Non-cost barriers to renewables – *AEON* study

National report France

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Introduction

The conditions for renewable energy development in France are determined by rather unique circumstances. A very clear political commitment towards nuclear energy has led to a situation where electricity supply is almost entirely provided from nuclear power plants. This does not only influence the framework conditions for renewable energy sources for electricity production but also has impacts on the heating sector. The wide distribution of electric heating systems resulting from their strong promotion in the past is certainly not the easiest starting point for a switch towards renewable based heating solutions.

While in the past the legal framework for renewable energy sources in France has been mainly characterised through missing provisions or provisions not adjusted to the specific needs of RES, the situation is slowly but constantly changing. In some domains, quite favourable conditions already exist, in others important barriers prevail and substantial efforts still have to be made. Currently, a process aiming at a comprehensive strategy for renewable energy development is under way. The first part of the "Grenelle de l'environnement", also laying down the overall aims for the renewable energy sector, has already been adopted. Under the "Grenelle II", the goals are now translated into concrete measures. The consultation process is still ongoing and an adoption of the law is expected in mid-2010. This process certainly has the potential to tackle the barriers for RES development identified by the present report. It has to be noted however that the current draft document contains a number of provisions that are not considered to be favourable for renewable energy sources but may on the contrary lead to the emergence of further barriers.

In France, the **administrative process** affects the development of RES technologies very differently. While it constitutes a major barrier for some (wind power, biogas power, hydro power); others are only affected to a limited extent (geothermal heat pumps, PV). Procedures for onshore wind are primarily characterised by a substantial delay. Projects now receiving permission granting have been requested permissions under entire different legal circumstances. Subsequent effects of this situation are an incoherent application and interpretation of legal text, an inconsistent documentation requirement as well as a large number of involved administrative authorities. For biogas power, the identified barriers are mainly the same. Regarding offshore wind, barriers are identified in form of a missing adequate administrative procedure for this RES technology. For the time being, the procedure is only derived in analogy to the onshore process. In addition, the communal delimitation of competencies constitutes a major problem as well as the fact that offshore installations have to request for a building permit. The administrative regime for hydro power is mainly characterised by an extremely long administrative process of up to 18 years for certain installations requiring a concession. Furthermore, the length of the

appeal period as well as a lack of comprehensive official mapping of hydro projects throughout France are also identified as barriers, limiting the further development of this RES technology.
Regarding competing public interests, a barrier is identified for onshore wind in form of potential interferences with radar installation of public and military institutions and the creation of ban zones for onshore wind installations. Furthermore, for offshore wind there is an obstacle regarding the introduction of preferential offshore exploitation zones.
Lastly, concerning the consideration of spatial planning aspects, there is a barrier identified for onshore wind, as the concept of ZDE (wind development zones) has not been properly and comprehensively implemented; thus hindering applications of project developers under administrative procedures based on this regime.

Technical specifications for eligibility in support measures are in line with the requirements of Art 13 (2) of the Directive 2009/28/EC. However, barriers to trade are caused by the 10-years insurance requirement for construction products and services in general, which is not part of these schemes. To provide this insurance, French insurance companies de facto require a French certification. Obtaining this certification is lengthy and costly. Though this issue does not strictly fall into the points covered by Art 13 (2), it constitutes a significant barrier to trade and is therefore discussed in the framework of this study.

French policies in the **building sector** are currently mainly focused on the promotion of energy efficiency. Whilst this can certainly be considered a very important issue, it would at the same time make sense to set clearer steps additionally aiming at increasing the share of renewable energies. To date, no renewable building obligation exists on a national level in France. The relevant legal framework for new buildings, the so-called Réglementation thérmique (RT) 2005, only prescribes certain energy efficiency levels. Currently, the succeeding RT 2012 is being prepared, setting even stricter efficiency requirements. It is not clear yet, where the ongoing debates will lead and which impact they will have on the future development of renewable energy sources in the building sector.
Public buildings do not fulfil their exemplary role in a sufficient way yet. The RT 2012 could be a step forward though if enacted as currently planned.
Regulations in tenancy law and ownership law have not been assessed as posing strong barriers for the installation of renewable energy sources in the building sector by the different interviewees. Very precise rules on the distribution of costs in case of energy efficiency renovations and/or the installation of renewable energy systems exist. In addition, an agreement between the landlord and the tenants has to be reached in the forefront in order to allow for the installation of a renewable energy system.

Where the **promotion of energy efficient RES** equipment is concerned, the requirements of Art.13(6) of the Directive 2009/28/EC are partly fulfilled for biomass boilers. The minimum efficiency criteria have been tightened in 2009 and now vary between 75% and 85%, depending on the raw material and on the technologies used. For heat pumps, the wording of Art.13(6) is not fulfilled. Efficiency criteria exist, but they are not based on the same legal basis and they are set at rather low levels. The required COP vary from ≥

3.4 to > 2.2. There is not yet any reference to the Commission Decision 2007/742/EC of 9 November 2007. For solar thermal systems there is no specific efficiency requirement.

In general, the availability of **information** on support measures for renewable energies and the **awareness raising** process in France can be evaluated as moderate. However, against the background of nuclear energy being for decades the absolutely dominate energy source, the development of available information and a broadening awareness is good. Generally, stakeholders highlighted that the main barrier is identified in form of incoherent, not concerted actions of the various RES branches without a global approach and perspective. In addition, stakeholders also critically commented on the performance of ADEME, the French energy agency. They especially highlighted the limited financial resources and the internal structure of the organisation as factors limiting the potential of the agency. Furthermore, there is also a substantial gap between the qualities of information sources on the regional level; while some regions have introduced groundbreaking information sources especially in the form of websites others have not taken any actions in this regard; thus neglecting their information obligation towards the population.

France has taken a leading role in Europe where the development of **qualification and certification schemes for installers** is concerned. All four existing major quality labels for installers are assembled under the roof of the association "Qualit'EnR". These very clear structures in combination with a uniform design are certainly a very good basis for the communication of the certification schemes towards the concerned craftsmen as well as the broader public. In a lot of regional subsidy programmes, the assignment of an installer certified by Qualit'EnR is already a necessary prerequisite and thus an important incentive for installers to undergo certification. On the whole, the certification and qualification schemes of Qualit'EnR meet the criteria laid out in the directive 2009/28/EC. The approach followed by Qualit'EnR, including not only the RES associations but also the professional guilds as well as the utility companies into the scheme and aiming at a very broad coverage of the certification, can on the one hand be considered as positive, leading to high levels of acceptance as well as a widespread basic level of qualification of installers. Nevertheless, some critical aspects should be considered, such as the risk of lower quality installations resulting from the dominance of the principle of inclusion and quantity. More important problems occur in the field of vocational training. The basic qualification level of installers is rather low, entailing difficulties for further training on RES. In addition, vocational training does not yet consider renewable energy sources in a sufficient way.

The question of **infrastructure development** in France is first and foremost characterised by the absence of a comprehensive long term strategy for the whole of France regarding the development of network infrastructure. The situation of the French power grid is however marked by a dichotomy between the distribution network and the transportation grid. The latter is showing major shortages regarding the capability to encompass further capacities from RES installations. In addition, a substantial delay is identified regarding the required grid reinforcement works also predominantly in regard to the transportation network. The procedure is heavy and long and is facing lacking public acceptability, required for the public procedures. Furthermore, the existing delay is becoming even longer by the fact that grid operators are investing only with high precaution, as they want

to avoid any false statement, not being based on reliable information regarding the future development of RES technologies and anticipated grid capacities in the various regions. Regarding a Trans European Electricity Network, France is playing an important role, not at least due to its geographical position; still, also here a comprehensive strategy is missing for the required grid reinforcements of the French transportation network.

The French **power grid** is first and foremost characterised by long delays during the grid connection procedures and a shortage of connection capacities in a number of French regions, limiting the development potential for RES. In addition, there is no priority feed-in rule in favour of RES technologies, but only a guaranteed access to the grid. Under this regime, RES technologies are primarily disconnected from the grid in case of a grid overcharge, instead of conventional installations. Furthermore, no long term plan for comprehensive grid reinforcement of the entire French network has been developed.

The **injection of biogas into the natural gas grid** is still at its very beginning in France. No biogas plant feeds gas into the grid until now. The relevant political framework decisions for enabling biogas injection are expected in mid-2010. A working group composed amongst others of representatives of GDF-SUEZ, GrDF, universities and biogas industry associations has been established by the responsible ministry and has developed a report with recommendations, also taking up proposals from the relevant actors in the biogas sector. The recommendations are in general considered as positive by the biogas industry associations and are anticipated to be rather favourable to the development of biogas injection if applied as planned. They are expected to be implemented in about a year's time. To date, about 40 biogas projects have asked for grid connection by GrDF and are waiting for the legal framework to be established in order to get the final permission to inject biogas into the grid. The criteria for grid connection have already been published by GrDF. However, these criteria are considered to be rather dissuasive for biogas plants, notably the very low concentration of oxygen allowed.

There is a very significant potential for renewable energy growth through **district heating and cooling** (DHC) networks in France. In European comparison, France has a very low share of DHC in the heating sector and of renewables within the existing DHC networks. Historically, the development of both DHC and cogeneration was hindered by the strong influence of the former power and gas monopolies. The policy framework has improved during the last few years, leading to some first results. As this report is being written, relevant legislative processes are ongoing. Their outcome will determine the pace with which the potential for renewables through DHC in France will be exploited.

1 Issue 1 Administrative Procedures

1.1 Introduction

The design of the administrative process is of utmost importance for the development and further diffusion of RES technologies. In this regard, barriers are often identified throughout the administrative process of a country; thus limiting the potential of one or more RES technologies. In France, the administrative process affects the development of RES technologies very differently. While it constitutes a major barrier for some (wind power, biogas power, hydro power); others are only affected to a limited extent (geothermal heat pumps, PV).

