

Non-cost barriers to renewables – *AEON* study

Italy

Mr Francesco Belfiore (Golder)

Mrs Livia Manzone (Golder)

Mr Roberto Scarano (Golder)

Mr Marco Di Muro (Golder)

Mr Marco Greco (Golder)

- Confidential -

Client: DG TREN

ECORYS Nederland BV

Contact author: *Jeroen Daey Ouwers: Jeroen.DaeyOuwers@ecorys.com*

Rotterdam, 10 May 2010

ECORYS Nederland BV
P.O. Box 4175
3006 AD Rotterdam
Watermanweg 44
3067 GG Rotterdam
The Netherlands

T +31 (0)10 453 88 00
F +31 (0)10 453 07 68
E netherlands@ecorys.com
W www.ecorys.com
Registration no. 24316726

ECORYS Macro & Sector Policies
T +31 (0)10 453 87 53
F +31 (0)10 452 36 60

Table of contents

1 Issue 1 Administrative Procedures	8
1.1 Introduction	8
1.2 Description of barriers & solutions	10
1.2.1 Detailed description of the barriers and solutions	10
1.2.2 Best Practice Elements and Indicators	13
1.3 Literature	15
2 Issue 2 Technical Specifications	17
2.1 Introduction	17
2.2 Description of barriers & solutions	18
2.2.1 Detailed description of the Barriers and solutions	18
2.2.2 Best Practice Elements and Indicators	20
2.3 Literature	20
3 Issue 3 Building integrated technologies	21
3.1 Introduction	21
3.2 Description of barriers & solutions	21
3.2.1 Detailed description of the barriers and solutions	21
3.2.2 Best Practice Elements and Indicators	27
3.3 Literature	28
4 Issue 4 – Promotion of energy efficient renewable energy equipment	31
4.1 Introduction	31
4.2 Description of barriers & solutions	32
4.2.1 Detailed description of the Barriers and solutions	32
4.2.2 Best Practice Elements and Indicators	32
4.3 Literature	33
5 Issue 5 Information/awareness raising	35
5.1 Introduction	35
5.2 Description of barriers & solutions	35
5.2.1 Detailed description of the Barriers and solutions	35
5.2.2 Best Practice Elements and Indicators	37
5.3 Literature	37
6 Issue 6 Certification of installers	39
6.1 Introduction	39
6.2 Description of barriers & solutions	40
6.2.1 Detailed description of the Barriers and solutions	40

6.2.2 Best Practice Elements and Indicators	41
6.3 Literature	41
7 Issue 7 Infrastructure Development	43
7.1 Introduction	43
7.2 Description of barriers & solutions	43
7.2.1 Detailed description of the Barriers and solutions	43
7.2.2 Best Practice Elements and Indicators	45
7.3 Literature	45
8 Issue 8 Power Grid Issues	47
8.1 Introduction	47
8.2 Description of the barriers & solutions	47
8.2.1 Detailed description of the Barriers and solutions	47
8.2.2 Best Practice Elements and Indicators	50
8.3 Literature	51
9 Issue 9 Gas Network Issues	53
9.1 Introduction	53
9.2 Description of barriers & solutions	54
9.2.1 Detailed description of the Barriers and solutions	54
9.2.2 Best Practice Elements and Indicators	54
9.3 Literature	55
10 Issue 10 District Heating	57
10.1 Introduction	57
10.2 Description of barriers & solutions	57
10.2.1 Detailed description of the Barriers and solutions	57
10.2.2 Best Practice Elements and Indicators	58
10.3 Literature	58

1 Issue 1 Administrative Procedures

1.1 Introduction

The administrative procedures in Italy are apparently considered favourable to renewable energy sources (“RES”) because of the existence of the Single Authorization Procedure (“SAP”) since 2003. Actually, many critical concerns have been identified about the functionality of this kind of one stop shopping.

The construction and operation of renewable energy plants, as well as related works and infrastructure, are considered essential and urgent works of public interest by Article 12 of Legislative Decree 387/2003, which implements the EU Renewable Energy Directive 2001/77/CE.

Legislative Decree 387/2003, with the above mentioned Article 12, intended to introduce a major simplification in the permitting procedures for installations using RES:

"The construction and operation of plants, the actions of modification, upgrading, renovation and reactivation of all or part of them and the related works and the infrastructure essential to the construction and operation of installations, are subject to a single authorization, issued by the region or province delegated by the region following a single procedure."

The procedure provides for the issue of a single authorization decree by the competent regional or provincial authority, subject to regulations on the protection of the environment, the landscape and the historical and cultural heritage.

Within 30 days of receiving an application to construct a renewable energy plant, the person nominated by the competent regional or provincial authority must convene the Conference of Parties (“COP”).

The COP is a tool that helps to simplify the decision making process. The conference includes all the authorities involved in the administrative procedures (generally the representatives from the regional department of the environment, the regional department of infrastructure and all the competent authorities). The opinions, permits, clearances and consents of all the authorities involved are produced in the COP. Decisions are made on the basis of the results of the COP, taking into account the prevailing opinions.

The decree issued at the end of the COP serves as authorization to build the renewable energy plant and carry out the subsidiary works. The procedure should be concluded within 180 days of submission of application.

Depending on the size of the plant and on specific environmental constraints, an application for an environmental impact assessment (“EIA”) can be required by the competent authority at regional level under Legislative Decree 4/2008. According to Decree 99/2009, in case of off-shore wind farms, the competent authority for the EIA, is the Ministry of Environment.

The target of Legislative Decree 387/03 is to simplify and to speed up the administrative procedures in order to develop the renewable energy business in Italy. By now the target has not been met; the main problems identified are reported below:

1. The 180 days deadline is largely missed: suspension periods are usually granted to allow for the completion of internal procedures;
2. Legislative Decree 387/03 was calling for specific guidelines, to be issued later on, to indicate precisely how the administrative and technical criteria should be applied to procedures for the construction and operation of plants using RESs, with particular reference to sitting criteria. By now, the guidelines have not been adopted yet. The guidelines were expected to be issued by the Ministry of Economic Development in coordination with the Ministry of Environment and the Ministry of Cultural Heritage and Activities, and approved by the Unified Conference between Regions and State (Unified Conference) shortly after the decree came into force, but they have not been adopted yet. The lack of general criteria has meant that, since 2003, the Regions have produced a flowering of rules and regulations with different provisions and requirements from one another. Where the Regions in some cases have delegated the matter to the Provinces, the authorization process can even be different among Provinces within the same region.

In this context the key finding of the consultation regarding Issue 1 - Administrative Procedures is the **lack of national guidelines for the Single Authorization Procedure**. The guidelines should have been issued in the Unified Conference set on 25th February 2010, but the Conference was not held and has been postponed. According to the latest news, the conference should be held in May 2010, after the Italian local council election.

Clear national guidelines for SAP process are highly recommended by all the stakeholders, and obligatory response periods for the authorities involved should be met with appropriate sanctions and clear responsibilities.

In particular, the possible solutions to mitigate or eliminate the barriers connected to these administrative procedures may be:

1. The interested ministries and the Unified Conference between Regions and State should issue the national guidelines and should respect the principles of the Legislative Decree 387/2003 that had been introduced by the legislator to simplify the authorization process for the construction and production of electric energy from RES. The good result achieved with new installations of RES plants, mainly photovoltaic and wind plants, would have been notably best without these barriers;
2. The EIA or the screening procedures should be required only in presence of specific environmental constraints, otherwise the SAP should be applied;

3. The guidelines, once issued by the Ministry of Economic Development in coordination with the Ministry of Environment and the Ministry of Cultural Heritage and Activities and approved by the Unified Conference, should be implemented by the single Regions without further changes.

1.2 Description of barriers & solutions

1.2.1 Detailed description of the barriers and solutions

Barrier 1.1 – Inefficient general administrative procedures

During the national consultation of the stakeholders in Italy, the following main barriers were identified regarding **RES technologies in general**:

- **Lack of national guidelines** and criteria for the application of the SAP for RES plants. In general comprehensive information on the authorization procedure and clear guidelines for the SAP process for all applicants are not available. Therefore each Region makes its own regulations and guidelines, often in conflict with the European Community directives and with the national laws [Rete]. A few Regions have empowered Provinces for the administrative procedures for RES plants, increasing the lack of coordination with the national or regional legislation. For example, in 2008 the Region of Puglia issued a regional law (Regional Law No. 31 21st October 2008) to regulate and simplify the authorization procedures for RES plants. The provincial or municipal legislation was not coordinated with the regional one: consequently the simplification was not applicable in many of the municipalities in the region. The lack of control and coordination on local legislation generates two effects/barriers:
 - long authorization processes;
 - complex and significant legal framework to obtain authorizations.

