changed by the new Energy Law. As a result of the legal instability many investors in particular in the **photovoltaic sector** backed off the started investment.

All interviewed stakeholders feel a discrepancy between the formal declared support to the RES and the actual actions of the Slovak Government for their deployment. There are **no public awareness campaigns** on RES conducted by the state bodies in Slovakia. In public speeches are the RES mentioned mostly in a negative meaning saying that RES are increasing all energy prices. The only technology presented mainly in a positive context is **biomass**. Photovoltaic energy and wind energy are pointed out as unsteady sources of energy. Moreover, almost all interviewees reported not transparent use of the Structural Funds for the RES projects. As a result, Structural Funds are given to companies with no experiences in the field of RES for financing of overpriced projects.

Considering the **administrative procedures** there are significant differences between the different RES. On one hand the biomass and geothermal sector have no serious deployment barriers, on the other hand the situation in small hydro, solar and wind sector is difficult. However, it must be said the restrictive approach of the Slovak administration is partly caused by the speculative efforts of potential investors in solar and wind sector to contract higher capacities than needed.

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

Geothermal energy projects are facing two legal obstacles for easier deployment. On one hand it is a discrepancy between the Geological Law and the Surface Water Law (both laws regulate different steps of the administrative procedure for use of the geothermal energy which makes things more complicated), on the other hand it is the new Geological Law of 2008 stating that the geothermal energy is a part of hydrogeology which means that there can not be both flat and deep drill holes at the same place.

In the **Small hydro** sector is the main problem obtaining the exclusive permission for the certain locality of the river issued by the state owned Slovak Water Company. The permissions are given under unknown conditions, often to people and companies who have no experiences in the field of small hydro power. Many applications for small hydro power permissions have been refused for unknown reasons.

Administrative barriers for building **photovoltaic** power plants in Slovakia are still strong. The rules for potential investors are not clear, not transparent and too often significantly changed.

- The first important barrier is the Application for **connection** of the power plant to the grid submitted to the electricity distribution company. There are 3 distribution companies in Slovakia but they have very different approach to photovoltaic investors: Western Slovakia Electricity Distribution Company has a serious delay in processing applications and too much space for not transparent approach, Central Slovakia Electricity Distribution Company completely stopped accepting applications and Eastern Slovakia Electricity Distribution Company is the only one working in an acceptable mode.
- Another barrier is the Confirmation of the compliance with the Long Term Energy Policy issued by the Ministry of Economics of the Slovak Republic. The obligation to have this confirmation has been introduced for all ground photovoltaic installations by the new Energy Law approved on March 3, 2010 that comes into effect on May 1, 2010 which means that the investors have no chance to adapt to the new conditions. The law is very confusing as it is not clear if the investors who started construction of the solar power plant before May 1, 2010 need the confirmation or not. Moreover, the Long Term Energy Policy of the Slovak Republic assumes the production of the solar energy of 0 GWh in 2010 and of 10 GWh (approx. 10 MW of installed performance) in 2020 which is an extremely low limit.

Administrative barriers for building the **wind** power plants are not as strong as they used to be few years ago. In the past the state bodies at local level refused all the wind power plant projects. Now they're already open for a discussion. However, the investor needs approx. 32 permissions and statements from different institutions. Many of them still have no clear rules and requirements and thus depend on the attitude of individual state officers. The most difficult to obtain are:

- Changing the spatial plan requires permissions from the Civil Aviation Authority of the Slovak Republic that gives permissions regarding the influence on the airport radars. In Slovakia they are more strict than in other countries. There have been projects refused even 50 km from the airport. Another permission is needed from the Ministry of Agriculture of the Slovak Republic that gave in 2008 instructions to local land authorities to refuse wind energy projects to be built on high quality soil (1st – 4th degree out of 9). At the moment it is a big problem as the best areas for wind energy are in south western parts of Slovakia that have almost everywhere the soil of high quality.
- Licence from the Ministry of Economics of the Slovak Republic that includes the permission of The Slovak Electricity Transmission and Transit Company. At the moment it is officially claimed that the grid can't handle safely the drag of the unsteady power plants. However, there are no studies proving this statement. Interviewed stakeholders consider the approach of the Slovak authorities a lack of political will for connection of the photovoltaic and wind energy to the grid rather than a technical problem. An independent impact study should be conducted in

order to assess the existing grid capacity in Slovakia. As a result of the study the limits for the RES connected to the grid should be set.