Procedures for **onshore wind** are primarily characterised by a substantial delay (of up to 5 years). Projects now receiving permission granting have been requested permissions under entire different legal circumstances. Consequently, identified barriers in the system are just the outcome of administrative structures already revised; still affecting the current development for next months/years. Subsequent effects of this situation are an incoherent application and interpretation of legal text, an inconsistent documentation requirement, long delays as well as a large number of involved administrative authorities.
Regarding the competing public interests, a barrier is identified for **onshore wind** in form of potential interferences with radar installation of public and military institutions and the creation of ban zones for onshore wind installations.
Additionally, concerning the consideration of spatial planning aspects, there is a barrier identified for **onshore wind**, as the concept of ZDE (wind development zones) hasn't been properly and comprehensively implemented; thus, hindering applications of project developers under administrative procedures based on this regime.

As the **biogas** power procedure is largely similar to the one of onshore wind power, the identified barriers are mainly the same. In this regard, also for biogas there is a divergence of interpretation and application of legal texts, no consistent documentation requirement as well as long delays, especially for the public enquiry.

Regarding **offshore wind**, barriers are identified in form of a missing adequate administrative procedure for this RES technology. For the time being, the procedure is only derived in analogy to the onshore process. In addition, the communal delimitation of competencies constitutes a major problem as well as the fact that offshore installations have to request for a building permit.
Furthermore, for **offshore wind** there is an obstacle regarding the introduction of preferential offshore exploitation zones while considering the specifications of the NATURA 2000 concept.

The administrative regime for **hydro power** is mainly characterised by an extremely long administrative process of up to 18 years for certain installations requiring a concession. Furthermore, the length of the appeal period as well as a lack of comprehensive official mapping of hydro projects throughout France are also identified as barriers, limiting the further development of this RES technology.

For **PV** the administrative procedure is not seen as main barrier for a further growth. Still stakeholders highlighted that the newly introduced requirement of a building permit for large ground mounted installations is a barrier, as this regime was not designed to regulate technical installations, but the construction of buildings. Additionally, stakeholders especially pointed to the effects of the new feed-in-tariff-regime of 2010 on the administrative procedure. The cut down of promotion has led to an extensive increase of application in late 2009. Still the administrative structures for the processing of building permits as well as for the processing of connections requests by ERDF were not designed to cope this "avalanche" of requests, which consequently resulted in an overload of these structures and thus in further delays for the project implementations.

Finally, it is also to highlight that for **heat pumps** the administrative procedure is not perceived as barrier at all. Here stakeholders were satisfied with the existing procedures.

1.2 Description of barriers & solutions

1.2.1 Detailed description of the barriers and solutions

Barrier 1.1 – Inefficient general administrative procedures for RES (including no/insufficient specific rules for building integrated/small scale installations)

The administrative procedure puts varying constraints to the development of the renewable energies depending on the form of RES technology. In this regard, the RES technologies are treated hereafter separately to account for their individual situations and barriers:

1. **Regarding onshore wind power systems:**

The administrative procedure for wind power systems in France is first and foremost characterised by a long delay regarding the processing of filed applications. At present, applications being filed up to 5 years ago are now granted permission and are implemented by the project developer (Nordex 2010, SER/FEE 2010). In consequence, projects now receiving permission granting, have been requested under entire different legal conditions at the time of their application, as the system has widely been modified since then (Cassin 2010).

For a comprehensive overview on the current barriers in the French administrative system for wind power installation it is required to give a short overview on the legal development of this system, as exiting barriers of today are the result of legal conditions at the time of their request:

- In 2003, the French government introduced the requirement of a building permit (PC) for the construction of RES installations. The implementation of this new system was under the responsibility of the prefects (the representation of the nation state on the

regional and departmental level); thus, a decentralised procedure was created. In addition, the criterion was introduced as to limit wind power parks to a maximum capacity of 12 MW. Under this regime, the prefect had to decide on filed application; this led to a situation, where different prefects were establishing different procedures and requirements for the granting of building permits for such installation; thus, always deciding on an individual case. No comprehensive planning scheme was created to underline a coherent application of a nationwide strategy toward the development of wind power or RES in general (Cassin 2010);

- In 2005, the French Government introduced a planning scheme, in form of the wind development zone (ZDE – zones de development de l'éolien) with the law of 13 July 2005 (Art. 37 of Law No. 2005-781, which was envisaged to created a comprehensive planning environment for the development of wind power in the whole of France. Under this system, municipalities submit a request for permission to create wind development zones to the department concerned, Préfet (local state authority), who is then consulting with neighbouring municipalities prior to decision. The decision is subject to three conditions: wind potential, grid connection possibilities and landscape protection (listed buildings, protected sites). Installations located within a ZDE can benefit from a preferential buy back tariff – a feed-in tariff. In addition, the government abolished the till then existing cap of 12 MW for these zones. Two power limits were to be defined by ZDE's: a minimum limit, applicable to individual wind farms and a maximum limit applicable to all other wind farms (SER/FEE 2010). The idea was to create stable planning conditions for wind power in clear outlined areas of the regions territory. A two year transition period was agreed for the implementation of these zones. During this transitional period, project developers were still allowed to also request the permission granting under the "old" scheme, with a cap of 12 MW (Cassin 2010, SER 2010);
  By the end of the transitional period, in the first quarter 2007, there was a heavy delay regarding the creation of ZDE by the regions/the communes. Project developers were mostly not able to request permission under the new planning scheme. In consequence, there was a major peak of request (requested 4.500 MW) for permission under the "old" scheme in the first quarter of 2007, as developers feared the legal insecurity after the end of the transitional period. These applications are receiving permission granting during these days. Still as they have been requested under the building permit scheme, they are only the outcome of a decision on the single circumstances of a case, thus not encompassing a comprehensive nationwide planning for the development of wind power (Cassin 2010, SER/ FEE 2010).

The present situation of administrative process is a clear outcome of this delayed processing of application. The following existing barriers can be identified, as consequence of this:

- **No coherent application and interpretation of legal texts:** Generally, the French administrative system gives a wide scope of discretion to the individual administrations. The fact that the departmental prefect has to decide on the requested building permit, thus deciding on individual circumstances of the individual case, as outlined above, resulted in an incoherent interpretation and consequently application of nationwide applicable laws and thus in a "rag rug" of individual interpretation of law by the various administrations. For project developers operating in the whole of France this created further legal insecurity regarding the required legal standards,

which they have to meet for their projects in the various regions and departments (Enertrag 2010; Nordex 2010; SER 2010).

- **No consistent documentation requirement:** A further consequence, which all stakeholders mentioned, is the inconsistent practice throughout the various regions and departments of France regarding the required documentation for wind power installations. The local authorities may request additional documentation for the permission granting, in addition to those required by the law, if they consider these necessary. An insecurity regarding the required documentation is the consequence and thus an existing planning instability (Enertrag 2010, Nordex 2010, SER/FEE 2010).

- **Long delays:** The current wind power authorisation process in France causes significant delays. Generally 5 to 7 years are required from the development of a wind farm project to its construction and operation; a significant share of this time is caused by administrative delays. Delays may become even longer by the system of tacit refusal. Under this system, if the administrative authorities do not reply to a building permit request within the given delay period of 6 months, the permit request is tacitly rejected. The practice is however that project developers generally do not request reasoning for the refusal, but rather wait for the final written notice, which might even be positive. Some projects receive response up to 5 years after they filed the permit request (Enertrag 2010; Gossement 2010; Nordex 2010; SER/FEE 2010). Since 2008, if the administration authorities do not reply to a building permit request within the given delay period of 2 months after the published results of the public survey, the permit request is tacitly rejected. However, stakeholders highlighted that there is no delay period given to the administration authorities to launch the public survey (Enertrag 2010).
  Possible options: Set out clear timetables at the beginning of the authorisation procedure, with deadlines for the various administrative acts to ensure a reliable investment design for project developers.

- **Large number of different administrations involved in administrative process:** The French administrative process is characterised by the involvement of a high number of different administrative bodies. In this regard, the permission granting process for the construction of a wind power installation involves not less than 27 authorities. A large number of stakeholders highlighted that the process becomes highly complicated by this fact. Still it is to highlight that the project developer is sending his request to the local town hall, which is forwarding the file to the prefect. The prefect is then contacting the involved 27 authorities for their approval (Enertrag 2010, Nordex 2010, SER/FEE 2010).

Announced changes of the current legal framework: The existing administrative procedure for RES installations is currently again under revision with the drafting of the Grenelle II law; at present before the Parliament and the Senate for debate. It is assumed that the current version (as of March 2010) will also be the one entering into force in Mai/June 2010 (SER 2010).

- With this new comprehensive scheme the French government might meet its obligation under Art 27 of Directive 2009/28/EC. One of the aims is to create a comprehensive planning scheme for wind power installations. With the introduction

of wind schemes ("schéma éolien") it is envisaged, to restrict the installation of wind farms within "preferential areas". Barriers might occur if the new "preferential zones" are designed in a too restrictive manner (UFE 2010). First drafts of regional schemes seem to confirm this apprehension, as some proposals only encompassed ≤ 10% of the total regional territory, even though the actual wind potential might be higher (Cassin 2010, SER/FEE 2010).

- In addition, it is envisaged, to classify wind power installation under the nomenclature of "Listed Constructions for the Protection of the Environment" (ICPE), which would require developers to obtain a further specific authorisation (Enertrag 2010; Nordex 2010; SER/FEE 2010, UFE 2010). Here stakeholders mentioned strong reservations as well as chances for the future development of wind energy. The fear is that installations, being classified under the ICPE protocol, are facing further delay regarding the project development and a corpus of new technical requirements. Furthermore, the prefect is receiving more rights to intervene in the project development process and is able to stop further development, without major reasoning (SER/FEE 2010). Stakeholders furthermore stressed that all changes of the procedures in the past have conducted to a general slowdown of the wind power authorisation process and mentioned as example *inter alia* the introduction of the ZDE scheme (wind development zones) in 2005 and 2007 (Enertrag 2010).
  In addition stakeholders expressed that the application of ICPE protocol to wind power installations will not provide a solution to more fundamental problems of the current procedure for RES, being *inter alia* a missing global approach on the national level (Fröding 2010). The national governmental goals for renewable development will be impossible to reach also with the application of ICPE protocol as long as the building and exploitation authorisations are derived from the competences of local authorities and are only exterminated case by case (Fröding 2010).
  Possible options: Stable conditions and legal security are key for a sustainable development of wind power and RES in general in France. A swift implementation of procedures and clear and comprehensive administrative rules though are required to further foster a new administrative process. Still, stakeholders outlined that the proposed modification of the current administrative procedure has the potential to strongly hinder project development in France (SER/FEE 2010). For wind power clear defined and restrictive zones for the developments would de facto constrain development. (Cassin 2010; Fröding 2010; Gossement 2010; SER 2010, UFE 2010).