The second example regards the Region of Sardegna: all the authorization procedures in progress, according to Legislative Decree 387/03, have been blocked since the end of year 2009. This situation is due to the unclear distribution of the administrative competences between Region and Provinces, pending the approval of the new regional Energy Plan. [ApSa] The issue of the SAP national guidelines and the new regional Energy Plan should clarify the distribution of the competences among the different administrative bodies and solve the issue;

- **Authorities in different Regions apply the same regulations of the SAP process in a different way.** The legal framework is ambiguous and it is not clear: individual officers of the authorities interpret the same regulations in different ways. For example, according to the interviewees, the Region of Marche applies the same regulations in a rigid way regarding wind plants: hence there is only one wind park in this Region;
- **Lead time is too long to obtain the necessary authorizations.** The obligatory response period for the authorities involved in the administrative authorization processes often is not met (depending on regional situation). As reported in Table 3, the time spent for the administrative process is at least on average 15 months, compared to the 6 months set by the Legislative Decree 387/03. In particular the authorization period for wind farms can be extremely long, up to 60 months

according to the interviewees. Sentence of the Council of State No 1139 of 26th February 2010 condemns a Region and a Municipality because they did not comply with Legislative Decree 387/03 and reminded that the maximum time of SAP process is 180 days (6 months). [Sen];

- **High number of administrative bodies involved in the SAP process.** The number of the authorities and bodies involved is often neither proportionate nor appropriate. As can be seen in Table 4, in a few cases there are even 50 authorities and bodies involved for wind applications with an average of about 25 actors. Also for biogas and biomass installations the average number of administrative bodies involved in the SAP process is very high (between 20 and 30 actors). In the case of PV and hydro plants there are about 15 actors on average. The SAP process does not reduce the number of opinions and bodies necessary to obtain the authorization. In many cases many authorities do not participate in the SAP process and therefore many authorizations are incomplete and uncertain. [ApDu] The authorizations are therefore subject to appeals by institutions or private citizens that are contrary to RES installations. In addition small changes of plan could be used as a pretext by adverse institutions to block the installation of a RES plant;
- **Lack of knowledge of RES technologies by authorities.** The officers of authorities have limited knowledge of different RES technologies. Therefore the authorities apply regulations not considering the specific features of each RES technology or they make inappropriate requirements. In addition sometimes local authorities do not know the environmental, social and economic benefits of RES technologies;
- **The responsibilities of different administrative bodies are not clearly coordinated and defined in the SAP process.**

Regarding off-shore wind power installations in particular, the following barrier was identified:

- Confusion about the authorization procedure because the responsibilities of different administrative bodies are not clearly coordinated and defined, especially for occupancy of sea and for EIA processes. Law No 99, 23rd July 2009 (“Law 99/09”) defines that a national EIA is required to install off-shore wind power plants, so lead time becomes more long. **Possible impacts of these barriers:** long lead time to obtain the necessary authorizations, additional costs to develop RES projects, uncertainty about procedure and about final result of the SAP process. The existence of these problems is also confirmed by the results of the benchmarks analysis. **Possible solutions:** a clear national framework legislation and guidelines for the authorization processes. Higher coordination between the national and the local legislation.

Barrier 1.2 – Competing public interests

Competing public interests represent another barrier related with the issue of administrative procedures. During the SAP, different competing interests must be balanced, for example environmental protection, land planning constraints, etc. The interest to develop a RES installation may compete with other public concerns.

Regarding all **RES technologies in general** the following public interest barriers were identified:

- **Environmental protection.** The problems concerning this barrier are due to:

- Different criteria in different Regions for the EIA processes;
- Disproportionate and unnecessary EIA procedures;
- Different administrative procedures in different Provinces and Municipalities;
- Lack of guidelines for EIA processes and for specific RES technologies;
- Lack of information about criteria for landscape assessment in the municipality authorization processes;
- Landscape mitigation measures: sometimes local authorities ask for landscape mitigation measures (for example for hydro installations, underground pipes, use of particular building materials or techniques, etc.) that are very expensive and sometimes not appropriate in the context. [ESHA].

Regarding **biomass, ground mounted PV and wind power installations**, the following public interest barrier was identified:

- **NIMBY effect:** NIMBY is the acronym of the expression “not in my back yard”.

Social opposition of neighbours is a significant barrier present in Italy, especially for wind installations. Most of the opposition is a result of insufficient or non existing information, dissemination and consultation with the local community.

According to the results of the Nimby Forum research [Nimby], in 2009, in Italy 283 complaints related to social opposition of neighbours were surveyed: in particular 102 complaints were related to renewable energy plants (70 biomass plants, 20 wind farms, 9 hydro plants, and 3 photovoltaic plants).

As a consequence of this barrier RES producers, particularly concerning biomass plants, invest substantial resources to organise meetings to engage the relevant local stakeholders and gain the population’s support.

Barrier 1.3 – Non existing or insufficient spatial planning

During the national consultation of stakeholders in Italy, the following barrier was identified regarding **hydro installations**:

- **Lack of spatial planning:** local authorities are often not interested in the development of **hydro installations** because of the lack of regional targets for RES. Therefore it is generally not easy to relate with local authorities, also because sometimes they do not have the necessary technical competences to assess the projects and need time (and money) to get information from consultants. [ESHA].

Barrier 1.4 – Other Barriers

During the national consultation of stakeholders, regarding **RES technologies in general** other main barriers were individuated in Italy:

- **Speculation:** high number of applications for the authorization of energy plants, regardless of the applicant financial capacity, for the mere purpose of speculating on the authorization once it has been issued. Precisely, the authorized projects are sold at a price significantly higher than the project’s original value;
- **Italian Constitution:** according to Title V of the Italian Constitution, State and Regions have concurrent legislative competence on production, transmission and distribution of energy: the State has the responsibility of the European RES target on 2020 but the authorizations required for RES plants are granted by the Regions.

Hence, the State is responsible for the target but cannot authorize the plants. According to Italian Law No. 13/99, Article 8-bis, each Region must share the burden towards delivering the Italian RES target for 2020 (the so called “regional burden sharing agreement” [ApDu]). The implementing decree has not been issued yet by the Ministry of the economic development. [Tos]. **Possible solution:** This is a strong barrier for the development of RES: the State should share a burden of responsibility with regional authorities by reaching binding agreements with them, as set by Law No. 13/99.

Regarding **hydro installations** the following barriers were identified:

- **Regions and Provinces define too precautionary values of the Minimum Vital Flow.** The Minimum Vital Flow refers to the minimum quantity of water required, after the uptake for the plant, to ensure that the natural ecological integrity is maintained, with particular reference to the protection of aquatic life. Thus the Minimum Vital Flow should be seen as the residual flow that is capable of guaranteeing, in the short and long term, the protection of the watercourse's natural state. As a consequence in many places it is impossible to develop projects of hydro installations;
- **In a few Regions the public authorities are setting a sort of “moratorium” for new concessions.** [ESHA and interview];
- In Italy there is a huge number of applications that are waiting for a response since many years and the majority of them are going through a competition procedure. The competition procedure happens if two applications for a concession compete for the same water flow.

1.2.2 Best Practice Elements and Indicators

Table 1:

No.	Technology	Benchmark	Result
1.1	All	Is one stop-shopping possible?	Yes
1.2		Amount of money to be invested in the administrative process (including cost of work and costs like fees) (in €)	See Table 2
1.3		Time to be spent for the administrative process (duration to get all the main permits) (in months)	See Table 3
1.4	All	Estimated number of permits required (#)	1

Table 2:

1.2 Amount of money to be invested in administrative process (including cost of work and costs like fees)	€	
1.2a * Wind onshore, 2MW, 80m height	10%	Range: 8-12%
1.2b Biogas plant < 2MW	150.000	€/MWe
1.2c Biomass < 2MW	150.000	€/MWe
1.2d Biomass > 10MW	75.000	€ Range: 50.000-100.000 €
PV (0,5 - 6 MWe)	225.000	€/MWe Range: 200.000-250.000 €/MWe
PV (0,5 - 6 MWe) if project is bought when it is already authorized through developer	375.000	€/MWe Range: 250.000-500.000 €/MWe
Hydro installations *		Range: 1-10%

* for a) wind and hydro: share (in %) of the overall project cost that was spent on the administrative procedures until plant was built.

Table 3:

1.3 Time to be spent for administrative permission process **	Months	
1.3a Wind onshore, 2MW, 80m height	42	Range: 24-60 months
1.3b Biogas plant < 2MW	15	Range: 12-18 months
1.3c Biomass < 2MW	15	Range: 12-18 months
1.3d Biomass > 10MW	12	Range: 10-18 months
PV (0,5 - 6 MWe)	21	Range: 12-27 months
Hydro installations		Range: 12- 120 months

** for all technologies: time is from the first application to any authority or grid operator until were received both a) the main permits to build and operate the facility, meaning the legal right to build at this site, and b) the permit to connect it to the grid (if applicable).

Table 4:

Number of actors involved in the SAP process	Actors	
a Wind onshore, 2MW, 80m height	25	Range: 15-50 actors
b Biogas plant < 2MW	20	Range: 10-30 actors
c Biomass < 2MW	20	Range: 10-30 actors
d Biomass > 10MW	30	Range: 20-40 actors
PV (0,5 - 6 MWe)	15	Range: 5-20 actors
Hydro installations	15	Range: 5- 30 actors

1.3 Literature

Interviews:

[ESHA] European Small Hydropower Association (ESHA). Administrative barriers for small hydropower development in Europe (2007).

[ApSa] Produzione di energia da fonti rinnovabili. Stato dei procedimenti di autorizzazione unica di cui all'articolo 12, d.lgs. n. 387/2003. Segnalazione Criticità. Letter of APER to Region Sardegna, Milano, 25 gennaio 2010.

[ApDu] Aper, Carlo Durante, Claudia Abelli, Tommaso Barbetti, Incontro per fonte eolica. Presentation of 26 February 2010, Milan.

[Tos] Website of Region of Toscana:

http://www.regione.toscana.it/regione/export/RT/sito-RT/Contenuti/minisiti/pier/visualizza_asset.html_336363598.html.

[Sen] Sentence of the Council of State No 1139 of 26 February 2010, "Autorizzazione unica per gli impianti alimentati da fonti rinnovabili - Mancata adozione della pianificazione comunale - Moratoria sulle nuove autorizzazione - Responsabilità del Comune – Condanna".