In the **biomass** sector there have been no significant barriers detected.

2 Issue 1 Administrative Procedures

2.1 Description of barriers & solutions

In Slovakia the most relevant barriers associated with the administrative procedures have to do with permitting processes. In general terms, the situation is characterized by heavy administrative procedures, not always clear and which deadlines are, more often, not observed, resulting in costs overrunning and even the abandonment of some projects.

There are significant differences in administrative obstacles between different RES. On one hand the biomass and geothermal sector have no serious deployment barriers, on the other hand the situation in small hydro, solar and wind sector is difficult.

However, it must be said the restrictive approach of the Slovak administration is partly caused by the speculative and aggressive behaviour of potential investors in solar and wind sector. The efforts of investors to contract higher capacities than needed caused the restriction or stop of permit issuing by the Slovak Electricity Transmission and Transit Company.

2.1.1 Detailed description of the Barriers and solutions

Barrier 1.1 – Inefficient general administrative procedures

Biomass

Basically there are no differences in administrative procedures for installation of biomass boilers and other boilers. As there are no green field investments into building new district heating systems in Slovakia in most cases are new technologies built into the old district heating systems burning gas or coals. Both public and administration mostly welcomes the transformation from coals into biomass. In some densely settled urban localities occurred small problems regarding the storing space for biomass.

There are no special administrative procedures for installation of large technologies for production of the biomass in different forms. The construction permission requires among others the permission issued by the local environmental authority as well as by the local fire department. There must be a large production hall with sufficient storing space for both wooden biomass and produced pellets. The production area also requires enough space for parking and loading trucks.

Geothermal

In general the Slovak state administration bodies neither support nor impede the development of the geothermal energy¹. Administrative procedures for geothermal energy take approx. 3 years:

1. Geological project analysis – approx. 2 months. The study collects and analyses all available data of the drill holes nearby and measuring conducted in the area. The study is followed by the technical project that stated 5 most important indicators (construction, depth, temperature, strength and mineralisation);
2. EIA – approx. 1 year;
3. Application for determination of the exploration area – approx. 3 months. Application is submitted to the Ministry of Environment of the Slovak Republic in line with the Geological Law. The Ministry requests opinions of 23 different bodies (stakeholders in the concerned area). A negative opinion can be expressed by a municipality or other institution responsible for protected zone (water, mining, wild life etc.). If there are no negative opinions the Ministry issues the permission for the exploration area (usually covering several km²);
4. Realisation of the exploration drill hole;
5. Urban planning permission – approx. 4 months. It is not necessary to change the spatial plan;
6. Construction permission – takes approx. 6 months. Typical problem of Slovakia is an extreme percolation of land and high share of unknown owners which is very cost and time intense for the developers. The geothermal energy projects are complicated because they need many parcels for pipe networks. Agricultural land must be administratively transformed into the build land. Construction permission is issued by the local Building Authority upon permission of the Regional Environmental Authority;
7. Hydrodynamic testing and measuring – approx. 1 month. Final testing report is submitted to the Ministry of Environment of the Slovak Republic;
8. Approval of the Commission for Sources Classification – approx. 3 months. The Commission at the Ministry of Environment must approve the winning of the hot water for specific purpose;
9. Permission for releasing of the used geothermal water – approx. 1 month. The permission is issued by the Regional Environmental Authority in line with the Surface Water Law. In most cases is the used geothermal water released into the rivers.