2. Regarding offshore wind power systems:

- **Only derivative administrative procedure for offshore wind:** The implementation of the offshore wind technology in France was just initiated, with the first offshore park receiving its permissions. For the time being, the administrative process for offshore wind installations is largely the same as for onshore installations; thus, not encompassing the different conditions and prerequisites of this technology in an offshore environment (Enertrag 2010, SER 2010);

- **Delimitation of communal offshore competencies:** The current administrative system requires the creation of ZDE also for offshore project. In this regard, the communes are the competent authority for the establishment of such zone. Though, no coherent system as for the delimitation of communal offshore competencies exists.

Project developers are often uncertain as to identify the competent commune for their respective project; In this regard, it is to highlight that the coastal areas are generally a domain of the federal government; thus requiring for a federal rule governing these zones, especially regarding the exploitation of natural resources in this areas. The before mentioned Grenelle II-draft law is envisaging such a federal regulation in form of an "utilisation concession for the public domain" (concession d'utilisation du domaine public) for offshore wind projects (Enertrag 2010, SER 2010);

- Generally, **Building permission also for offshore installations:** At the moment, also offshore installations require an onshore building permit under the French law. This requirement is heavily lengthening the administrative process for offshore installations, even though there is no reasoning for the onshore permit in the offshore context (Enertrag 2010, SER 2010);

- **Announced changes of the current legal framework:** Stakeholders assume that the administrative procedures for offshore wind power installations will benefit from the before mentioned Grenelle II- draft law, as it is foreseen to exclude the ZDE and the building permit requirement from the offshore process, thus simplifying the entire procedure for offshore installations (Cassin 2010; Enertrag 2010).

3. Regarding hydro power systems:

- **Classification of water courses:** The French Hydro Power Association highlighted the new classification of French water courses under the water law of 2006 as a limiting barrier for the further development of hydro power in France. The French water law of 2006 introduced a new classification of French water courses, especially to enforce the respect of ecological continuity, by classifying the water courses into two parts. List 1 contains all building being an obstacle for the ecological continuity, including hydro power installations. The association is arguing that this future classification will put decisive constraints on a further development of hydro power in France. Furthermore, association is stressing the non transparent classification scheme in place, characterized by the non justification of classification of the administration, as well as the unilateral application of the Water Framework Directive (WFD), without taking the economical usage of water courses into account (Hydro 2010).

- **Increase of residual flow:** For 2012, it is envisaged to increase the residual flow to a minimum of 1/10 of the annual mean of the water courses. Here association is highlighting the fact that a certain share of the existing hydro power installations was designed for a minimum of 1/40 of residual flow; thus, production from these installations will decrease, limiting the overall capacity from hydro power installations (Hydro 2010).

- **Length of the administrative process:** The administrative process for hydro power installation is extremely long. Stakeholders mentioned an average time of 6 years for the authorization process, even though the Rural Development Areas Law (loi DTR "development des territories ruraux") foresees a maximum of 2 years. For large hydro projects requiring for a concession the average time is even estimated with 18

years, though a report of the Ministry of Industry recommended a 5 year process (ESHA 2007, Hydro 2010);

- **Length of appeal period:** The French law provides for a 4 year period of appeal for permits given to hydro power installations. This means, that projects may be built already, however have to fear that the entire project is contested by any third party, which may result in conditions demanding for the (partial) deconstruction of the installation. Thus, the 4 year period of appeal is creating a high legal insecurity for the developer during this time. In addition, stakeholders highlighted that financial institutions lately refuse any financing for projects during this 4 year period as the outcome of the project cannot be ensured ((ESHA 2007, Hydro 2010);

- **No comprehensive mapping:** Stakeholders highlighted that there is no comprehensive official mapping from governmental authorities for the whole of France of existing hydro power projects, projects under realisation and those to be developed. Furthermore, no official figures exist regarding installed capacities from hydro installations or the overall number of applications for new developments. Such data is only collected by private companies or producers of hydro electricity (Hydro 2010). Project developers are thus only hardly able to gain a comprehensive picture of the hydro situation in France for their project developments, especially also taking into account figures such as the ratio between applied and accepted projects (Hydro 2010).

- **Announced changes of the current legal framework:** As outlined before, the existing administrative procedure for RES installations is currently gain under revision with the drafting of the Grenelle II-law. This law introduces RES schemes, which aim at indicating preferential areas for renewable energies. Barriers might occur, if the new "preferential zones" are designed in a too restrictive manner (UFE 2010).

4. Regarding PV power systems:

The administrative process does not constitute a major barrier for the development of PV as such (Cassin 2010; ENERPLAN 2010; SER 2010,). Still, stakeholders highlighted parts of the process as critical and having the potential to become obstacles in the future.
In this regard, it is however to differentiate between the different form of PV (BIPV, roof-top mounted installations, large ground mounted installation) as well as between capacity sizes. For the sake of completeness, it is also required to highlight the latest reform of the feed-in regime in France, generally not being the focus of this report. This is however advised, as temporary barriers occurred after the latest changes and will potentially have a decisive effect on the further development of PV in France (Cassin 2010).

- **New administrative procedure for ground-mounted installations:** For large ground mounted installation the French government introduced a new administrative procedure in November 2009, requiring for a building permit as well as an impact assessment and a public consultation. Stakeholders outlined in this regard that most project developers were also requesting building permits for their project before, even though they were not obliged by law, simply to secure the further development and construction process (Cassin 2010; Fröding 2010; SER 2010). Criticism was

expressed by stakeholders however as they considered the new procedure as further obstacle for the development, in first due to the fact that the system was inadequately designed for PV installation (Cassin 2010). Their main argument is to be found in the fact that building regulations were introduced to regulate actual buildings. This regime is now transposed to electric installation, such as PV modules; though being only partially able to regulate these structures. Stakeholders outlined that an adequate procedure would have brought real value to the system (Cassin 2010).

- **Consequences of the new feed-in-tariff-regime:**
  - As outlined above, the new feed-in-tariff-regime introduced at the beginning of 2010 has created conditions, which may result in barriers for the further development of PV. With the announcement of a cut-back of the feed-in-regime of 2006 in September 2009 for the year 2010, government has created an "avalanche" of requests for the beneficial feed-in-tariff under the regime of 2006. Until the end of 2009, about 6,000 MW were requested by project developers for permission granting (Cassin 2010; ENERPLAN 2010; ERDF 2010). The administrative structures regarding the processing of building permits as well as the administrative structures of ERDF, being the grid operator for the distribution network, were not designed to encompass such surge of applications (Cassin 2010; ENERPLAN 2010; ERDF 2010); thus, creating delays for permission granting of around 12 months for medium size installations and 24 months for large installations (ENERPLAN 2010).
  - A further consequence and obstacle, was the bad quality of applications, due to the fact that application had to be filed before the end of 2009 (Cassin 2010). These circumstances are resulting in conditions, where a clear picture regarding the quality of applied projects cannot be derived. It is hardly possible to predict what share of projects will finally be realised, respectively how many projects will fail during the process leading to their construction (Cassin 2010).
  - A major obstacle was further identified in the fact that with the ministerial decree of 16 March 2010 the French government has retroactively introduced a transitional period for application being filed after the 1. November 2010. Under the 2006 feed-in-tariff-regime project developers had to present only a completed application dossier for feed-in-granting; now after the ministerial decree, projects which had been filed after the 1st November 2009 had to present already the connection agreement (being the consent of the producer to the technical and financial proposal (PTF) of the grid operator), in order to benefit from the preferential feed-in-tariff of 2006. With this new prerequisite, project developers had to be already far more advanced in the process to benefit from the 2006 feed-in-tariff-regime (Cassin 2010).
  - In addition, government provided for an exemption for installation on agricultural building with a capacity up to 250 kWp. Under this regulation, agricultural building were still benefiting from the 2006 feed-in-tariff-regime also after the 1. November 2009, if the capacity of the installed installation was not exceeding 250 kWh. Stakeholders strongly highlighted the violation of general legal principles through this approach (Cassin 2010). According to their opinion, government violated the legal principle of non-retroactivity, especially without a law providing for this exception. Furthermore, they

outlined that the exemption of agricultural buildings from the new regulation was in fact a breach of the principle of equal treatment (Cassin 2010); thus discriminating any other project, which has requested granting. High legal instability is the direct outcome of these circumstances, as project developers requested permission granting under entire different legal conditions, which were changed *ex post* (Cassin 2010).

- An additional barrier for the further development that stakeholders highlighted is the design of the new feed-in-tariff-regime as such (Cassin 2010; ENERPLAN 2010; Enertrag 2010). Criticism wasn't expressed in regard to the level of remuneration, but regarding the classification of different PV forms, being BIPV, roof-mounted PV or large ground-mounted installations. Stakeholders outlined that beside the classification of ground mounted installations, project developers were hardly able to select the appropriate tariff for their project, as differentiation was unclear and artificial (Cassin 2010; ENERPLAN 2010; Enertrag 2010). A high number of wrong applications is the consequence, which is utilising resources in the administrative process; thus slowing the process and limiting further development.

5. Regarding biogas power systems:

For the existing barriers within the administrative procedure for biogas power installations it is largely referred to the above outlined problems for onshore wind power systems.