[Rete] Giffoni Maria Antonietta, Petrucci Francesco, "Autorizzazione Unica, il medioevo delle rinnovabili italiane" article available from:

<http://www.reteambiente.it/news/12995/autorizzazione-unica-il-medioevo-delle-rinnovabil/>.

[Nimby] Nimby Forum. Cantiere Italia. Quando lo sviluppo è una corsa ad ostacoli.

Aper, www.aper.it.

Website of Wind Power Data: <http://www.windpowerdata.com/>.

2 Issue 2 Technical Specifications

2.1 Introduction

This chapter analyses if the provisions of Directive 28/2009/EC concerning technical requirements concerning renewable energy equipment and systems are fulfilled in Italy.

Notably, following preamble:

“National technical specifications and other requirements [...] in the field of technical standards and regulations [...] relating for example to levels of quality, testing methods or conditions of use, should not create barriers for trade in renewable energy equipment and systems. Therefore, support schemes for energy from renewable sources should not prescribe national technical specifications which deviate from existing Community standards or require the supported equipment or systems to be certified or tested in a specified location or by a specified entity.”

and mainly Article 13 (2):

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

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.

The main support schemes available in Italy are reported below:

- **Quota system:** electricity generated from renewable energy sources is mainly promoted through a quota system (green certificates) according to Legislative Decree 79/99. The quota system obliges all producers and importers of electricity to generate a certain quota of electricity from renewable sources or purchase a certain amount of green certificates;
- **Feed-in tariff:** small renewable energy plants in general and photovoltaic plants in particular are promoted through several kinds of feed-in tariff systems. Photovoltaic systems are promoted through a guaranteed payment (according to Ministerial Decree of 19/02/2007). Small systems, except for photovoltaic systems, can also be promoted through the guaranteed feed-in tariff (according to Law 244/07) as an alternative to green certificates. Furthermore, the Manager of Energy Services (*Gestore dei Servizi*

Energetici-GSE S.p.A., “GSE”)¹ can manage the sale of renewable energy on request, and interested parties can make use of net-metering;

- **Fiscal regulation mechanisms:** Solar thermal collectors and heat pumps are eligible for fiscal deduction of 55% of the investment costs, according to the Italian Law no 296/06 and subsequent amendments;
- **Regional programmes** and promotion instruments.

In general, in Italy the technical specifications to be met in order to be eligible for support schemes are based on European standards, hence do not constitute a barrier.

2.2 Description of barriers & solutions

2.2.1 Detailed description of the Barriers and solutions

Barrier 2.1 – Weak definitions

This is not an identified barrier in Italy. The technical specifications and requirements to be met by renewable energy equipment and systems in order to benefit from support schemes are clearly set, as reported below.

Regarding **solar thermal collectors**, the technical specifications to be met in order to benefit from the support scheme set by Law 296/06 and subsequent amendments are listed below:

- The collectors must comply with the technical specifications set by European standard 12975;
- The solar collectors’ and boilers’ guarantee period must be at least 5 years;
- The electric and electronic equipment’ guarantee period must be at least 2 years;
- The installation of the solar systems must comply with the producer guidelines.

Regarding **heat pumps**, the technical specifications to be met in order to benefit from the support scheme set by Law 296/06 and subsequent amendments are listed below:

- The coefficient of performance (in a heating device, it is the ratio of the heat delivered in the high-temperature coils to the work – usually electricity – supplied) must comply with the values set by Ministerial Decree of 07/04/2008;
- The heat pump performance must be measured according to the technical specifications set by standard EN 14511:2004.

Regarding **solar photovoltaic panels**, the technical specifications to be met in order to benefit from the support scheme set by Ministerial Decree of 19/02/2007 are listed below:

- The crystalline silicon cells must comply with the technical specifications set by standard EN 61215;
- The thin-film cells must comply with the technical specifications set by standard EN 17025;

¹ **Gestore dei Servizi Energetici - GSE S.p.A.** (GSE) plays a central role in promotion, support and development of renewable energy sources in Italy. GSE’s sole shareholder is the Italian Ministry of Economy and Finance which, in consultation with the Ministry of Economic Development, provides guidance on GSE’s activities. GSE is the parent company of “Gestore dei Mercati Energetici S.p.A.” (GME) and of “Acquirente Unico S.p.A.” (AU).

- Photovoltaic test laboratory accreditation must comply with the technical specifications set by standard EN 61646.

Regarding **biomass systems**, the technical specifications to be met in order to benefit from the support scheme set by Law 296/06 and subsequent amendments are listed below:

- The efficiency of biomass heat generator (with a power lower than 300 kW) must comply with the technical specification set by standard EN 303-05.

Barrier 2.2 – No EU standards applied

This is not an identified barrier in Italy. The technical specifications are expressed in terms of European standards, as below reported:

Regarding **photovoltaic systems**:

- The photovoltaic crystalline silicon cells must comply with the technical specifications set by standard EN 61215;
- The photovoltaic thin-film cells must comply with the technical specifications set by standard EN 17025.

Regarding **solar thermal systems**:

- The solar thermal collectors must comply with the technical specifications set by standard EN 12975.

Regarding **biomass systems**:

- The room heaters fired by solid fuel must comply with the technical specifications set by standard EN 13240;
- The inset appliances including open fires fired by solid fuels must comply with the technical specifications set by standard EN 13229;
- The residential space heating appliances fired by wood pellets must comply with the technical specifications set by standard EN 14785;
- The residential cookers fired by solid fuel must comply with the technical specifications set by standard EN 12815.

The installation requirements for biomass systems are set by standard ISO 10683.

Barrier 2.3 – Specified locations for testing and/or certification

This is not an identified barrier in Italy. None of the technical requirements that must be complied with to be eligible for the support scheme set by Law 296/06 and subsequent amendments (solar collectors, heat pumps, biomass systems) and Ministerial Decree 19/02/2007 (photovoltaic panels) requires implicitly or explicitly a certification or a testing in a specific country.

Barrier 2.4 – Barrier to trade

No relevant barriers to trade have been identified. All the technical specifications required to be eligible for the Italian support schemes, as reported in *Barrier 2.1*, are expressed in terms of international standards and generally do not impede the operation of the internal market in any other way.

2.2.2 Best Practice Elements and Indicators

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

2.3 Literature

Interviews:

Enea: Energy efficiency support scheme guideline <http://efficienzaenergetica.acs.enea.it/>.

“Conto Energia” guideline (photovoltaic systems guideline) <http://www.gse.it>.

Legislative Decree 79/99-“Attuazione della direttiva 96/92/CE recante norme comuni per il mercato interno dell'energia elettrica”.

Law 296 of 27/12/2006. "Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato (Legge finanziaria 2007)".

Law 244 of 24/12/2007. "Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato (Legge finanziaria 2008)".

Ministerial Decree of 19/02/2007. “Criteri e modalità per incentivare la produzione di energia elettrica mediante conversione fotovoltaica della fonte solare, in attuazione dell'articolo 7 del Decreto Legislativo 29 dicembre 2003, n. 387”.

3 Issue 3 Building integrated technologies

3.1 Introduction

“Building integrated technologies” is a very broad topic and the related barriers are very diverse in character.

The barriers can be grouped under the following topics: administrative procedures, regulations and codes (Barriers 3.1, 3.2, 3.3), obligation to use renewable energy sources (“renewable obligation”) and minimum energy performance requirements (Barriers 3.4, 3.5), spatial planning issues (Barrier 3.6) and private law issues (Barrier 3.7).

The issue encompasses barriers for small to medium-scale RES systems installed in or on buildings, including:

- photovoltaic systems;
- solar thermal systems;
- geothermal heat pumps;
- small wind turbines;
- biomass systems.

In general support schemes are available, and the administrative procedures are appropriate for most of these technologies.

The main barriers identified are related to the lack of effective renewable obligations and to spatial planning issues.

3.2 Description of barriers & solutions

3.2.1 Detailed description of the barriers and solutions

Barrier 3.1 – Inefficient general administrative procedures

Inefficient administrative procedures do not constitute the main barrier to the deployment of renewable energy building integrated technologies in Italy, especially solar thermal and photovoltaic systems.

The installation of solar **thermal and photovoltaic panels** integrated in the roof of the building is regulated by Legislative Decree 115/08 as follows:

- If the building is located in an area not subject to regulatory constraints, no authorization is required;

- If the building is located in an area subject to regulatory restrictions, the following administrative procedures are required:
 1. DIA – Dichiarazione di inizio attività (Activity Start-up Notice-ASN) to the local municipality;
 2. Authorizations granted by the administrative bodies responsible for the restrictions.

The ASN is a notification, to the competent local administrators, of the start-up of minor works.

The local administrator should review the application and accompanying documentation and either approve the start-up of works or state his objections. If no decision is made within 30 days, this will be taken as a tacit approval. Where doubts arise, the local authorities can call a meeting with the stakeholder within 30 days and ask for additional information on the project.

Thanks to the tacit approval, the ACN is not perceived as an important barrier.

No official guideline or guidance is available for the authorization when regulatory restrictions occur: as a result, local administrative bodies do not apply a common approach and can hence slow down the administrative process.