Small hydro

There are no legal obstacles for building new small hydro power plants in Slovakia. The new RES law adopted in 2009 is sufficient and correct for further deployment. However, at the moment there is no development of the small hydro power sector in Slovakia. The reason is following:

The investor needs an exclusive permission for certain locality of the river. The permission is issued by the state owned Slovak Water Company that is the administrator and supervisor of all rivers in Slovakia. The permissions are given under unknown conditions, often to people and companies who have no experiences in the field of small hydro power. For example many permissions for the river Hron have been given to one

¹ Interview with the geothermal energy developer

person who is trying to sell them. Many applications for small hydro power permissions have been refused for unknown reasons².

EIA and construction permission are in most cases no problem for small hydro power plants.

Solar

Administrative barriers for building photovoltaic power plants in Slovakia are still strong. The rules for potential investors in photovoltaic sector are not clear, not transparent and often significantly changed³.

Administrative procedures for solar energy:

1. Investor must have a proper land for solar power plant – it can't be a high quality soil (1st – 4th degree out of 9). Otherwise it needs a special permission of the Ministry of Agriculture of the Slovak Republic which is expensive and there is a high risk of refusal;
2. Changing the spatial plan – approx. 1 year. If the municipality has no spatial plan a new one doesn't have to be elaborated;
3. Application for connection of the power plant to the grid – submitted to the local electricity distribution company. There are 3 distribution companies in Slovakia – Western, Central and Eastern. They have very different approach to photovoltaic investors:
 - a. Western Slovakia Electricity Distribution Company – complicated application with too many annexes. Some requested documents are not standardised and thus unclear (e.g. Study on electricity production – no templates available, no minimal requirements available). The application must be reviewed in 30 days, but it takes even 5 months and longer. There is no communication with the applicant and no possibility to complain. The employees neither answer the phone calls and e-mails nor provide personal assistance. There is too much space for not transparent approach to individual applicants;
 - b. Central Slovakia Electricity Distribution Company – the company stopped submitting applications in 2009 until the distribution system impact assessment study will be prepared. There is no legal base for such decision;
 - c. Eastern Slovakia Electricity Distribution Company – clear and reasonable application, transparent approval process. There is some delay in the 30 days period, but the phone and e-mail communication with the applicant works and it is possible to add additional documents if the application is incomplete. The Eastern Slovakia Electricity Distribution Company introduced an internal rule saying that the 100 kW and higher applications must be approved also by The Slovak Electricity Transmission and Transit Company which takes another 2 months.
4. Confirmation of the compliance with the Long Term Energy Policy issued by the Ministry of Economics of the Slovak Republic. The obligation to have this confirmation has been introduced for all ground photovoltaic installations by the

² Interview with the Slovak Association of Small Hydro Power Plants representative

³ Interviews with the solar energy project developers

new Energy Law approved on March 3, 2010 that comes into effect on May 1, 2010 which means that the investors have no chance to adapt to the new conditions. The law is very confusing:

- a. It is not clear if the investors who started construction of the solar power plant before May 1, 2010 need the confirmation or not. As a result many investors backed off the started investment. Other investors hurry to finish the investment before the May 1 which affects the quality of the installation (e.g. they are forced to buy low quality components due to shorter delivery times);
 - b. The Long Term Energy Policy of the Slovak Republic assumes the production of the solar energy of 0 GWh in 2010 and of 10 GWh (approx. 10 MW of installed performance) in 2020. On one hand it is an extremely low limit and on the other hand in December 2009 the Slovak Electricity Transmission and Transit Company granted quotas for solar energy installations to different companies totalling 120 MW (in a not transparent way).
5. Construction permission – the investor needs among other documents another positive statement of the electricity distribution company. Surprisingly there are cases when the distribution company stopped the project in this phase in spite of the positive statement for connection of the power plant to the grid (step 3).

EIA is needed only for power plants of 5 MW or more.