- In this regard, biogas power installation also have to receive a building permit; thus localizing the permission granting, given by the departmental prefects. With this system, also biogas systems are subjects to varying interpretations of the national law by the prefects, resulting in a "rag rug" of interpretations (ATEE 2010; Méthéor 2010), as prefects are only deciding on the single case, without an underlying planning scheme.

- Furthermore, the required documentation and prerequisites is also a barrier for biogas installations. Here, as outlined for wind, prefects may ask for additional documents to decide on the specific case; additionally, they also may introduce new prerequisites if they judge these necessary to comply with departmental obligation. And unclear and legally unstable condition is the outcome (ATEE 2010; Méthéor 2010).

- Stakeholders from the biogas branch also highlighted the public enquiry process as barrier for the development of biogas in France, pointing in specific to long delays of this procedure (ATEE 2010; Méthéor 2010). Still, democratic participation is a fundamental principle and may put delays to a procedure; however delays should be limited to a minimum to also encompass the developer perspective.

The Grenelle II draft law may also solve some barriers for biogas, with the introduction of the scheme-regime.

6. **Regarding heat pumps:**

For geothermal heat pumps the administrative procedure is not perceived as barrier for the further development (AFPAC 2010; CERTEX 2010). In this regard, stakeholders outlined that there are clear and easy procedures in place, allowing for further development of this RES technology (AFPAC 2010; CERTEX 2010). The main barrier for heat pumps is identified in form of a misperception of this technology by the general public and incoherent and at times inconsistent available information, as outlined under issue 5 of this report.

Barrier 1.2 – Competing public interests

Regarding **onshore wind power systems** the following barrier could be identified:

- Interference with radar installations of Météo France, of the French military as well as of civil aviation is considered a major barrier. Generally, the administrative practice has been established to create 20 km non interference zone around radar installation. However, even larger ban zones up to 30 km are possible, on decision of the French military (Enertrag 2010); The impact intensity of this barrier is varying depending on the market actor. Smaller project developers are generally affected on a larger scale as they are often lacking reliable information about radar ban zones, which is consequently resulting in a misled project development (Enertrag 2010, Nordex 2010, SER/FEE 2010).

Regarding **offshore wind power systems**:

- A lack of coordination on national as well as with the European level can be identified regarding the creation of wind offshore schemes (schéma éolien sur mèr) and the creation of environmental protection zones under the French transposition of the Natura 2000 regime, being a comprehensive ecological network of protected areas in the EU. Stakeholders outlined that the later had been created without taking into consideration to already include a planning for offshore wind exploitation zones. The ex post introduction of exploitation zones in the existing areas of the Natura 2000 concept is only possible to a limited extent. Stakeholders identified this situation as a barrier for the development of offshore wind in France (Enertrag 2010).

Barrier 1.3 – RES not or insufficiently considered in spatial planning

Regarding **wind power systems**:

- As outlined under Barrier 1.1. of the French report, it is to highlight that the comprehensive implementation of wind development zone (ZDE – zones de development de l'éolien) in the whole of France hasn't yet been completed; thus limiting the development of wind power systems. Still, it is also to mention that the system of wind development zones is not part of the urban development regime but is derived from the energy law; thus just providing a framework for the allocation of the feed-in tariff to those installations situated within a preferential zone. For the creation of ZDE the local land and town planning schemes are only partially taken into account so that there is no coherent and congruent approach between energy law and urban development exigencies (Cassin 2010, SER/FEE 2010).

  The new envisaged system of schemes ("schéma") of the Grenelle II-draft, being preferential areas for the exploitation of RES, could be an additional layer of planning, further hindering development, especially as first drafts of the preferential

zones confirmed the apprehension that their design might be too restrictive; thus limiting the actual RES potential (SER/FEE 2010).

- In addition, the Mountain Act (loi montagne - law No. 85-30 of 9 January 1985) and the coastline Act (loi littoral - law No. 86-2 of 3 January 1986) reinforce protection and totally rule out the possibility of setting up wind farms (REPAP 2010).

1.2.2 Best practice elements and indicators

No.	Technology	Benchmark	Result
1.1		**Is one stop-shopping possible?**	
	Wind onshore, 2MW, 80m height		No
	Biogas plant < 2MW		No
1.3		**Time to be spent for administrative permission process (duration in months)**	
	Wind onshore, 2MW, 80m height		60 to 84
	Biogas plant < 2MW		24
1.4		**Number of all permits that need to be obtained (#)**	
	Wind onshore, 2MW, 80m height		3 to 4
	Biogas plant < 2MW		3

1.3 Literature

AFPAC (2010): Association Française pour les Pompes À Chaleurs; Christian Bernhardt/ David Bonnet. Interview in Paris on 03.03.2010

ATEE (2010): Association Technique Énergie Environnement Club Biogaz; Caroline Marchais. Interview in Paris on 01.03.2010

Cassin (2010): Fabrice Cassin, CGR Legal. Interviews in Paris on 02.03.2010, 12.03.2010 and 20.04.2010

ENERPLAN (2010): Association Professionnelle de l'Énergie Solaire; Sylvain Roland. Interview on 11.04.2010

Enertrag (2010): Enertrag AG Etablissement France; Philippe Gouverneur, Guillaume Fagot, David Saint-André, Grégoire Simon. Interview on 10.03.2010 and 30.04.2010

ESHA (2007): European Small Hydro Association, Administrative barriers for small hydropower development in Europe, Brussels

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Méthéor (2010): Association pour la Méthanisation Écologique des déchets, Jean-Claude Peres. Interview in Paris on 01.03.2010

Nordex (2010): Nordex France S.A.S.; Barbara Portailler. Interview in Paris on 02.03.2010

REPAP (2020): European Renewable Energy Council (EREC), Renewable Energy Policy Action Paving the Way towards 2020 – Report for France, Brussels

SER (2010): Syndicat des Énergies Renouvelables; Alexandre Courcambeck/ Wael Elamine/ Damien Mathon. Interviews in Paris on 01.03.2010, 02.03.2010 and 12.03.2010

UFE (2010): Union Française de l'Électricité; Anne Chenu / Soizic Hémion / Hélène Robert. Interview Paris on 02.03.2010

2 Issue 2 Technical Specifications

2.1 Introduction

Companies importing renewable energy equipment into France have been complaining for a number of years about barriers to trade originating from specific certification requirements in order to access financial incentives, or to be allowed to sell at all. These complaints concern especially building integrated technologies, such as solar thermal systems, heat pumps and PV (EHPA 2010; ESTIF 2010; Lubnow 2008; Nielsen 2010; Welling 2010).

Therefore, the adoption of the text of Art 13 (2) of the Directive 28/2009/EC has been particularly welcomed by those associations and companies that have been working for an open European market for renewable energy equipment.

As discussed below, the wording of Art 13 (2) can already been considered as implemented in France. However, the barriers to trade remain. These are mainly related to the 10-years guarantee required by law for construction products and services in general. To provide this insurance, French insurance companies de facto require a French certification. Obtaining this certification is lengthy and costly. Though this issue does not strictly fall into the points covered by Art 13 (2), it constitutes a significant barrier to trade and is therefore discussed in detail in this chapter.

As for the support schemes mentioned in Art 13 (2), several dozens of them exist in France (DENA 2010), since also the regional authorities provide a number of specific financial incentives. Here only some examples at national and at regional level are analysed, namely:

- The main income tax break scheme (CIDD 2009)
- The VAT reduction scheme (Rescrit 2007)
- As a representative example, two regional schemes in the regions of Alsace and of Franche-Compté, supporting building integrated renewables

All technical requirements in the analysed support schemes are in line with the requirements of Art 13 (2). However, as mentioned above, the barriers to trade are caused by the 10-years insurance requirement, which is not part of these schemes.

2.2 Description of possible barriers & solutions

Barrier 2.1 – Weak definitions

No barrier.

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

Barrier 2.2 –Non-EU standards. or specified locations for testing and/or certification requirements

- **Product certification required to achieve eligibility for support schemes:**
  The source of the technical requirements for renewable energy equipment is in general the income tax break scheme (Arrêté du 13 novembre 2007). The VAT reduction scheme and the regional financial incentives either do not set any explicit technical specifications or ask for the same ones that are defined in the income tax break scheme. For all technologies supported by these financial incentives, the technical parameters are always defined in terms of European norms (EN 12975 and EN 12976 for solar thermal systems, EN 13240, EN 14785 and EN 15250 for different biomass burners, EN 255 and EN 14511 for heat pumps). In some cases, a different French norm can be used as an alternative, but it is always possible to comply with the eligibility criteria through European norms. A specific place of certification is not required in any of these support schemes. In the case of solar thermal, the European certification scheme Solar Keymark is explicitly accepted as a proof of compliance with the relative EN norms. All this is in line with the requirements of Art 13 (2).

- **French certification de facto necessary to obtain a 10-year insurance:**
  Renewable energy equipment for building integration, even if already validly certified according to the European standards mentioned in the previous section, still needs to obtain an additional French certification before it can be installed in France. This is reported as a significant barrier by market players in the photovoltaic (Lubnow 2008), solar thermal (Nielsen 2010; Welling 2010) and heat pump sector (EPHA 2010). The origin of this barrier is the following: the French law (article 1792, Code civil) makes construction companies liable for any damage that may result from a building they have constructed, even in absence of specific faults of the constructor. This article applies to all construction components that are "inseparably connected" to the building, and thus also on parts of solar and of heat pump systems. This obligation lasts ten years from construction and is called "Décennale". Of course, construction companies need insurance on this liability. Because this insurance is directly related to the French civil law, it is practically possible to obtain it only from insurance companies based in France. And they request in practice a French certification.