The main barrier for thermal and photovoltaic panels integrated in buildings is consequently the non homogeneous application, across the country, of Legislative Decree 115/08: if the building is located in an area not subject to regulatory constraints, no ACN should be required. Some small municipalities are not aware of Legislative Decree 115/08, hence the ACN application is often required even if no restriction is present. The main consequence is a delay (the 30 days required for the tacit approval) and an increase in the costs of the authorization process for the ACN application. **Possible solutions:** According to most of the interviewees, the Italian administrative procedures seem to be appropriate for small size building integrated technologies: the main problem is due to the non homogeneous application, across the country, of Legislative Decree 115/08. The possible solution could be a self-certification, by the applicants, of compliance with the requirements of Legislative Decree 115/08 when the building is located in an area not subject to regulatory constraints.

The installation of **small wind turbines** (maximum height of 1.5 m and maximum diameter of 1 m) is also regulated by Legislative Decree 115/08, with the same procedures reported above for solar panels.

The installation of **ground source low enthalpy heat pumps** is regulated by the new Legislative Decree 22/2010 as follows:

- No authorization is required for ground source heat pumps with horizontal loop;
- Authorizations for vertical loop ground source heat pump are under the jurisdiction of Local authorities (Region, Provinces or Municipalities).

The main barrier is due to the lack of specific and proportionate laws for low enthalpy geothermal energy: in most of the Italian Regions, the geothermal heat pumps must

comply with the stricter general environmental and soil and water protection legislation, even in case of closed loop technologies (with no groundwater and soil contamination risks). The administrative procedures are hence not proportionate for these technologies: the consequence is a difficult and long authorization process. **Possible solutions:** a specific authorization procedure for geothermal heat pumps, as set by the Law 99/2009, Article 27, Paragraph 28: “The government must adopt new regulations in order to simplify the administrative procedures required for low and medium temperature geothermal energy.”

No administrative procedures or authorizations are required for the installation of domestic **biomass systems**.

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

In Italy specific rules (Legislative Decree 115/08) for building integrated photovoltaic and solar thermal panels and small wind turbines are generally clear, transparent and appropriate for this system size. As already pointed out, a barrier can result from the non homogeneous application, across the country, of these rules.

Moreover, there is no specific rule for ground source low enthalpy heat pumps in most of the Italian Regions.

Barrier 3.3 – Competing public interests

Generally, competing public interests are not seen as a significant barrier in most cases. The integration of technologies in the buildings minimizes the opposition of neighbours.

The installations falling under monument protection laws can lead to a barrier for RES technologies, especially for photovoltaic panels. Restrictions on the installation of building integrated technologies also apply to not historical buildings located in a protected area.

No official guideline or guidance is available for the integration of RES technologies in protected buildings: the historical restriction can be a very important obstacle for the installation of RES technologies, due to the typical nature of the Italian urban environment. The authorization process can be very long and slow down, or in some cases impede, the development of building integrated RES technologies.

Barrier 3.4 – Renewable obligation insufficient

The renewable obligation has not been implemented to an appropriate degree in Italy and this is one of the main barriers to the deployment of building integrated RES technologies.

Renewable obligation for public buildings has been present in the national legislation since Law 10/1991 but the law has never been fully implemented.

Later on, renewables obligation for private and public new buildings or in case of major renovation works was set by the following decrees:

- Legislative Decree 311/06: 50% of the domestic hot water consumption must be provided by renewable sources;
- Presidential Decree 59/09: obligation of photovoltaic panels.

The implementing decrees, according to Legislative Decree 311/06, Annex 1, Paragraph 13 and Presidential Decree 59/09, Article 4, Paragraph 23 have not been issued yet. Consequently, the renewable obligation has not come into force.

The obligation for the use of solar photovoltaic panels was also introduced in the Italian general building framework legislation by Law 244/2007: the minimum obligations to be met for new buildings since January 2009 are reported below:

- 1 kW for each apartment in residential buildings;
- kW for industrial buildings wider than 100 m².

The obligations deadline was postponed by the following laws:

- Law 14/09, Article 28, Paragraph 1-octies postponed it to January 2010;
- Law 25/10, Article 8, Paragraph 4-bis postponed it to January 2011.

Consequently, the renewables obligation has not come in to force yet, mainly due to the lack of the implementing decrees and to the low or not existent fines for non-compliance.

The Italian Constitution allows the local governments (Region, Provinces or Municipalities) to introduce local buildings obligations: by now, renewables obligation for solar thermal or photovoltaic systems has only been implemented in 253 municipalities (out of 8100 municipalities countrywide), with different provisions and requirements from one another (for example, in Piedmont, 60% of the domestic hot water consumption must be provided by renewable sources, as set by the Regional Law 13/2007, Article 18, Paragraph 1).

The renewables obligations in force in the Italian Regions are reported in Figure 3.1 and Figure 3.2.

Figure 3.1 Regions with a solar thermal obligation



Source: Comuni Rinnovabili 2010, Legambiente.

Figure 3.2 Regions with a solar photovoltaic obligation



Source: Comuni Rinnovabili 2010, Legambiente.

Possible solution: the national legislation is clear and transparent. The possible solution is the adoption of decrees implementing the renewables obligation countrywide.

Barrier 3.5 – Exemplary role of public buildings neglected

Public buildings do not yet fulfil their exemplary role concerning the integration of RES in buildings. RES are not sufficiently used and visible in public buildings.

The main reasons are listed below:

- Lack of suitable funding;
- Lack of motivation and political will.

Possible solution: the implementation of the existing legislation, starting from Law 10/1991.

Barrier 3.6 – RES deployment hindered by spatial planning matters

RES are not taken into account in a sufficient way for spatial planning: new buildings are not prepared for an integration of RES at a later point in time (e.g. optimal orientation for the use of solar technologies, roof buildings designed to support additional weight).

Moreover, Italian cities are largely characterized by big apartment buildings: the installation of building integrated RES technologies (such as photovoltaic panels on the roof) is not easy, because it requires the agreement of the majority of the owners.

According to the interviewees, the most important barrier to the development of building integrated RES technologies is a technical one. Many building integrated RES technologies (in particular solar thermal collectors and biomass systems) require easily accessible spaces for the technical equipment (mainly hot water and biomass storage tanks and pumps, chimneys): the lack of technical rooms can impede the installation of RES technologies in existing buildings.

In addition, no technical rooms for RES technologies are planned in new buildings: that is mainly due to the lack of the renewables obligation. **Possible solution:** no solution has been identified for the technical barrier regarding the installation of RES technologies in existing buildings.

A real renewable obligation (as set by the law listed in *Barrier 3.4*) is the key solution for the technical barrier in new buildings.

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

The distribution of costs in tenancy is regulated by Law 392/78, Article 9 and by the Civil Code, Article 1576: in general, operation costs are at the tenant's expense, while all the other costs (elevators, heat and cooling systems, etc.) are at the landlord's expense. In general, this is perceived as a barrier for the deployment of RES, because landlords are usually not interested in investing money without directly benefiting from the investments.

In Italy, the tenancy and ownership legal regulations are not perceived as a barrier, mainly because Italy has a very low rate of rented houses (according to ISTAT - National Statistic Institute, less than 20% of the Italian families live in a rented house).

The building integrated RES technologies deployment in rented houses is extremely low, but it is due mainly to an economic reason: tenancy is seen in Italy as a temporary condition before purchasing a house. Hence, tenants are generally not interested in

spending money on energy efficiency or RES technologies, characterized by a payback time usually longer than 10 years.

Barrier 3.8 – Other barriers:

- The Italian construction engineers and architects are considered quite conservative and are not aware or used to try new materials (such as photovoltaic panels) in buildings;
- There is a cultural barrier: the environmental education and awareness is not well developed in Italy. Consequently, the demand of energy efficiency and renewable energy equipment is still low;
- The energy efficiency and RES technologies could be installed, in large apartment buildings, by Energy Service Companies (ESCO): the ESCO business, especially for residential buildings, is not well developed in Italy.

3.2.2 Best Practice Elements and Indicators

No.	Technology	Benchmark	Result
3.1	PV rooftop 1-3kW	Is this installation type in normal cases exempted from an authorization procedure (building permit)?	Yes*
3.2	PV rooftop 1-3kW	Are legal-administrative requirements adequate for this installation type?	Positive**
3.3	PV rooftop 1-3kW	Number of administrations that must be contacted (#)	0-2***

*If the building is located in an area not subject to regulatory constraints.

**No authorizations or ASN: it depends on the Regions.

***Depends on the regulatory constraints present in the area where the building is located.

No.	Technology	Benchmark	Result
3.1	Solar thermal ~9m ² collectors	Is this installation type in normal cases exempted from an authorization procedure (building permit)?	Yes*
3.2	Solar thermal ~9m ² collectors	Are legal-administrative requirements adequate for this installation type?	Positive**
3.3	Solar thermal ~9m ² collectors	Number of administrations that must be contacted (#)	0-2***

*If the building is located in an area not subject to regulatory constraints.

**No authorizations or ASN: it depends on the Regions.

***Depends on the regulatory constraints present in the area where the building is located.

No.	Technology	Benchmark	Result
3.1	Geothermal heat pump < 10kW	Is this installation type in normal cases exempted from an authorization procedure (building permit)?	Yes*
3.2	Geothermal heat pump < 10kW	Are legal-administrative requirements adequate for this installation type?	Negative**
3.3	Geothermal heat pump < 10kW	Number of administrations that must be contacted (#)	.*

*Depends on the Regions and the technologies.

**Lack of specific and proportionate laws for low enthalpy geothermal energy in most of the Italian Regions.

3.3 Literature

Interviews:

Italian Civil Code. Royal Decree 262 of 16/03/1942.

Law 392/78. “Disciplina delle locazioni di immobili urbani”.