Wind

Administrative barriers for building wind power plants in Slovakia are not as strong as they used to be few years ago. In the past the state bodies at local level refused all the wind power plant projects. Now they're already open for a discussion. However, the investor needs approx. 32 permissions and statements from different institutions. Many of them still have no clear rules and requirements and thus depend on the attitude of individual state officers⁴.

Administrative procedures for wind energy take approx. 5 years:

1. EIA (2 steps) – approx. 2 years. The preliminary assessment sets requirements to be carried out by the applicant on his own costs (e.g. monitoring of the wild life animals in the area). Detailed assessment is carried out upon the results of the preliminary assessment;
2. Changing the spatial plan – approx. 2 years. A new spatial plan must be elaborated if the municipality has no spatial plan – it takes up to 3 years. Changing the spatial plan requires permissions from following bodies:
 - a. Civil Aviation Authority of the Slovak Republic – gives permissions regarding the influence on the airport radars. In Slovakia they are more strict than in other countries. There have been projects refused even 50 km from the airport;
 - b. Ministry of Agriculture of the Slovak Republic – in 2008 gave instructions to local land authorities to refuse wind energy projects to be built on high quality soil (1st – 4th degree out of 9). At the moment it is a big problem as the

⁴ Interview with the wind energy project developer

best areas for wind energy are in south western parts of Slovakia that have almost everywhere the soil of high quality.

3. Construction permission – takes 6 - 8 months. Typical problem of Slovakia is an extreme percolation of land and high share of unknown owners which is very cost and time intense for the developers. The wind energy projects are complicated because they need many parcels for roads, networks, etc.
4. Licence from the Ministry of Economics of the Slovak Republic that includes the permission of The Slovak Electricity Transmission and Transit Company. This is a problem (see issue 8). 2005 - 2009 there was no licence for wind energy issued. In early 2010 received the first licence after 5 years the company Green Energy Slovakia.

The estimation of the wind energy potential in Slovakia is 600-1000 MW of installed capacity. However, the applications for connection to the grid submitted to the Slovak Electricity Transmission and Transit Company are totalling 5600 MW of installed capacity. This unreal figure includes also duplicate and fictive applications. These efforts of investors to contract higher capacities than needed caused the stop of permit issuing by the Slovak Electricity Transmission and Transit Company. So at the moment it is not possible to obtain neither positive nor negative statement of the Slovak Electricity Transmission and Transit Company and thus it is not possible to obtain the construction permission for the wind power plant. The result of this attitude is a stagnation of the wind energy in Slovakia. Many projects and companies became bankrupt as the costs for administrative procedures are very high (e.g. EIA costs approx. 33 000 EUR, one year long birds monitoring in the area etc.).

Barrier 1.2 – Competing public interests

Public oppositions in Slovakia are rather rare. So far there have been only a few wind energy projects facing the protests of the public and the local stakeholders.

Barrier 1.3 – Inexistent or insufficient spatial planning

The spatial planning in Slovakia is generally good. However, there is still a large number of small villages that have no spatial plan. In such cases a new spatial plan must be elaborated for wind energy projects only. It takes up to 3 years and the costs are usually shared by the municipality and the developer.

Barrier 1.4 – Other Barriers

There are 2 legal obstacles for easier deployment of the **geothermal** energy in Slovakia⁵:

1. Discrepancy between the Geological Law and the Surface Water Law. Both laws regulate different steps of the administrative procedure for use of the geothermal energy which makes things more complicated. According to the Geological Law the developer must build the exploration drill hole although he doesn't want to explore. An additional permission must be obtained from the Regional Environmental Authority according to the Surface Water Law;
2. The new Geological Law of 2008 states that the geothermal energy is a part of hydrogeology. It means that there can not be both flat and deep drill holes at the

⁵ Interview with the geothermal energy developer

same place. This limitation has no scientific reason and uselessly reduces the areas for potential deployment of the geothermal energy.