  The French-German consumer association *Euro-Info-Consommateurs / Euro-Info Verbraucher* has dedicated a very interesting analysis to this issue, published in similar form both in German (Euro-Info-Consommateurs 2008) and in French

language (Euro-Info-Consommateurs 2008a). The following is quoted from the former:

"French insurance companies prescribe in their contracts the exclusion of technologies and construction materials which are not largely known in France or do not comply with French norms. Moreover, the bodies controlling construction ("Bureaux de contrôle technique") are obliged to produce their certificates on the basis of French norms […]. The experience in France shows that the insurer avoids the risk of insuring new methods, technologies or materials that are not yet known. […] insurers provide a Décennale-insurance only if the construction materials are generally accepted in France. In practice, foreign construction materials and technologies have no access to the French market. This restriction within insurance contracts constitutes a violation of the free circulation of goods. Therefore, it seems necessary to promote an adaption of the insurance conditions as well as the harmonization of the mutual recognition of construction materials."

However, the experience of the renewable industry shows that even the highest possible level of mutual recognition is not enough to overcome the barrier created by this practice of the insurance companies, as shown by this example: the solar thermal industry, with the support of the European Commission, has created the European certification scheme Solar Keymark, which produces a European certificate. In fact, the Keymark is also recognized in France, as mentioned above. Nevertheless, the insurance companies still require an additional certification (CSTBat), which can only be provided by the French certification body CSTB. Obtaining a CSTBat certificate can be very lengthy and costly, with long waiting times. As a result, importing companies face additional costs that are passed to the consumers. In certain cases, these additional costs discourage foreign companies. This may lead to reduced competition on the French market, resulting in less choice and higher prices. Finally, the additional certification and/or testing requirements cause a delay in innovation, since new products have to wait for months at the gates of the French market.

Possible options: It is tricky to tackle this issue because, as stated by Lubnow (2008) and shown by our research, there is no explicit legal basis for the requirement of an additional French certification on products that already fulfill the respective European norms. As discussed above, this requirement is given by insurance companies, which have to cope with the risk of being made liable within the French legal system. *Euro-Info-Consommateurs* asserts that this situation is a violation of Art. 28 and 30 of the Treaty, and quotes a judgment of the European Court of Justice of 13 March 2008 (Case C- 227/06), in which Belgium has been declared in breach of Art. 28 and 30 for having encouraged economic operators wishing to market construction products in Belgium lawfully manufactured and/or marketed in another Member State to obtain Belgian marks of conformity. Assessing whether this principle could be applied also to the situation described in France would go beyond the scope of the present study.

2.2.1 Best Practice Elements and Indicators

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

2.3 Literature

Arrêté du 13 novembre (2007): Arrêté du 13 novembre 2007 pris pour l'application de l'article 200 quater du code général des impôts relatif aux dépenses d'équipements de l'habitation principale (www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000706721&dateTexte)

CIDD (2009): Crédit d'impôt développement durable; Loi de finances rectificative pour 2009, Art. 58; Bulletin officiel B-22-09

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EHPA (2010): EHPA – European Heat Pump Association; Thomas Nowak, Secretary General EPHA, interview on 11.03.2010

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Lubnow (2008): Marcus Lubnow, Law firm Epp, Gebauer & Kühl, Gebäudeintegrierte Photovoltaik in Frankreich (www.rae-epp.de/news_bisher_d.php?id=20)

Nielsen (2010): Jan Erik Nielsen, SolarKey Int, Technical Manager of ESTIF; private communication, February 2010.
Rescrit (2007): Rescrit du Ministère de l'Économie, des Finances et de l'Industrie RES N°2007/12 (TCA)

Welling (2010): Robin Welling, Managing Director TiSUN; private communication, February 2010

3 Issue 3 Building Integrated Technologies

3.1 Introduction

French policies in the building sector are currently mainly focused on the promotion of energy efficiency. Whilst this can certainly be considered a very important issue, it would at the same time make sense to set clearer steps additionally aiming at increasing the share of renewable energies. To date, no **renewable building obligation** exists at national level in France. Positive developments can already be observed in almost all French overseas departments (DOM), where a solar thermal building obligation for new buildings has been put into place and will be effective from mid 2010 on. Also on municipal level, cities such as Lyon or Grenoble have introduced policies on the use of renewable energy sources in certain types of new buildings (ENERPLAN 2010). On a national level, the relevant legal framework for new buildings, the so-called Réglementation thermique (RT) 2005, only prescribes certain energy efficiency levels. Currently, the succeeding RT 2012 is being prepared, setting even stricter efficiency requirements. The French solar industry association states that it will be very difficult to reach the efficiency threshold without falling back on renewable energy sources (ENERPLAN 2010). Following discussions of the government, there are also debates on whether to include an obligation to install solar thermal systems or other renewable energy technologies, at least in certain types of buildings (SER 2010a). With the RT 2020, current plans aim at the introduction of an obligation of "energy positive" new buildings in 2020, producing more energy than they consume (SER 2010b). It is not clear yet, where those debates will lead and which impact they will have on the future development of renewable energy sources in the building sector.

Where existing buildings are concerned, there is no obligation for the installation of renewable energy sources either. The RT Existant (Arrêté du 13 juin 2008) asks for reaching a heat demand of 80 kWh/m²/year in buildings built after 1948 and larger than 1,000 m² undergoing major renovations. Among the measures that can be counted for reaching the limit is the installation of a renewable energy system (ENERPLAN 2010).

Public buildings do not fulfil their exemplary role in a sufficient way yet. The RT 2012 could be a step forward though if enacted as currently planned. While the efficiency standards for residential buildings will only apply from 2013 on, public buildings have to take a leading role and will already be subject to the provisions in 2011 (ENERPLAN 2010).

Regulations in tenancy law and ownership law have not been assessed as posing strong barriers for the installation of renewable energy sources in the building sector by the different interviewees. In November 2009, two decrees (Arrêté du 23 novembre 2009;

Décret n° 1438 2009) have been published by the Ministry of the Environment, containing very precise rules on the distribution of costs in case of energy efficiency renovations and/or the installation of renewable energy systems. One applies to private landlords, the other to social housing societies. In both cases, upper cost limits for the amount to be borne by the tenants are defined in order to protect them from excessive charges. They either have to pay a pre-defined fix monthly allowance graded according to the apartment size or a monthly contribution set by the landlord amounting to a maximum of 50% of the estimated energy savings. In addition, an agreement between the landlord and the tenants has to be reached in the forefront in order to allow for the installation of a renewable energy system (ANIL 2009a; ANIL 2009b).

3.2 Description of barriers & solutions

3.2.1 Detailed description of the barriers and solutions

Barrier 3.1 – Renewables obligations insufficient

- The current building code on the construction of new buildings, the RT 2005, does not prescribe the use of renewable energy sources. The main focus lies on energy efficiency and reducing consumption but not on producing renewable energy. **Possible options:** The renewable energy association SER favours the inclusion of an obligatory use of renewable energy sources into the Réglementation thermique 2012, which is currently being prepared. In the RT 2012, the maximum overall energy consumption of buildings will be set at 50 kWh/m² per year. SER proposes in addition a minimum threshold of consumption from renewable energy sources of 5 kWh/m² per year. It should be possible to freely choose the energy source. As an alternative, the connection to district heating systems fuelled from renewable energy sources would be an option for densely populated areas (SER 2010b).

- The RT Existant (Arrêté du 13 juin 2008) asks for reaching a heat demand of 80 kWh/m² per year in buildings built after 1948 and larger than 1,000 m² undergoing major renovations. Among the measures that can be counted for reaching the limit is the installation of a renewable energy system (ENERPLAN 2010).This can be considered a first good step but the provisions are not very far-reaching, as only a small amount of buildings is concerned and the use of renewable energy sources is not obligatory.

Barrier 3.2 – Exemplary role of public buildings neglected

- Public buildings do not fulfil their exemplary role concerning the use of renewable energy sources in a satisfying way yet (ENERPLAN 2010; SER 2010b). Mainly on a local and municipal level, certain efforts have already been made, while the federal institutions still lag behind. This might change to the better with the RT 2012, at least where the construction of new public buildings is concerned. According to current plans, public buildings, as well as buildings in the tertiary sector, will fall under the scope of the RT 2012 from 2011 on, while it is foreseen to apply the regulations to residential buildings starting in 2013 only (ENERPLAN 2010). As already mentioned above, it is to be seen whether the regulations of the RT 2012 will mainly lead to

energy efficiency measures or also initiate a significant development of renewable energy sources.

Possible options: The RES association SER suggests to make it obligatory for all newly constructed public buildings or also buildings undergoing major renovations to introduce a minimum level of renewable energy sources (SER 2010b).

Barrier 3.3 – Tenancy law and ownership law impede development of building integrated RES technologies

This is not considered a barrier in France.

3.2.2 Best practice elements and indicators:

No.	Technology	Benchmark/comments	Result
3.1		**Is this installation type in normal cases exempted from an authorization procedure (building permit)?**	
	PV rooftop 1-3kW		No
	Solar thermal ~9m² collectors	For existing buildings a simple notification is sufficient. In case of new buildings a building permit is needed.	Yes
	Geothermal heat pump < 10kW	Except if ground-water is involved.	Yes
3.2		**Are legal-administrative requirements adequate for this installation type?**	
	PV rooftop 1-3kW		Positive
	Solar thermal ~9m² collectors	Urban planning conditions are sometimes quite complicated for the installation of solar thermal systems.	Average
	Geothermal heat pump < 10kW		Positive
3.3		**Number of administrations that must be contacted (#)**	
	PV rooftop 1-3kW		1
	Solar thermal ~9m² collectors		1
	Geothermal heat pump < 10kW		1

3.3 Literature

ANIL (2009a): Agence Nationale pour l'Information sur le Logement. Contribution du locataire au partage des économies de charges (www.anil.org/fr/profil/vous-etes-locataire/location-vide/decence-entretien-et-charges/travaux-d-economie-d-energie/contribution-du-locataire-au-partage-des-economies-de-charges/index.html)

ANIL (2009b): Agence Nationale pour l'Information sur le Logement. Travaux d'économie d'énergie dans un logement en location: contribution du locataire au partage des économies de charges (www.anil.org/fr/analyses-et-commentaires/analyses-juridiques/2009/travaux-d-economie-d-energie-contribution-du-locataire/index.html)

Arrêté du 13 juin (2008) : Arrêté du 13 juin relatif à la performance énergétique des bâtiments existants de surface supérieure à 1 000 mètres carrés, lorsqu'ils font l'objet de travaux de rénovation importants

Arrêté du 23 novembre (2009): Arrêté du 23 novembre 2009 relatif à la contribution du locataire au partage des économies de charges issues des travaux d'économie d'énergie réalisés par un bailleur privé

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ENERPLAN (2010): ENERPLAN – Association professionnelle de l'énergie solaire; Sylvain Roland, telephone interview on 08.04.2010

SER (2010a): Syndicat des Énergies Renouvelables; Alexandre Courcambeck/ Wael Elamine/ Damien Mathon. Interviews in Paris on 01.03.2010, 02.03.2010 and 12.03.2010

SER (2010b): Syndicat des énergies renouvelables. REPAP 2020, Renewable Energy Policy Action Paving the Way towards 2020, Roadmap 2020 report for France (http://www.repap2020.eu/fileadmin/user_upload/Roadmaps /SER-REPAP2020-ENG-vF.PDF)

4 Issue 4 – Promotion of energy efficient renewable energy equipment

4.1 Introduction

Purpose of this chapter is to verify if following provisions of article 13 (6) of the Directive are fulfilled in France:

"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."