Law 10/91. “Norme per l'attuazione del Piano energetico nazionale in materia di uso razionale dell'energia, di risparmio energetico e di sviluppo delle fonti rinnovabili di energia”.

Legislative Decree 311/06. “Disposizioni correttive ed integrative al decreto legislativo 19 agosto 2005, n. 192, recante attuazione della direttiva 2002/91/CE, relativa al rendimento energetico nell'edilizia”.

Regional Law 13/07 (Piedmont). “Disposizioni in materia di rendimento energetico nell'edilizia”.

Law 244/07. "Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato (legge finanziaria 2008)".

Legislative Decree 115/08. "Attuazione della direttiva 2006/32/CE relativa all'efficienza degli usi finali dell'energia e i servizi energetici e abrogazione della direttiva 93/76/CEE".

Law 14/09. “Conversione in legge, con modificazioni, del Decreto-Legge 30 dicembre 2008, n. 207, recante proroga di termini previsti da disposizioni legislative e disposizioni finanziarie urgenti”.

Presidential Decree 59/09. “Regolamento di attuazione dell'articolo 4, Paragraph 1, lettere a) e b), del decreto legislativo 19 agosto 2005, n. 192, concernente attuazione della direttiva 2002/91/CE sul rendimento energetico in edilizia”.

Law 99/2009. "Disposizioni per lo sviluppo e l'internazionalizzazione delle imprese, nonché in materia di energia".

Law 25/10. “Conversione in legge, con modificazioni, del decreto-legge 30 dicembre 2009, n. 194, recante proroga di termini previsti da disposizioni legislative”.

Legislative Decree 22/2010. “Riassetto della normativa in materia di ricerca e coltivazione delle risorse geotermiche, a norma dell'articolo 27, Paragraph 28, della legge 23 luglio 2009, n. 99”.

Legambiente, 2010. Comuni Rinnovabili 2010: Sole, vento, acqua, terra, biomasse - La mappatura delle fonti rinnovabili nel territorio italiano.

ENEA website:

www.enea.it.

GSE website:

<http://www.gse.it>.

ISTAT website:

www.istat.it.

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 Italy, since year 2007 (Law 296/06 - Legge 27 dicembre 2006 n. 296 - Finanziaria 2007- Budget Act of 2007), there has been an incentive system called “Detrazione 55%” which is a tax reduction for whomever invests in measures to save energy in buildings and existing heating systems. In Italy this incentive system is effective and much appreciated by the public. The information concerning this incentive system is clear and always updated in the website “<http://efficienzaenergetica.acs.enea.it/>”. This website is managed by ENEA.

The plan “Energy efficiency: the 55% solution” was approved by the European Commission as an official partner of the "Sustainable Energy Europe" campaign. [Enea].

4.2 Description of barriers & solutions

4.2.1 Detailed description of the Barriers and solutions

Barrier 4.1 – Non-compliant promotion schemes

Biomass systems. In Italy the State doesn't support directly the substitution of biomass boilers, but with the system "Detrazione 55%" it provides incentives to the final users that demonstrate that the energy saving achieved with the substitution of biomass boiler and other actions for improving the building's thermal dispersion is above a certain threshold.

Final users must install biomass boilers that are in third class of European norm "Uni-En 303-5", regarding the nominal net conversion efficiency. So the nominal net conversion efficiency (n) is calculated on the basis of maximum power of furnace (P_n [kW]) with this formula: $n = 67 + 6 \log P_n$. For example, for a residential biomass boiler of 22 kW the nominal net conversion efficiency (n) is 75% that is smaller than 85%, required in the article 13 (6) of the Directive for residential and commercial applications. [Nextv].

Therefore this incentive system doesn't fulfil the requirements of Art. 13(6).

Heat pump and solar thermal systems. In Italy the State supports directly with the incentive system "Detrazione 55%" only heat pump and solar thermal systems that fulfil the requirements of Art. 13(6).

Barrier 4.2 – Lack of substitution of existing inefficient systems

In Italy this is not an identified barrier.

Barrier 4.3 – Use of national procedures

In Italy this is not an identified barrier.

Barrier 4.4 – Insufficient information

In Italy this is not an identified barrier.

Barrier 4.5 – Other Barriers

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)	Yes. Not for bioheat

During the national consultation of the stakeholders, the incentive system "Detrazione 55%" is much appreciated by the population and it's seen as Best practice by stakeholders.

Unfortunately at present this system is providing incentives only until 31st December 2010. [Nextv].

4.3 Literature

Interviews:

[Enea] Website ENEA – Efficienza energetica:
<http://efficienzaenergetica.acs.enea.it/index.html>.

[Nextv] Website Nextville: <http://www.nextville.it/index/426>.

L 244/07 (Legge 24 dicembre 2007 n. 244 - Finanziaria 2008 - Budget Act of 2008).

L 296/06 (Legge 27 dicembre 2006 n. 296 - Finanziaria 2007- Budget Act of 2007).

Decree: Decreto 6 agosto 2009 “Disposizioni in materia di detrazioni per le spese di riqualificazione energetica del patrimonio edilizio esistente, ai sensi dell'articolo 1, Paragraph 349, della legge 27 dicembre 2006, n. 296.

Commission Decision 2007/742/EC of 9 November 2007.

5 Issue 5 Information/awareness raising

5.1 Introduction

Information and awareness campaigns on RES are mostly organised by renewable energy and environmental associations.

According to the interviewees, the campaigns are mostly small-scale and not coordinated, and do not bring to visible and widely spread results for the general public (there is not any awareness campaign on television, one of the most effective means of communication for the general public), especially for some technologies as solar thermal collectors or shallow geothermal systems.

Instead, information for the operators on support mechanisms is in most cases made available online in a structured and comprehensible form by the public authorities, mainly by GSE, Gestore Servizi Energetici (Energy Services Administrator) and by the relevant industry and renewable energy associations.

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

The insufficient availability of information on support measures is not an identified barrier in Italy.

GSE operates support mechanisms for **renewable energy production** (green certificates, feed in tariff for photovoltaic systems and feed in tariff for small RE plants) and makes relevant information available online in a structured and comprehensible form.

Specific information on the support scheme set by the Italian law no 296/06 and subsequent amendments for **solar thermal collectors** and **heat pumps** is made available online in a structured and comprehensible form by the public authorities on the ENEA (National Agency for New Technologies and Sustainable Energy).

Barrier 5.2 – Insufficient funding for campaigns/programmes

Information and awareness campaigns on RES are organised mostly by renewable energy and environmental associations, hence are paid by private operators.

The prevailing opinion amongst interviewees is that there are not enough campaigns and that there is an insufficient funding for information raising campaigns and programmes by the public sector.

Some examples of the information campaigns initiated in the course of the last years are below reported:

“Il sole a scuola” (Sun in the schools) - 2001

<http://ilsoleascuola.casaccia.enea.it/progetto.html>

This campaign, organised by the Ministry for the Environment and the Ministry of Education, aimed to develop solar photovoltaic systems on public schools.

“Programma nazionale di solarizzazione degli Istituti Penitenziari” (Program for solar plants in jails) - 2001-2005

http://www.minambiente.it/opencms/export/sites/default/archivio/normativa/pi_solarizzazione_istituti_penitenziari_07_11_2001.pdf

The campaign, organised by the Ministry for the Environment and the Ministry of Justice, aimed to install solar thermal collectors on prison buildings.

Enerbuilding (2006-2009)

<http://www.enerbuilding.eu/>

The campaign, organised in Italy by Adiconsum, Fire and Aper (consumer and renewable energy associations) aimed to raise citizens awareness and knowledge on energy efficiency and saving in buildings.

Barrier 5.3 – Insufficient campaign-/programme-design

The prevailing opinion amongst interviewees is that the information campaigns are not properly designed and coordinated to fulfil the envisaged aim to spread and promote information on RES across the country.

It was also noticed that the information campaigns on photovoltaic systems are more effective and spread in the country than the campaigns on solar collectors. Consequently, the awareness and the demand of solar thermal collectors is very low in the country.

Moreover, in some cases the campaigns organized by environmental associations at national level are not coordinated with the campaigns organized at local level [Aper – Legambiente Trani].

Barrier 5.4 – Other Barriers

- Some local governments organized energy information points in order to promote renewable energies and a sustainable energy use. According to the interviewees, the provincial or municipal energy information points are not spread enough in the territory and effective on promoting the RES technologies;
- According to the Italian Law no 10/91, the Energy Manager is the responsible for a sustainable use of energy in the energy intensive private companies or in public institutions. Currently, the Energy Manager position is not fully exploited. consequently it is not effective in spreading the information on a sustainable use of energy;

- RE business is characterized by a large number of small companies: their lobbying power is much less effective compared to the power held by the large traditional electricity companies. Consequently, the information campaigns in favour of RES are less effective and lack of visibility compared to the campaigns opposed to RES.

5.2.2 Best Practice Elements and Indicators

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

5.3 Literature

Interviews:

Aper – Legambiente. Osservazioni APER in merito all’articolo “Centrale elettrica da biomasse, in undici punti il “no” di Legambiente”, comparso su alcune testate locali – 15/01/10.

GME – APER. Fonti rinnovabili: guida alla vendita dell’energia e agli incentivi.

Enea website:

www.enea.it.

Aper website:

www.aper.it.

Enerbuilding website:

www.enerbuilding.eu.

6 Issue 6 Certification

6.1 Introduction

There is no **official** certification and accreditation scheme for RES installers in Italy. [QualiC] Currently in Italy for PV and solar thermal plants unofficial certification systems of installers hasn't gained ground.