2.1.2 Best Practice Elements and Indicators

No.	Technology	Benchmark	Result
1.1	All	Is one stop-shopping possible?	No
1.2	All	Amount of money to be invested in the administrative process (including cost of work and costs like fees) (in €)	Biomass 10 k€ Geothermal 200 k€ Hydro n.a. Solar 10 k€ Wind 100 k€ (est.)
1.3	All	Time to be spent for the administrative process (duration to get all the main permits) (in months)	Biomass 6 Geothermal 36 Hydro n.a. Solar 12 Wind 60
1.4	All	Estimated number of permits required (#)	>6

3 Issue 2 Technical Specifications

3.1 Description of barriers & solutions

In general there are no technical specifications hindering support/subsidies in Slovakia.

The technical specifications are established basically for solar thermal equipment only, using the Solar Keymark schemes. The Solar Keymark certificate guarantees that the collector will not be damaged by the temperature changes, rain water, hail etc. Another technical standard – minimal energy profit of 525 kWh/year/1 m² collector surface will be valid from 2011.

The Technical Testing Institute in Piešťany is responsible for testing of the solar systems including solar collectors. At the moment there are following tests of solar systems conducted: Slovak Technical Norm STN EN 12975 – 1:2008, Slovak Technical Norm STN EN 12975-2:2006 and Solar Keymark conformity assessment.

For solar thermal technology the situation is quite clear and no major barriers are identified. The Slovak regulation for the RES grant applications doesn't impose specifications on other technologies. There are no technical requirements hindering internal market.

There are several types of financial support for installation of thermal solar collectors and biomass boilers available from the State Budget. For example, the Ministry of Economics of the Slovak Republic allocated 8 million EUR for supporting the use of biomass and solar energy in private households. Obtaining the subvention takes approx. 4 months. The costs for administrative procedures are very low. Information on administrative procedures are clear and available. The application can be submitted when the installation is completed. The application has 12 annexes (7 out of 12 documents are sworn statements of the applicant). The most important documents are cadastre statement, invoice and installation protocol.

Barrier 2.1 – Weak definitions

No barriers detected.

Barrier 2.2 – no EU standards applied

No barriers detected.

Barrier 2.3 – Specified locations

No barriers detected.

Barrier 2.4 – Barrier to trade

No barriers detected.

Barrier 2.5 – Other Barriers

Almost all interviewees reported not transparent use of the Structural Funds for the RES projects. As a result, Structural Funds are given to companies with no experiences in the field of RES for financing of overpriced projects.

Moreover, there is a serious technical obstacle in using Structural Funds – Operational Programme Environment, Objective 3.2 Reduction of negative climate changes including deployment of RES – for **geothermal** projects. The geothermal project to be financed under this Programme must already have an exploration drill hole which is the most expensive issue of the total budget. Such senseless requirement discourages all potential applicants from applying for the Structural Funds.

3.1.1 Best Practice Elements and Indicators

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

4 Issue 3 Building integrated technologies

4.1 Introduction

In spite of the sufficient legislation and existing financial support schemes the use of the building integrated technologies in Slovakia is **underdeveloped**. The most important RES within the build environment are the thermal solar collectors and biomass boilers. However, most RES technologies are installed in the family houses. Public buildings and apartment houses are mostly connected to the district heating systems. The problem indicated by interviewees is that the management of public buildings and apartment houses still didn't recognise the benefits of Building Integrated RES.

4.2 Description of barriers & solutions

4.2.1 Detailed description of the Barriers and solutions

In general the Slovak legislation doesn't impede the development of Building Integrated RES technologies. In line with the Heat Energy Law Nr. 657/2004 are all municipalities with district heating obliged to have a Heat Energy Strategy. The structure of the document is given by the methodical guideline of the Ministry of Economics Nr. 952/2005-200. According to the guideline RES are an obligatory part of the document. After municipal council approval becomes the Heat Energy Strategy a part of the spatial plan.

Barrier 3.1 – Inefficient general administrative procedures

No barriers detected.

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

No barriers detected.