The main source of promotion of renewable heating systems is the income tax break scheme (Arrêté du 13 novembre 2007) at national level. As far as the technical requirements for energy efficiency are concerned, the regional support schemes usually base their technical requirements on the national income tax break scheme, which is therefore analysed here.

Biomass

The requirements of Art 13(6) are partly fulfilled.

The minimum efficiency criteria for biomass burners to be eligible for the income tax break scheme have been made more strict in 2009 ("Arrêté du 15 septembre 2009 ",

Annexe 2, Tableau 3) and vary now between 75% and 85%, depending on the raw material and on the technologies used.

Heat pumps

The wording of Art 13(6) is not fulfilled. Efficiency criteria exist, but they are not based on the same legal basis and they are set at a significantly lower level than, for instance, in Germany. There is not yet any reference to the Commission Decision 2007/742/EC of 9 November 2007. The efficiency requirements for heat pumps to be considered as eligible for the main support scheme (income tax break) are expressed in terms of COP. The required COP are relatively low, if compared with Germany for instance and vary from ≥ 3,4 to > 2,2, depending on the kind of heat pumps. There is no reference to the Seasonal Performance Factor.

Solar Thermal

There is no specific efficiency requirement. See Issue 2 for the discussion on the barriers to trade emerging from the 10-years-insurance requirement.

4.2 Literature

Arrêté du 13 novembre (2007): Arrêté du 13 novembre 2007 pris pour l'application de l'article 200 quater du code général des impôts relatif aux dépenses d'équipements de l'habitation principale (www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000706721&dateTexte)

5 Issue 5 Information/Awareness Raising

5.1 Introduction

In general, the availability of information on support measures for renewable energies and the awareness raising process in France can be evaluated as moderate. However, against the background of nuclear energy being for decades the absolutely dominate energy source, the development of available information and a broadening awareness is good.
Generally, stakeholders highlighted that the main barrier regarding the information and awareness raising is identified in form of incoherent and non-concerted actions of the various RES branches without a global approach and perspective. In addition, stakeholders also critically commented on the performance of ADEME, being the French energy agency. They highlighted especially the limited financial resources and the internal structure of the organisation as factors limiting the potential of the agency.

In addition, there is also a substantial gap between the qualities of information sources on the regional level; while some regions have introduced groundbreaking information sources especially in form of websites; others haven't taken any actions in this regard; thus neglecting their information obligation towards the general public.

A potential reason for the current situation regarding the information availability on RES and the actions by official authorities in this regard is to be seen in the fact that there was at the time a clear decision in favour of a state controlled, monopolistic power generation from nuclear sources.

5.2 Description of barriers & solutions

5.2.1 Detailed description of the barriers and solutions

The biggest problem about the information supply in France is the lack of quality and coherence. There are a lot of different websites, campaigns and many other platforms for information and discussion, but they are too specific and punctual, offered by many different actors. What is lacking is concentrated, clear and pedagogically useful information coming from a legitimate and controlled authority (Gossement 2010); this both for private individuals as well as for professionals (AFPAC 2010; 2010). Due to the current fragmented and incoherent discussion about renewable energies, it happens that there are misinformation and contradictions that are unsettling the respective target groups. According to a recent study by the ADEME, the French public is mostly favourable to renewable energies, with a clear intention to implement those technologies; however the further the individual is advancing with the envisaged implementation, the

more he realises that he does not know what to do (AFPAC 2010; CERTEX 2010). While there is a lot of general information and advertisement, it lacks substantial, manageable and reliable advice: Quite some discourses, though no interlinkage between theses discourses and no clear perspectives (AFPAC 2010).

According to stakeholders from the heat pump sector this situation constitutes the main barrier for this form of RES technology (AFPAC 2010). The heat pump association is highlighting a general misperception of the heat pump technology in this regard, not at least caused by the above outlined incoherent and often inconsistent available information (AFPAC 2010). The different RES branches are often operating in regard to information campaigning on their own, with no global approach and no concerted action (AFPAC 2010; CERTEX 2010). The association sees a leading responsibility here for the ADEME, the French energy agency (Association Française de l'Environnement et de la Maîtrise de l'Énergie).

Still, the current role of ADEME is ambiguously perceived; while some stakeholders outlined that the role of informing the public is ensured by ADEME (REPAP 2010; SER 2010), others had a more critical perspective on the current work of the energy agency (AFPAC 2010; CERTEX 2010; Gossement 2010,). Stakeholders from the later group highlighted especially the internal structure and the limited budget of the organisation as an obstacle for comprehensive information campaigning by ADEME for the general public and professionals on the topic of RES technologies (AFPAC 2010; CERTEX 2010; Gossement 2010).

In this regard, the history of the agency is to recall: The ADEME, being the French energy agency (Agency for the Environment and Energy Management), is a public body under the joint supervision of the French Ministries for Ecology, Energy, Sustainable Development and Sea (MEEDDM) and for Higher Education and Research. Founded in 1990, the agency has still not achieved a high level of awareness and suffers from political struggles about the energy issue, managed before by the Ministry for Economy. As a consequence, the ADEME's budget is considered being just enough to organize punctual campaigns and advertisements, but it is not sufficient for offering a global vision on renewable energies, supported by expert knowledge. Furthermore, stakeholders mentioned that ADEME is acting largely on governmental and ministerial impulses, however often only highlighting a specific topic for a short period of time, before addressing afterwards an entire different theme, without interlinking the various aspects with each other; thus neglecting the global picture (AFPAC 2010; CERTEX 2010; Gossement 2010).

Also stakeholders from the group, which is generally judging the work of ADEME as positive and sufficient, outlined that there are not enough advisors to cope with the rise of RES use in buildings (REPAP 2010; SER 2010).

Barrier 5.1 – Insufficient availability of information on support measures

The table below analyses two different types of barriers to the development of renewable energies at the national and at the regional level: the availability of information on support measures and the design of programmes/campaigns. The findings are based on a

recent study, realised by eclareon GmbH in 01-03/2010, about support mechanisms for photovoltaics and solar thermal installations in France.

The following evaluation of the national level and each French region is based on different criteria:

1. Are all relevant, current data on the support measures provided? (→ completeness);
2. Is the presented data too technical and is there a clear differentiation between support measures for different actor groups? (→ comprehensiveness);
3. Is the provided data hard to find; are there clear links to information websites, additional hotlines, online application tools, etc.? (→ accessibility);
4. Are the programmes/campaigns properly designed to fulfil the envisaged aim? (→ programme/campaign design).

The availability of information is assessed as a "good" example if the provided data is complete, comprehensive and easy to find. The respective programmes/campaigns are properly designed to fulfil the envisaged aim.
The availability of information is rated as an "average" example if the provided data fulfils at least two out of the four mentioned characteristics.
The availability of information is rated as a "bad" example if only one of the criteria is fulfilled.

National level	average
Local level (Regions)	
Alsace	good
Aquitaine	bad
Auvergne	average
Basse-Normandie	good
Bretagne	bad
Bourgogne	average
Centre	good
Champagne-Ardennes	average
Corse	bad
Franche-Compté	average
Haute-Normandie	average
Île-de-France	average
Languedoc-Roussillon	average
Limousin	good
Lorraine	average
Midi-Pyrénées	average
Nord-Pas-de-Calais	good
Pays de la Loire	average
Picardie	good
Poitou-Charentes	good
Provence-Alpes-Côte-d'Azur	average

Rhône-Alpes	good

To illustrate the evaluations above, one best and one worst practice example will be presented in a more detailed way.

***L'Alsace* as an example of best practice:** "Alsace ÉnergiVie" (http://www.energivie.fr/)

1. **Completeness:**
   The relevant data on the support measures is provided; amongst others, there is information on required installation sizes for eligibility, details on the amount of the financial support are given (percentages and caps), and there are specific information sheets for different actor groups. As far as the update of the website is concerned, in February 2010, there were still some information sheets from 2009. However, the updating process was already started. As a very positive aspect should be underlined that the main website offers links and short explanations to further financial supports on the national and local level;
2. **Comprehensiveness:**
   The information sheet about the support measures contains a lot of technical data, and further enriched by links with supportive information for different target groups. The differentiations between support measures for the different actor groups are very clear;
3. **Accessibility:**
   The information on support measures is presented in an easily accessible way thanks to a clear structure and differentiation between the respective issues. The linking to the main information site is both available from the Regional Council website and the ADEME Alsace website. On the main website, there is an additional hotline as well as links to other relevant contact partners. It can be positively mentioned that there is also a tool to calculate an estimated amount of personalised financial support;
4. **Programme/Campaign design:**
   The region Alsace offers a special website for its renewable energy programme "Alsace ÉnergiVie". This website is very well structured and contains all relevant information about renewable energies in Alsace, including financial support measures. The programme has a very individual design; on the website you can find, for instance, a video about the programme, a slogan and a mascot. To sum up, the EnergiVie programme represents a global approach to renewable energies at the regional level.