For PV plants a certification system at this moment is made by a few installers.

For solar thermal plants a certification system was activated by Assolterm (Italian Association of Solar Thermal) in the year 2002. This system was related to the issuing of a brand called "Solar Pass Installa", a voluntary brand for firms of installation. At this moment this certification system is under revision to obtain a large number of installers certified.

In general in Italy there are two main compulsory qualifications of installers concerning thermal plants and electrical plants.

The main barrier is the lack of certification that **oblige all installers** to make sufficient training to install RES plants.

Legal framework:

Based on the Ministerial Decree (22 January 2008 N°37) for installers, companies are allowed to install small plants among which plants as defined in art. 14 of the EU directive 2009/28, if at least one of the employee has one out of the five following professional requirements:

1. University technical degree;
2. High school technical degree together with two years of experience in plant installations;
3. Other qualification together with four years of experience in plant installations;
4. Three years of experience as specialised installer;
5. Six years of experience as owner of an installing company.

In order to install a new plant, the company has to inform the local Chamber of Commerce of the start of the activity (DIA). At this stage, the company has to comply with the requirements foreseen by the legislation and will be then recorded at the Chamber of Commerce register. The Chamber of Commerce verifies, on a random basis, if the company comply with the foreseen requirements and operates properly. The customers on the other hand have the possibility to complain to the chamber of Commerce about the truthfulness of the declarations.

The company can receive a document assessing the requirements of installers to the Chamber of Commerce. [QualiC].

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 no **official** certification body for RES installers in Italy.

The official Certification body for the qualification of installers of general thermal and electric plants is the “Camera di Commercio” (Chamber of Commerce).

For PV plants there is a private Certification body for installers, but at this moment the certification system at this moment is not official and it is made by a few installers.

For solar thermal plants there is Assolterm (Italian Association of Solar Thermal), at present the certification system is under revision to obtain a large number of installers certified ensuring the quality and uniformity of the courses provided. The “Solar Pass Installa” is a voluntary brand for firms of installation that have qualification of the law (Law 46/90) and attend a training course recognized by Assolterm.

For other RES technologies there are no official and recognized certification schemes.

This is the main barrier about this issue because it’s possible that installers with low knowledge of RES plants can install this typology of plants. **Possible solution:** State could create different compulsory official certifications of installers about different RES plants and institute an official Certification body, responsible for also the courses of trainings.

Barrier 6.2 - Lack of guidelines

Guidelines are available to installers by firm that produce and sell components of RES plants. For example, a firm of solar thermal plants (anonymous) organize courses of trainings and it gives guidelines of solar systems to the installers. In Italy this barrier isn’t relevant and it isn’t perceived.

Barrier 6.3 - Lack of training

In Italy training in the field of RE systems is organized by different actors. For example, two bodies that organize certified training courses in Italy are:

- ENEA, the Italian Energy Agency, organizes certified training accredited by CEPAS, the Italian Certification Body for Personal and Training Body. ENEA has developed e-learning courses on solar photovoltaic and solar thermal, biomass and geothermal installations. ENEA has launched a spin-off, Mesos, for the certification of different professional skills in the field of RES both for designers and installers (the free e-learning courses are considered as a prerequisite for the on-site courses);
- CREA (Energy saving and environmental quality research centre) recognized by ESACert (European System for Accreditation and Certification Bodies energy and

environmental, based on CEN standards) also provides certified training on heat pumps. [QualiC].

Training in the RE field is provided by different stakeholders such as training centres and manufacturers **but few courses include a final examination**. The training offer range from master courses, to higher technical education financed by regional funds, to courses offered by companies working in the sector and to courses organized by educational institutions. **Training is mainly organized in the fields of Photovoltaic and solar thermal**.

The courses provided by the companies in the sector **do not require specific entrance criteria and the trainees do not have to pass a final examination**. They receive a certificate of attendance at the end of the training.

The training courses organized by training institutions associated with universities or research centres are primarily aimed at professionals of the field in order to update and/or deepen their knowledge on the design of photovoltaic systems or technical regulations.

Vocational education in the field of RE systems has been developed for young science graduates. [QualiC]

Barrier 6.4 – Other Barriers

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?	Average

*Only unofficial certifications for PV and Solar thermal plants. In general there are two main compulsory qualifications of installers concerning thermal plants and electrical plants.

6.3 Literature

Interviews:

[QualiC] QUALICERT Common quality certification & accreditation for installers of small-scale renewable energy systems, Deliverable D2.1: List of existing schemes by country and summary of the research work, available at: http://www.qualicert-project.eu/fileadmin/Qualicert_Docs/QualiCert_WP2_Deliverable_1_summary_research_report_FINAL.pdf.

Website CEPAS: <http://www.cepas.it/>.

Website Assolterm: <http://assolterm.org/index.php>.

Website Paese del Sole: <http://www.paesedelsole.org/prodotti/solarpass.htm>.

Law 46/90.

Decree of Ministry of Economic Development January 22, 2008, n. 37.

7 Issue 7 Infrastructure Development

7.1 Introduction

The current situation of the Italian grid infrastructure is quite negative. The development of RES industry has radically increased within the last years, and consequently a growing demand for a rapid adaptation and expansion of the grid is observed.

Nevertheless, in the last 2 decades, the development of the grid infrastructure has been almost blocked, mainly due to an insufficient long term strategic thinking and planning and to an increasing social opposition to new installations for environmental reasons.

Consequently, the grid infrastructure has become an important barrier for the development of RES in Italy.

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

The national legislation, according to Legislative Decree 387/03 (Article 3, Paragraph 3) and the Gas and Electricity Authority (“AEEG”) decision No. 99/08 and subsequent amendments, ensures an efficient and non discriminatory grid access.

Particularly:

- **priority power utilization** is granted to renewable energy and cogeneration plants according to Legislative Decree 387/03, Article 3, Paragraph 3;
- **priority grid connection** is granted to renewable energy and cogeneration plants according to AEEG) decision No. 99/08, Article 13.1 and Article 27.1.

Moreover, priority grid connection and dispatch is confirmed by the following relevant legislation:

- priority grid connection is granted to RES according to Italian Law No. 244, 24th December 2007, Article 164;
- priority power dispatch is granted to renewable energy and cogeneration plants according to AEEG decisions Nos. 168/03, 111/06 and 330/07.

The prevailing opinion amongst interviewees is that the connection to the existing electricity network is not the most important barrier to the deployment of RES although there are usually delays for getting the connection.

The main identified barrier is power dispatch: as reported in Chapter 8.2, priority power dispatch is not provided for especially for large wind farms dispatching in high voltage (“HV”). The resulting income loss can seriously affect the plant business plan.

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

The long-term strategic planning for grid development is reported in the annual development plan made by Terna, the Italian Transmission System Operator (“TSO”).

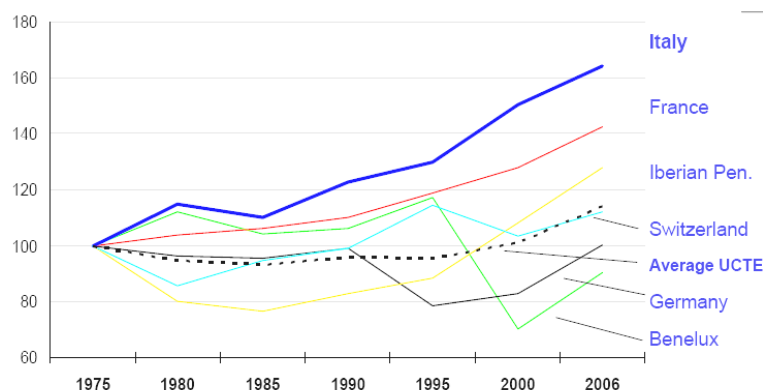
The 2009 Italian TSO’s strategy is beginning to take RES into account in planning the development of the grid: the HV grid planned investments to improve wind energy dispatching, are for example listed and described in Terna’s 2009 Grid Development Plan - Paragraph 4.4).

The current lack of a **national energy plan** and of a **clear energy strategy** makes it difficult to predict the new RES installation capacity: consequently, as admitted by the TSO operator, the planned investments might not be adequate in case of a large deployment of RES.

According to the interviewees, the development of the network infrastructures is an important barrier to the deployment of RES countrywide.

The infrastructure has not been properly modernised in the last 15 years: the consequence is that the grid utilization rate is increasing and is higher than the European average (Figure 7.1).

Figure 7.1 Grid utilization rate (source UCTE)



Furthermore, the planning grid process is a very complex procedure: the increasing social opposition to new grid installations can slow down or stop the planned development of the grid.

The main consequence is an increase in the grid congestion that can lead to an inhibition in the use of intermittent resources: according to the interviewees, in several regions, mainly in the south of the country, the TSO operator fails to dispatch wind power, as the lines lack capacity to carry the power.

Hence, transmission inadequacy is currently an important barrier to the deployment of RES.

Possible solutions:

- In the past three years the TSO has significantly accelerated the grid development thanks to the adoption of the Strategic Environmental Assessment: the focus has been placed on the coordination with the Regions and authorities in order to guarantee high levels of environmental protection and promote participation in decisions by the Administrations and local communities. The public involvement in the decision-making processes and an improved communication and cooperation among interested parties can reduce the public opposition to the grid development works;
- A national energy plan would be the key to plan the investments required by the development of the grid. The last Italian National Energy Plan was made in 1998, consequently the development of the grid did not take into account the deployment of a large number of small scale power plants.