Barrier 3.3 – Competing public interests

No barriers detected.

Barrier 3.4 – Renewables obligations insufficient

The Heat Energy Strategies are in building permitting procedures not fully respected⁶. In many cases local municipalities allow under investor's pressure building a new gas or even electrical boiler although there is a possibility to connect to the district heating

⁶ Interview with the representative of the district heating company

system or to install a RES technology. Moreover, many low standard apartments have their own boilers as it is easy to turn it off in case of not paying energy bills. So the failure in development of the building integrated technologies occurs at the local level.

Barrier 3.5 – Exemplary role of public buildings neglected

No barriers detected.

Barrier 3.6 – RES deployment hindered by spatial planning matters

No barriers detected.

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

No barriers detected.

Barrier 3.8 – Other Barriers

No barriers detected.

4.2.2 Best Practice Elements and Indicators

No.	Technology	Benchmark	Result
3.1	All	Is this installation type in normal cases exempted from an authorization procedure (building permit)?	No
3.2	All	Are legal-administrative requirements adequate for this installation type?	Yes
3.3	All	Number of administrations that must be contacted (#)	1

5 Issue 4 – Promotion of energy efficient renewable energy equipment

5.1 Description of barriers & solutions

5.1.1 Detailed description of the Barriers and solutions

The efficiency of **biomass** boilers must be 85%. It is strictly inspected by the Regulatory Office for Network Industries every 2 years. The district heat producers welcome the efficiency regulation as it is in their own interest⁷.

The efficiency of other RES is limited solely to economical efficiency:

The use of geothermal water for heating in Slovakia is always profitable if there is an existing district heating system. To exploit a new source of geothermal water and to build a new district heating distribution is not possible without subventions.

In case of solar collectors is the duration about 30 years. The basic domestic solar system with 2 collectors for water heating and 200 litre tank saves 60% of yearly electricity consumption. The energy profit of the standard solar collector (2 m²) is 700 – 930 KWh per year. The energetic amortization time (the period of time taken for all energetic expenditures involved in the construction of an energy-producing facility to be compensated by the energy production) is also very short. So the initial costs for solar collectors will be paid back 2 or 3 times during the life cycle of the installation depending on the quality of the solar system. The energy prices will rise so the economies will be still higher.

Efficiency of the wind power plants depends on the wind speed. The average wind speed in the height of 100 m above ground in appropriate locations in Slovakia is 6,1 to 6,7 m/s.

Barrier 4.1 – Non-compliant promotion schemes

No barriers detected.

Barrier 4.2 – Lack of substitution of existing inefficient systems

No barriers detected.

Barrier 4.3 – Use of national procedures

No barriers detected.

⁷ Interview with the representative of the district heating company

Barrier 4.4 – Insufficient information

No barriers detected.

Barrier 4.5 – Other Barriers

No barriers detected.

5.1.2 Best Practice Elements and Indicators

Please fill in here the results of the Benchmark 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)	Yes

6 Issue 5 Information/awareness raising

6.1 Description of barriers & solutions

The enthusiasm of the Slovak Government in the field of RES is notably low⁸. There are no public awareness campaigns on RES conducted by the state bodies in Slovakia. In public speeches the RES are mentioned mostly in a negative meaning saying that RES are increasing all energy prices. The only technology presented mainly in a positive context is biomass. Photovoltaic energy and wind energy are pointed out as unsteady sources of energy.

6.1.1 Detailed description of the Barriers and solutions

Barrier 5.1 – Insufficient availability of information on support measures

No barriers detected.

Barrier 5.2 – Insufficient funding for campaigns/programmes

No barriers detected.

Barrier 5.3 – Insufficient campaign-/programme-design

Not applicable as there are no public awareness campaigns on RES conducted by the state bodies in Slovakia.

Barrier 5.4 – Other Barriers

The information in media is often presented by non-professionals and thus incorrect.

There is a lack of positive information on best practices in other countries like Germany which could be an idea for public awareness campaign. On the other hand there is sufficient information on different internet sites available.