For other good practice examples, have a look at the following websites:
Basse-Normandie: „Chèque éco-énergie" (http://www.cr-basse-normandie.fr/index.php/batir-une-eco-region/environnement/energie/cheque-eco-energie)

Centre: „Énergies Centre"
(http://www.regioncentre.fr/jahia/Jahia/site/energie_centre/accueil/aides_outils_financiers/aideconvention_ademe_region)

Limousin: "Le chèque énergie" (http://www.region-limousin.fr/Le-cheque-energie)

***La Corse* as an example of worst practice:** "Plan de développement des energies renouvelables et de la maîtrise de l'énergie 2007/2013" (http://adec.corse.fr/politique-energetique-regionale.php):

1. **Completeness:**
   The provided data are incomplete, i.e. specific information about financial support, technical prerequisites or actor groups are not shown on the relevant websites (CTC, ADEC). There you can only find the political basis of support measures, the renewable energy plan. Here, you can find targets related to renewable energies and energy efficiency as well as budget numbers, but no further details. For specific support measures, you have to address one of the contacts directly.

As a consequence, the following criteria no longer apply.

Barrier 5.2 – Possible (historical) reasons for barriers

To understand barriers to the development of renewable energies in France, it is important to understand the underlying cultural barriers. It is both important to consider the French political system as well as the historical aspects of energy supply. France has a semi-presidential system of government and has a strong tradition of centralism. Thus, the role of the State is very important. In the energy sector, the importance of this role was strengthened by the choice for nuclear energy as the main energy source, which was made in France in the 1950s and 1960s. The nuclear industry in France is managed by EDF, a state-dominated company, in a monopolistic way. This development of nuclear energy was communicated to the public by underlining the importance of one energy source, controlled by the State, for an independent and secure energy supply of the country. This absolute dominance of nuclear energy in the energy sector led to the negligence of other energy sources, expressed by the lack of a political and public debate about alternatives until 2006, when the pressure of the Community law finally made an impact (Gossement 2010).

5.2.2 Best practice elements and indicators

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

5.3 Literature

AFPAC (2010): Association Française pour les Pompes À Chaleurs; David Bonnet. Interview in Paris on 03.03.2010

Cassin (2010): Fabrice Cassin, CGR Legal. Interviews in Paris on 02.03.2010 and 12.03.2010

CERTEX (2010): Certex France SA, Christian Bernhardt. Interview in Paris on 03.03.2010.

Enertrag (2010): Enertrag AG Etablissement France; Philippe Gouverneur. Interview on 10.03.2010

Fröding (2010): Véronique Fröding, Gide Loyrette Nouel. Interview on 11.03.2010

Gossement (2010): Arnaud Gossement, SELARL Huglo-Lepage & Associés Conseil. Interview in Paris on 02.03.2010

SER (2010): Syndicat des Énergies Renouvelables; Alexandre Courcambeck / Wael Elamine / Damien Mathon. Interviews in Paris on 01.03.2010, 02.03.2010 and 12.03.2010

6 Issue 6 Certification

6.1 Introduction

France has taken a leading role in Europe where the development of qualification and certification schemes for installers is concerned. All four existing major quality labels for installers are assembled under the roof of the association "Qualit'EnR": Qualisol for solar thermal systems, QualiPV for photovoltaic systems, Qualibois for biomass boilers and QualiPAC for heat pumps. These very clear structures in combination with a uniform design are certainly a very good basis for the communication of the certification schemes towards the concerned craftsmen as well as the broader public. The website www.qualit-enr.org also includes a search tool for qualified installers. In a lot of regional subsidy programmes, the assignment of an installer certified by Qualit'EnR is already a necessary prerequisite and thus an important incentive for installers to undergo certification (Qualit'EnR 2010a; www.qualit-enr.org 2010).

On the whole, the certification and qualification schemes of Qualit'EnR meet the criteria laid out in the directive 2009/28/EC – they are composed of theoretical as well as practical elements and need to be renewed at regular intervals. The approach followed by Qualit'EnR, including not only the RES associations but also the professional guilds (CAPEB, UECF-FFB, UNCP-FFB, FFIE, SNEFCCA) as well as the utility companies (EDF, GDF-SUEZ, PRIMAGAZ) into the scheme and aiming at a very broad coverage of the certification, can on the one hand be considered as positive, leading to high levels of acceptance as well as a widespread basic level of qualification of installers. Nevertheless, some critical aspects should be considered, such as the risk of lower quality installations resulting from the dominance of the principle of inclusion and quantity. Qualit'EnR argues that this problem is at least partially tackled through the organisation of the training (contracts with the training centres, updates of training contents according to the results from audits, train-the-trainer sessions etc.) as well as regular audits of the installations (Qualit'EnR 2010c).

More important problems occur in the field of vocational training. In general, to become an installer in France, it is not necessary to undergo thorough education. As a result, the basic qualification level of installers is rather low, entailing difficulties for further training on RES. In addition, vocational training does not consider renewable energy sources in a sufficient way. Some initiatives to change this situation have been launched. It is not possible to tell yet whether they will efficiently tackle the problem.

6.2 Description of barriers & solutions

6.2.1 Detailed description of the barriers and solutions

Barrier 6.1 - Lack of a certification body/scheme

This cannot be considered a real barrier in France, since the certification body Qualit'EnR is recognised by the French energy agency ADEME and the installer certification is made a condition of eligibility for the support schemes in almost all regions. It is however not a prerequisite for the main support scheme, the "Crédit d'impôt".

- The certification body Qualit'EnR is a private association recognised by the French renewable energy agency ADEME. The association is not accredited by the official accreditation body Comité français d'accréditation (Cofrac) though. However, this option is currently under consideration and Qualit'EnR might aim at being officially recognised in the future (Qualit'EnR 2010a).

Barrier 6.2 - Lack of communication/information on certification

This cannot be considered a substantial barrier in France.

- The Qualit'EnR qualifications as well as certifications are in general well-known amongst installers. This is also due to the fact that the different professional guilds are included in the scheme and help to spread the message among their members (Qualit'EnR 2010a). The heat pump association AFPAC still observes a certain lack of knowledge of the certification QualiPAC amongst installers. They are quite confident though that this problem will be solved soon thanks to the integration of their certification into the Qualit'EnR scheme at the beginning of 2010 (AFPAC 2010; CERTEX 2010).

- There is still a lack of knowledge on the side of the general public. Since 2009/10 Qualit'EnR has developed a marketing strategy with information material aiming at this target group. The installers are included into the strategy and encouraged to participate in the distribution of information. Recently, a radio campaign for the promotion of the Qualisol label has been launched by ENERPLAN and Qualit'EnR (ENERPLAN 2010; Qualit'EnR 2010a; Qualit'EnR 2010c; www.qualisol.org 2010).

Barrier 6.3 - Lack of sufficient training possibilities

Training possibilities dedicated to renewables are in general available in France for those who search for them. However, many installers still have to be motivated to use these possibilities (see barrier 6.2 above).

- According to Qualit'EnR, in general sufficient training possibilities for installers are available. To date, around 100 training centres accredited by Qualit'EnR exist all over the country (Qualit'EnR 2010a). For heat pumps, only 14 training centres offer training courses at the moment and a better local distribution is desired (AFPAC 2010; CERTEX 2010).

Barrier 6.4 - Renewable energies not sufficiently covered by vocational training

In general, the level of qualification of electricians and heating installers is low in France. As a consequence, renewables are not sufficiently covered.

- In France, a general problem with regard to the education of electricians and installers for heating systems can be observed. In order to exercise these professions, it is not necessary to absolve a thorough vocational training, but only to follow a short training course. This leads to a very low level of basic professional expertise, constituting a difficult starting point for further education on RES (AFPAC 2010; CERTEX 2010). Basic education on RES for nascent installers does hardly exist in France (AFPAC 2010; CERTEX 2010; Qualit'EnR 2010b; UFE 2010). First initiatives for the introduction of basic vocational training on renewable energy sources have already been launched and might be put into practice in the near future (Qualit'EnR 2010b; UFE 2010).

  Possible solutions: As the regions are responsible for vocational training, SER suggests encouraging collaboration between renewable energy professionals and regions in order to develop vocational training programmes on renewable energy sources (SER 2010).

Barrier 6.5 - Problems with the guarantee/warrantee/maintenance regime

One criterion for the installers obtaining certification is to provide evidence on the existence of a 2-year-liability insurance (assurance responsabilité civile) as well as insurance on the quality of the installation (assurance décennale) for a period of ten years. Due to this prerequisite, regulated by French law, according to Qualit'EnR, no severe problems concerning the guarantee/warrantee/maintenance regime exist (Qualit'EnR 2010a).

It must be noted that the ten-year insurance on products mounted on the building envelope has been identified as a source of barriers to trade within the European Union (see Issue 2).

Barrier 6.6 - Other barriers

- The certification is not awarded to individual installers but to the whole company, as long as one technical referent per label and per installation type fulfils the enlisted criteria. This risks leading to low quality installations carried out by unqualified installers. Qualit'EnR argues that this risk is mostly addressed by the introduction of audits on the quality of the installations. In addition they point out that most installation companies are quite small with only a few employees or only consisting of individual installers (Qualit'EnR 2010c).