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

Italy has 18 interconnection lines with other Member States: 9 with France, 9 with Switzerland, 1 with Austria, 2 with Slovenia, 1 direct current (“DC”) cable with Greece and 1 DC cable between Corsica and Sardinia.

There are concrete plans for the increase of the interconnection capacity with France, Switzerland, Austria and Slovenia and for a new interconnection line with the Balkan States and North Africa.

According to the interviewees, interconnection lines between Member States do not constitute an important barrier to the deployment of renewables.

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.	Average*
7.2		Presence of an efficient plan for the reinforcement of the connection capacity within the country.	Average *

*The plan for the reinforcement of the connection capacity seems to be efficient and appropriate, but it has not been fully implemented yet.

7.3 Literature

Interviews:

Terna: Piano di Sviluppo 2009 (Italian TSO operator: 2009 Grid Development Plan).

Legislative Decree 79/99. “Attuazione della direttiva 96/92/CE recante norme comuni per il mercato interno dell'energia elettrica”.

Law no. 244/07. "Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato (legge finanziaria 2008)".

AEEG decision no 168/03. Condizioni per l'erogazione del pubblico servizio di dispacciamento dell'energia elettrica sul territorio nazionale e per l'approvvigionamento delle relative risorse su base di merito economico, ai sensi degli articoli 3 e 5 del decreto legislativo 16 marzo 1999, n. 79.

AEEG decision no 111/06. Condizioni per l'erogazione del pubblico servizio di dispacciamento dell'energia elettrica sul territorio nazionale e per l'approvvigionamento delle relative risorse su base di merito economico, ai sensi degli articoli 3 e 5 del decreto legislativo 16 marzo 1999, n. 79.

AEEG decision no 330/07. Condizioni per la gestione della priorità di dispacciamento relativa ad impianti di produzione da fonti rinnovabili in situazioni di criticità del sistema elettrico nazionale.

AEEG decision no 99/08. Testo integrato delle condizioni tecniche ed economiche per la connessione alle reti elettriche con obbligo di connessione di terzi degli impianti di produzione di energia elettrica.

8 Issue 8 Power Grid Issues

8.1 Introduction

By law in Italy, grid operators are obliged to give priority access to renewable energy systems in the operation of their grids. They are also obliged to give priority dispatch to electricity from renewable sources. System operators may request their grid operator to expand the grid if the connection of a system requires this expansion. [res_legal].

8.2 Description of the 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 one of the main barriers to the growth of RES plants. According to the national legislation operators of renewable energy systems are entitled to be connected to the national electricity grid upon request (Law Decree (“DL”) 79/99, Art. 3.1 and Art. 9.1). To this aim, the grid operator and a given system operator sign a connection contract. The grid operator is obliged to enter into this contract (regulation ARG/elt 99/08, Annex 1, Art. 31.5).

On 1st January 2009 regulation ARG/elt 99/08 came into force, concerning the Resolution on the terms and conditions for connection and access to the grid. In Italy is known as TICA (Testo integrato delle connessioni attive - Integrated act on active connections).

The main barriers identified are as follows:

- **Lack of capacity of the grid infrastructure** in several regions, in particular right where there is a higher potential for wind energy. This is one of main barriers that involve some of the problems concerning grid connection explained in the following pages;
- When there is no grid capacity readily accessible or there are no existing suitable connection infrastructures, **lead time for getting grid connection is very long**. This happens because there are some technical changes of plan of connection during the agreement by the TSO and the RES producers. In Italy the physical connection consists of the TSO’s power line and the RES producer’s power line: these power lines are connected by a high voltage (“HV”) station. These changes of plan of connection involve different costs of construction of power lines. Therefore there are many changes because the TSO and the RES producers try to spend little money for the construction of their power line;

- Another cause is the time of construction of the new HV station and of the power line. Lead time is somehow connected with barrier 8.3.

Barrier 8.2 - Problems concerning grid access

System operators are contractually entitled against the TSO to the transmission of electricity (AEEG 111/06, Art. 4). The grid operator is obliged to grant priority transmission to electricity from renewable sources (DL 79/99, Art. 3.3). In detail, at transmission level priority shall be granted as long as grid security can be maintained. Electricity generated from sources that are not fully controllable (wind, solar and geothermal energy, running waters, biogas) has the highest priority, whereas fully controllable sources as used by combined heat and power generation (“CHP”) have the second highest priority (AEEG 111/06, Annex A, Art. 30.7 and Art. 31.7).

For reasons of security of the national energy grid, capacity limits may be imposed (AEEG 330/07, Art. 3.a) by TSO. [res_legal].

Regarding **wind power installations** the following barriers were identified:

- Despite the rules and regulations priority access when dispatching at transmission level in many cases is not provided for. This generally happens when there is large production of electricity attributable to high wind speed. This barrier is caused by **general lack of capacity of the grid infrastructure**;
- When RES producers are obliged to turn off their plants, **tariffs of compensation are unsatisfactory**. For reasons of security of the national energy grid, RES producers are obliged to turn off their plants. With the incentive system called Green Certificates (“Certificati Verdi”) in Italy RES producers obtain two types of income: one related to the price of sale of electricity introduced into the grid and one related to the economic value of Green Certificates. When RES producers are obliged to turn off their plants, these two incomes are compensated in different ways. Related to electricity not introduced into the grid the tariffs of compensation have been updated in 2010 and are good according to the stakeholder’s opinions. Related to income of Green Certificates not earned, the system allows RES producers to obtain Green Certificates for 15 year plus the plant’s time off.

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

The main barrier is as follows:

- In Italy the physical connection is between the TSO’s power line and the RES producer’s power line: these power lines are connected by a HV station. When there isn’t an appropriate HV station for new RES plants, the **rules on timetables (defined in the TICA) are not met by the TSO**. In fact in this case the lead time for getting a grid connection can be very long. As a consequence RES producer usually decides to plan and pay also the TSO’s power line not to waste time and money. After the construction of the connection the TSO gives back the the money spent by RES producer for the construction of TSO’s power line. In conclusion according to the interviewees the lead times for getting grid connection are the following:
 - about 6 months if the HV station exists;
 - about 6 months if the HV station does not exist and the RES producers decide to plan and pay also the TSO’s power line. about 24-30 months if the HV station

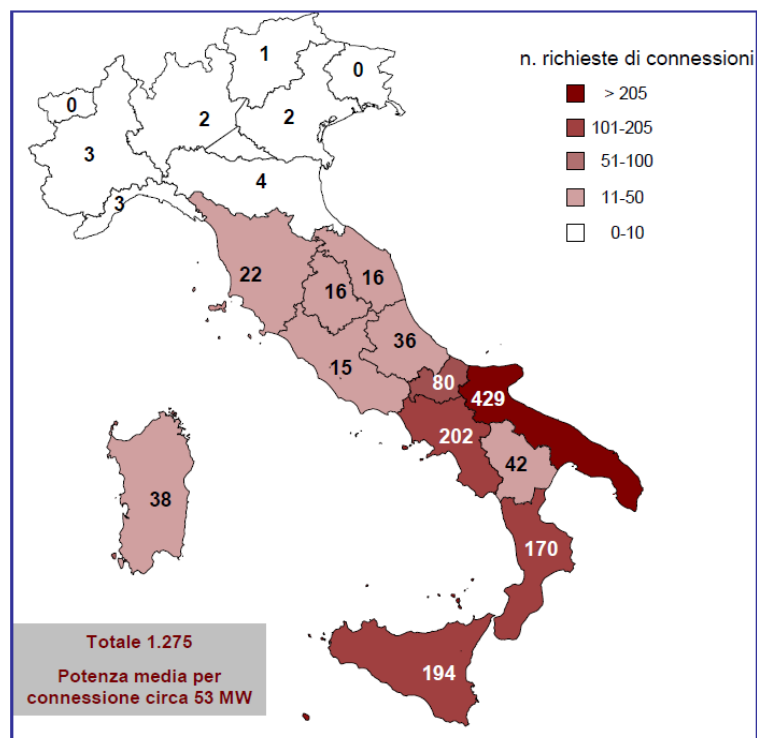
does not exist and if each actor (TSO and RES producer) plans and pays his own power line.

Barrier 8.4 – Other barriers

During the national consultation of the stakeholders, as far as other **RES technologies in general** are concerned, other barriers were identified in Italy:

- The Number of connection requests is very high. This is caused by:
 - **Speculation:** a high number of connection requests of RES plants are submitted for the mere purpose of selling the connection's authorization after it has been issued. The projects with an approved authorization of connection are sold at a price significantly higher than the project's original value. **As can** be seen in the Figure 4, in the Regions of south Italy there was many requests of connection of wind applications as of 31st December 2008. At this date the total number of requests was 1,275 with a average power of each connection of about 53 MWe;
 - **Lack of human resources:** according to the interviewees, there are limited TSO's human resources that look after connections, particularly about the agreement of authorization and the technical planning of grid connection.

Figure 8.1 Number of connection requests of wind applications as of 31st December 2008



Taken from "Piano di Sviluppo 2009 – Nuovi interventi di sviluppo e Stato avanzamento piani precedenti", Terna.

- Sanctions concerning delays by TSO and DSOs are defined in ARG/elt 99/08. According to the interviewees, these **sanctions to TSO and DSOs could be got round and perhaps they are not really significant** with respect to the TSO and DSOs's financial capacity;

- **The choice (by TSO) of the High Voltage (HV) station to which a RES producer must connect is not transparent.** The TSO decides to which HV station RES producer can connect. This chosen HV station could be 3 km away, even if there is another HV station closer to RES plant. The TSO is not obliged to justify the choice of the HV station.