All interviewed stakeholders feel a discrepancy between the formal declared support to the RES and the actual actions of the Slovak Government for their deployment. For example, the total estimated area for wind power plants in Slovakia was 4300 km² in 1998. At present the Ministry of Environment declares that it is only 196 km². Similar restrictive information is presented by the Ministry of Environment regarding the energy potential: Slovakia can gain only 600 GWh wind energy per year which is too low in

⁸ It is an opinion of all interviewed RES stakeholders

comparison with the Czech Republic with the available wind energy potential of 4 000 GWh per year⁹.

Moreover, during the Russian - Ukrainian gas crisis in early 2009 promised the Slovak Prime Minister Robert Fico the provision of state guarantees for RES projects. Unfortunately it didn't come true.

6.1.2 Best Practice Elements and Indicators

No.	Benchmark	Result
5.1	Is sufficient information on support measures available?	Yes, for the existing measures

⁹ Interview with a representative of the Slovak Association for Wind Energy

7 Issue 6 Certification

7.1 Description of barriers & solutions

In Slovakia there is no RES certification authorised neither by the Government nor by other state bodies. The certification of persons responsible for the installation is given mostly by the technology producer. According to the Slovak law, there are several types of certified professions involved in the technology installation e.g. welder, electrician, construction supervisor, geologist, heating engineer, etc.

7.1.1 Detailed description of the Barriers and solutions

Barrier 6.1 - Lack of a Certification body

No barriers detected.

Barrier 6.2 - Lack of guidelines

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.

Barrier 6.3 - Lack of training

In Slovakia there is no systematic education in the field of RES.

Barrier 6.4 – Other Barriers

No barriers detected.

7.1.2 Best Practice Elements and Indicators

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

8 Issue 7 Infrastructure Development

8.1 Description of barriers & solutions

Infrastructure development barriers have a negative impact in particular on the “unsteady” wind and solar energy deployment in Slovakia. It is essential to set clear limits and to create transparent conditions for their further deployment.

8.1.1 Detailed description of the Barriers and solutions

Barrier 7.1 - Problems concerning connection to existing electricity networks

The limited grid capacity is mentioned by the Slovak Electricity Transmission and Transit Company as an important barrier of further wind and solar power plants deployment. It is officially claimed that the grid can't handle safely the drag of the unsteady power plants. However, there are no studies proving this statement. Interviewed stakeholders consider the approach of the Slovak authorities a lack of political will for connection of the photovoltaic and wind energy to the grid rather than a technical problem.

An independent impact study should be conducted in order to assess the existing grid capacity in Slovakia. 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

No barriers detected.

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

No barriers detected.

Barrier 7.4 – Other Barriers

According to the Slovak law the power plant operator (4 MW or more) is responsible for electricity fall outs. The operator must report hourly electricity production one year in advance. In case of fall outs he is responsible for buying the expensive compensation electricity. This requirement is hindering in particular the development of the wind energy. The operators of the photovoltaic power plants avoid it by dividing the power plant into several smaller installations of less than 4 MW.

Another barrier is the resistance of existing power plants and district heat producers towards the construction of the new facilities. This barrier faced for example the first geothermal power plant in Slovakia that is going to be built in Košice. The project is

being prepared since many years but the progress was very slow due to political and administrative barriers.

8.1.2 Best Practice Elements and Indicators

In early 2010 there has been launched a new biomass power plant in the city of Bardejov. The total investment was 32 Million EUR. The power plant is combining the production of electricity and heat. Estimated yearly performance is 250 000 GJ heat that covers 7000 households in the city and 65 000 MWh electricity that will be injected into the grid. The heat price in the city will be 10% lower than before. Estimated daily consumption of wooden biomass is 12 – 15 fully loaded trucks. The facility replaced 12 old gas boiler plants.

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.	n.a.
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 Description of the barrier

Power grid issues in Slovakia have a close connection with the administrative procedures and infrastructure development. For details see also Chapter 2 and Chapter 8.

9.1.1 Detailed description of the Barriers and solutions

Barrier 8.1 - Problems concerning grid connection

The Slovak Electricity Transmission and Transit Company has a significantly better approach to hydro and biomass electricity producers than to “unsteady” wind and photovoltaic electricity producers.

After completion of the power plant construction there are no problems to connect to the grid. The costs for connection to the grid are paid by both investor and the Electricity Company. The price tariff at the moment of connection is valid for the following 15 years. The Regulatory Office for Network Industries may increase the buy out price each year by inflation.

Barrier 8.2 - Problems concerning grid access

No barriers detected.

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

No barriers detected.

Barrier 8.4 – Other Barriers

No barriers detected.

9.1.2 Best Practice Elements and Indicators

Not all small hydro power plants are connected to the grid. Some of them are built by large factories for their own energy consumption. For example the leading Slovak steel works in Podbrezová has a small hydro power plant that is able to cover the electricity consumption of a steel-making furnace. This was an important competitive advantage during the crisis.

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
8.3	All	Number of months for getting grid connection (considering also approval of grid connection)	> 12
8.4	All	Estimated connection costs in Euros (in case producer pays)	n.a.

10 Issue 9 Gas Network Issues

10.1 Description of barriers & solutions

Slovakia has a good and dense gas network. On the other hand the country is strongly dependent on gas supply from Russia. The Russian – Ukrainian gas crisis in early 2009 showed the vulnerability of the Slovak economy based on Russian gas.

There are several biogas plants in Slovakia. More than 20 are built at waste water treatment plants, another approx. 5 are located at farms using both green mass and animal excrements. Biogas is used for production of both heat and electricity.

10.1.1 Detailed description of the Barriers and solutions

Barrier 9.1 – No encouragement for upgrading

So far there is no biogas upgraded and connected to the gas network. Dalkia is the first company in Slovakia that started negotiations with the gas distribution company about connecting the green gas to the gas network. At the moment the gas distribution company prepares the list of requirements for connecting to the gas network.

Barrier 9.2 – Lack of information

No barriers detected.

Barrier 9.3 – Authorisation procedures

No barriers detected.

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

No barriers detected.

Barrier 9.5 – Other Barriers

No barriers detected.

10.1.2 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 Description of barriers & solutions

District heating is an important issue in Slovakia. Almost all municipalities of 5 000 inhabitants and more have their own district heating system. 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.

11.1.1 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 Slovakia is not motivating for the RES investments in district heating systems. The old gas and coal boilers are mostly in a good shape and RES bring too many economical risks. On one hand the Slovak Government is strongly regulating the gas prices (keeps them low), on the other hand the biomass prices are still growing (one reason are biomass subventions in Austria and other neighbouring countries, another reason is price cartel behaviour of the Slovak biomass producers). Moreover, there is a strict regulation of the costs and profit (maximum profit 3,8%) in heat delivery by the Regulatory Office for Network Industries. Thus the RES investment in a district heating system is profitable only in case of subvention of at least 50%¹⁰.

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

There are two possible sources of financial support for District Heating projects: Structural Funds and European Economic Area Grants (Norway, Iceland and Liechtenstein). However, there are signals that the selection procedure of the Structural Funds projects is neither transparent nor efficient. Several approved projects are overpriced (comparing the price for 1MW installed performance) and overdesigned (installed capacity is not fully used)¹¹.

¹⁰ Interview with the representative of the district heating company

¹¹ Interview with the representative of the district heating company

11.1.2 Best Practice Elements and Indicators

There are several successful projects using the geothermal water for the district heating (e.g. the city of Galanta - geothermal water is used for the heating of the hospital and a settlement of approx. 1000 apartments). The investor in most geothermal projects is either the municipality or the district heating company so there is mostly a good cooperation at the local level.

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)	2%
10.4	Percentage CHP share (idem)	54%