8.2.2 Best Practice Elements and Indicators

No.	Technology	Benchmark	Result
8.1	wind onshore and biomass > 10 MW	Are the rules on cost sharing and bearing of grid connection objective, transparent and non-discriminatory?	Positive
8.2	wind onshore and biomass > 10 MW	Is the denial of grid connection by TSOs and DSOs a common problem, constituting an important barrier for RES development?	Positive*
8.3	wind onshore and biomass > 10 MW	Number of months for getting grid connection (considering also approval of grid connection)	6-30**
8.4	wind onshore and biomass > 10 MW	Estimated connection costs in Euros (in case producer pays)	***

* But if there is not an existing high voltage station, lead time is too long.

** See the barrier 8.3.

*** Depends on distance from the HV station and if the HV station exists or not.

Regarding **onshore wind power installations** (with a power > 10 MWe) the estimated connection cost is in a wide range of 100.000 – 2.000.000 €

Regarding **biomass installations** (with a power > 10 MWe) the estimated connection cost is in a wide range of 50.000 – 500.000 €

Regarding **PV installations** (with a power of 500-6.000 kWe) and **hydro installations** that need a grid connection of medium voltage, it takes about 12 months.

Regarding **PV installations** (with a power of 500-6.000 kWe) the estimated connection cost is about 130.000 €/km of power line with a range of 110.000 – 150.000 €/km.

8.3 Literature

Interviews:

Website: Legal sources on the generation of electricity from renewable energy sources.

<http://res-legal.eu/>

ARG/elt 99/08 (Deliberazione 23 luglio 2008 - ARG/elt 99/08. Testo integrato delle condizioni tecniche ed economiche per la connessione alle reti elettriche – Resolution on the terms and conditions for access to the grid) - TICA (Testo integrato delle connessioni attive).

ARG/elt 123/08. Procedure for the settlement of disputes between producers and grid operators in accordance with Legislative Decree No. 367/03, Art. 14, Par. 2 item f-ter).

“Piano di Sviluppo 2009 – Nuovi interventi di sviluppo e Stato avanzamento piani precedenti”, Terna.

Aper, www.aper.it.

9 Issue 9 Gas Network Issues

9.1 Introduction

In Italy there is the system of incentives of Green Certificates (“Certificati Verdi”) that subsidizes the electricity generation by biogas plant. This promotion system makes economically unattractive to feed biogas into the grid, in fact actually the State does not provide incentives for biogas producers to feed into the gas grid. There are no incentives either for infrastructure owners to accept biogas. So there are no biogas plants connected to gas grid.

Actually there is no specific regulation for biomethane grid injection. In general for gas grid injection there are Network Code of Snam Rete Gas (national gas transport system operator) and the rules of local distributor system operators. [SnRe] [Nat].

The Region Lombardia and the Municipality of Rome takes part in the European Biogasmax project. The Region Lombardia intends to operate through policy, incentives and direct involvement of private entrepreneurs and investors in order to:

- verify exploitation routes for biogas and biomethane in Lombardia;
- prepare the field for demonstration plants to be tested within 2010;
- define future policies, regulation and targeted incentives to sustain supply and demand. [RLomb].

General possible solutions. Possible solutions for biomethane expansion are:

- Green Certificate for biomethane grid injection based on existing mechanism for electricity;
- Incentives for infrastructure owners to accept biogas;
- Balanced incentives policies:
 - long term policies for biowaste management;
 - long term tax policies both on fuels and waste treatment options;
 - no competition between the feed-in tariffs (electricity, heat, fuel).
- Long term perspective for investors (biomethane producers), for example purchase obligation of the biomethane for 15-20 years;
- Simplified procedure for grid injection;
- Obligation for gas grid operators to access the feed-in of biogas;
- Common technical rules: quality and safety standard for fuelling station and grid injection;
- Synergy with the Natural Gas industry;
- Support or obligation to develop the distribution infrastructure, particularly low pressure grid in the Middle and Southern Italy:
 - local authorities can help through their urban planning responsibility;

- development of cooperation with the natural gas industry.
- Increase the knowledge of stakeholders. [BePr] [LeAm].

9.2 Description of barriers & solutions

9.2.1 Detailed description of the Barriers and solutions

Barrier 9.1 – No encouragement for upgrading

In general the main barrier is the lack of policies, regulation and targeted incentives to feed biogas into to grid. The State decides to provide incentives only to electricity produced by biogas plants and the other RES plants.

Barrier 9.2 – Lack of information

At this moment this is not an identified barrier in Italy yet. The main barrier is described in barrier 9.1.

Barrier 9.3 – Authorisation procedures

At this moment this is not an identified barrier in Italy yet. The main barrier is described in barrier 9.1.

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

The lack of incentives for infrastructure owners to open to biogas is a barrier. The problems for grid operators concerning biomethane grid injection should be compensated by incentives for infrastructure owners. Actually there is no obligation for gas grid operators to access the feed-in of biogas.

Barrier 9.5 – Other Barriers

No barriers detected.

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?	Yes
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

Interviews:

Website GSE:

<http://www.gse.it/attivita/Incentivazioni%20Fonti%20Rinnovabili/Pagine/QuadroNormativo.aspx>.

[RLomb] Paolo Mora, Gabriele Boccasile, How to incentivate supply and demand through effective and targeted policy-making: the case of the Lombardy Region.

European Conference on Biomethane Fuel – Göteborg 7-9 September 2009. Retrieved from <http://www.biogasmax.it/european-conference-on-biomethane/download/>.

[BePr] Best practices in Europe, European Conference on Biomethane Fuel – Göteborg 7-9 September 2009. Retrieved from <http://www.biogasmax.it/european-conference-on-biomethane/download/>.

[LeAm] Legambiente, BIOGAS E BIOMETANO: LA STRATEGIA E LE PROPOSTE, Settembre 2009.

[Nat] Dante Natali, FEDERMETANO, Il biometano: un'alternativa ai carburanti fossili in autotrazione, Turin, 21 January 2010, Conference: Biogas e Biometano: la sfida delle energie intelligenti.

Retrieved from:

http://www.envipark.com/index.php?option=com_events&task=view_detail&agid=16&year=2010&month=1&day=21&Itemid=59.

[SnRe] Website Snam Rete Gas, Network Code , Retrieved from http://www.snamretegas.it/it/clienti_e_istituzioni/cln_istituzioni_codice_di_rete.shtml.

Website 6°INFO BIOGAS "Biogas - ora più che mai!"

<http://www.convegnobiogas.com/atti-del-convegno-2010.php>.

10 Issue 10 District Heating

10.1 Introduction

In Italy there is an high level of subsidy of RES for electricity generation but not for heat generation. In fact there are two systems of incentives (Green Certificates and a feed-in tariff called “tariffa omnicomprensiva”) that subsidize only the electricity produced by RES plants, except for PV plants. So many big biomass plants produce only electricity because of high investment costs of district heating. The heat production by RES hasn’t incentives in suitable way. There are only a few laws:

- L 448/88 (Legge n. 448 del 23 dicembre 1988) Art. 8 Paragraph 10 lettera f;
- L 203/00 (Legge n. 388 del 23/12/2000 - Finanziaria 2001- Budget Act of 2001) Art. 29;
- L 203/08 (Legge n. 203 del 22 dicembre 2008 - Finanziaria 2009 - Budget Act of 2009).

That give very small discounts to end users of district heating. Besides these laws are not very often known.

In Italy there is also a system of subsidy of “White Certificates” about the energy saving but for DH producers this system is very complex, difficult to access and not remunerative.

So the lack of efficient incentives to heat production by RES and high investment costs of district heating are the main barriers of this issue. **Possible solution:** The State should provide efficient incentives to heat production by RES and efficient investment’s subsidy to reduce high weight of investment costs of district heating.

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

There aren’t positive conditions for increase of the share of renewable in existing DHC systems because there aren’t efficient incentives to heat production by RES.

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

There aren't positive conditions for the initiation and expansion of DH systems largely based on renewable.

According to an interview, a Province is favorable to the initiation of DH systems and to a better use of biomass, that is used now by big power plants for only electric production. But this Province haven't got authority to oblige investors to make a better use of biomass with also district heating.

Barrier 10.3 – Other Barriers

During the national consultation of the stakeholders, other main barriers were individuated in Italy:

- In the structure of the State three different Ministries (as Department of the Environment, Department for Rural Affairs, Department of Economic Development) haven't the same purposes concerning biomass plants and so district heating. There isn't an efficient planning;
- About RES subsidies the legal framework doesn't permit to have a vision of the future, there are often changes of laws and the legislation becomes more and more complex and unclear.

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 ECOHEATTOOL)	17%
10.4	Percentage CHP share (idem)	77%

10.3 Literature

Interviews:

Website FIPER: <http://www.fiper.it/>.

Website GSE:

<http://www.gse.it/attivita/Incentivazioni%20Fonti%20Rinnovabili/Pagine/QuadroNormativo.aspx>.

Ecoheatcool (2006), Euroheat & Power.

<http://www.euroheat.org/Files/Filer/ecoheatcool/index.htm>.

L 448/88 (Legge n. 448 del 23 dicembre 1988) Art. 8 Paragraph 10 lettera f.

L 203/00 (Legge n. 388 del 23/12/2000 - Finanziaria 2001- Budget Act of 2001) Art. 29.

L 203/08 (Legge n. 203 del 22 dicembre 2008 - Finanziaria 2009 - Budget Act of 2009).