6.2.2 Best practice elements and indicators

No.	Technology	Benchmark/comments	Result
6.1		**Are certification schemes or equivalent qualification schemes available for installers?**	
	PV		Yes
	Solar thermal		Yes
	Heat pumps		Yes
	Biomass boilers		Yes
6.2		**Is sufficient training on RES provided during the standard education curriculum of installers?**	
	PV		Negative
	Solar thermal		Negative
	Heat pumps		Negative
	Biomass boilers		Negative
6.3		**Number of certified installers**	
	PV		5,000
	Solar thermal		12,000
	Heat pumps		1,000
	Biomass boilers		1,500

6.3 Literature

AFPAC (2010): Association française pour les pompes à chaleur; David Bonnet. Interview in Paris on 03.03.2010

CERTEX (2010): CERTEX France SA; Christian Bernhardt. Interview in Paris on 03.03.2010

ENERPLAN (2010): ENERPLAN – Association professionnelle de l'énergie solaire; Sylvain Roland, telephone interview on 08.04.2010

Qualit'EnR (2010a): Association Qualit'EnR; Vénus Maroun. Interview in Paris on 01.03.2010

Qualit'EnR (2010b): Association Qualit'EnR; Teddy Puaud. Interview in Paris on 01.03.2010

Qualit'EnR (2010c): Association Qualit'EnR; William Mademba-sy. E-mail from 03.05.2010

SER (2010): Syndicat des énergies renouvelables. REPAP 2020, Renewable Energy Policy Action Paving the Way towards 2020, Roadmap 2020 report for France, 19.03.2010 (http://www.repap2020.eu/fileadmin/user_upload/Roadmaps/SER-REPAP2020-ENG-vF.PDF)

UFE (2010): UFE - Union Française de l'Électricité; Anne Chenu, Soizic Hemion, Hélène Robert. Interview in Paris on 02.03.2010

Websites:
www.qualisol.org
www.qualit-enr.org

7 Issue 7 Infrastructure Development

7.1 Introduction

The question of infrastructure development in France is first and foremost characterised by the absence of a comprehensive long term strategy for the whole of France regarding the development of network infrastructure. The situation of the French power grid is however marked by a dichotomy between the distribution network and the transportation grid. It is the latter, which is qualified by a majority of stakeholders to show major shortages regarding the capability to encompass further capacities from RES installations.

In addition, a substantial delay is identified regarding the required grid reinforcement works also predominantly in regard to the transportation network. Stakeholders doubted that a comprehensive reinforcement is realisable until 2020, especially in regard to those additional RES capacities required to achieve the French national RES share. ERDF as DSO in France however outlined that the reinforcement of the distribution network is realisable in far shorter delays than the reinforcement of the transportation network, as the procedure of the later is heavy and long and is facing lacking public acceptability, required for the public procedures (ERDF 2010).

Furthermore, the existing delay is becoming even longer by the fact that grid operators are investing only with high precaution, as they want to avoid any false statement, not being based on reliable information regarding the future development of RES technologies and anticipated grid capacities in the various regions (SER 2010).

Regarding a Trans European Electricity Network, France is playing an important role, not at least due to its geographical position; still, also here a comprehensive strategy is missing for the required grid reinforcements of the French transportation network.

7.2 Description of barriers & solutions

7.2.1 Detailed description of the barriers and solutions

Barrier 7.1 - Problems concerning the development of network infrastructure according to a long-term strategy

For the time being no long term strategy has been developed in regard to the development of the network infrastructure for the integration of RES (SER 2010). Throughout the interviews with stakeholders the picture crystallised that the question of infrastructure development is yet not embraced on a prominent agenda in France; assumingly due to the fact that shortages in the grid occurred only lately with a growing share of RES feeding

into the French grid (RTE 2010). For the time being, grid reinforcement works are conducted in a punctual and selective way on the regional level, mainly to solve the most pressuring problems concerning the grid and to satisfy urgent demand (ENERPLAN 2010; SER 2010). RTE clarified in this regard that there is no published comprehensive grid reinforcement plan available; currently development works are only undertaken in the framework of the "development scheme of transportation grid" ("schéma development du réseau transport") and only cover those developments required to solve sensitivities of the grid (fragilities du réseau) (RTE 2010). Until 2020, RTE is furthermore envisaging an investment for grid reinforcement works of 1 billion € to allow for the planned development of RES (RTE 2010).

This situation is mainly rooted in the fact that only with the introduction and further development of RES in France, the existing grid was reaching in some parts the limits of its capacity.
The most pressing issue however seems to be the question on how to transport the electricity from the offshore and onshore wind farms on the coasts especially in the North-West of France or from the Massif Central to the areas of high population density or the industrial areas of France. These measures will lead to a new architecture of the grid. Still, the distribution grid operator highlighted that in the future there will be a mixed of energy: on the one hand large conventional power plants connected to the transportation grid of RTE (400 kV), on the other hand, especially in regions with high consumption, a mixed between the distribution and the transportation network (90 kV, 225 kV) (ERDF 2010). The operator sees the real problem of today in form of large wind parks, large PV installation, located in rural areas and requiring for the necessary infrastructure (20 kV, 90 kV, 225 kV), even though there only very low actual consumption in these areas (ERDF 2010). RES produced electricity must be harvested in those regions, where the resources are available (ERDF 2010).
Under these circumstances, regions like Brittany (Bretagne), originally considered as peripheral regions of France with no nuclear production, gained massively in importance, due to their rich natural resources (e.g. outstanding wind conditions).
Possible options: A comprehensive analysis of the grid infrastructure situation is required to develop a global plan, especially to also allow for a further RES development in order to reach the national 2020 RES target. Such comprehensive plan is also part of the Grenelle II draft law, envisaging that grid operators should develop a global strategy to meet the national 2020 objectives (SER 2010).

Still, stakeholders emphatically highlighted that the implementation of the envisaged grid reinforcement works will take substantial time. Already with an established, comprehensive grid reinforcement plan, time would be extremely short. Yet, as no such plan has been developed, there is a major shortage regarding the implementation time. This situation has to be identified as barrier in regard to the infrastructure development. A timely development of a comprehensive grid reinforcement plan is thus of urgent importance for the further development of the French grid (Cassin 2010, ENERPLAN 2010, SER 2010). ERDF, being the French DSO, outlined that the reinforcement of the distribution network is realisable in far shorter delays than the reinforcement of the transportation network, as the procedure of the later is heavy and long and is facing lacking public acceptability, required for the public procedures. While the creation of a

line of high tension will require a period of 5 to 6 years; a line of low tension is realisable within a period of some months (ERDF 2010).
RTE, as French TSO further clarified that delays are also caused by lengthy legally compulsory consultations for grid reinforcement works (RTE 2010). Furthermore, RTE outlined that nowadays project development, especially of wind installations, is realised in far shorter time periods than the required grid reinforcement works (RTE 2010). Under these conditions, RTE is only hardly able to cope with the current large scale development of RES, resulting in shortages of grid infrastructure in some regions (RTE 2010).

Stakeholders also elaborated on the substantial investments required for reinforcement studies as well as for the actual grid reinforcement works. Up to now, operators were reluctant to make such investment without reliable information regarding anticipation of future demands and location of RES installations, to avoid any false investment. This precautious position is further delaying required grid reinforcement works (SER 2010); thus constituting a barrier for the RES development in France at present. The currently undertaken task of creation of schemes in the regions, being preferential zones for the further exploitation of the natural resources, might bring clarification regarding the required future capacities and the locations of future RES installations (ERDF 2010); thus, preparing the ground for the required investments in the French grid. Still, stakeholders highlighted again the short remaining time and called for an urgent start regarding the reinforcement works in France (SER 2010).

Barrier 7.3 - Problems concerning grid expansion processes of existing electricity networks

The French distribution grid operator mentioned as one of the main problems for grid expansion the difficult task to anticipate future developments of the RES potential (ERDF 2010). It is only possible to limited extend to estimate the required future capacities and the exact location of RES installations. Under these circumstances, grid operators are still waiting for a comprehensive evaluation in the framework of the creation of preferential exploitation zones in the regions (schemes) (ERDF 2010), before making the investments. In addition, ERDF stressed that currently there are about 2 GW of PV connection applications per year, even though the governmental plan for the 2020 is only foreseeing a total development target of 5400 MW for PV until 2020 (ERDF 2010). Based on the national target, the distribution operator planned for an annual grid reinforcement of 500 MW, while being in 2010 confronted with a demand of over 2000 MW (ERDF 2010).
Possible options: Still, an independent, comprehensive analysis, anticipating future developments and thus capacity demands of RES in France, especially regarding wind and PV projects from private developers (SER 2010) and their location could be advised for a global approach to the current situation.

Barrier 7.4 - Problems concerning the development of a Trans-European Electricity Network

The development of a Trans-European Electricity Network is related to the transmission network in place. In this regard and as outlined above, the French transportation grid constitutes a major barrier for the further development of RES technologies; thus also being a problem for the development of a Trans-European Electricity Network. In addition, also for a European grid, there is no comprehensive plan yet developed, how to

reinforce the French national grid to also encompass European transmissions (ENERPLAN 2010, SER 2010).

In this regard, RTE as French TSO, stressed that large scale reinforcement of the French transportation grid wasn't required until now (RTE 2010): on the one hand, due to the fact that the French RES sector has not reached a size comparable to other countries (Germany, Spain); furthermore, due to natural resources (e.g. wind), which are not only available in a single region of the country (like for example wind in the Northern part of Germany), but available in the North, West as well as the South. With this natural potential evenly spread over France, the French (transportation) grid is facing different challenges than grids in Spain or Germany (RTE 2010).

France, being located in the heart of Western Europe, is playing though a vital role in the architecture of a future European grid, not at least due to its geographical location (ERDF 2010; RTE 2010; UFE 2010). The Iberian Peninsula but also the United Kingdom as well as Ireland will have to transport large shares of their capacities through interconnections with the French mainland.

As outlined above, the procedure for the construction of high tension lines is very heavy and long and is facing public opposition. Under these circumstances, a comprehensive analysis and exploration of required grid reinforcement works is advised, to obtain a clear picture of the current situation (SER 2010).

7.2.2 Best practice elements and indicators

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

7.3 Literature

Cassin (2010): Fabrice Cassin, CGR Legal. Interviews in Paris on 02.03.2010 and 12.03.2010

Enertrag (2010): Enertrag AG Etablissement France; Philippe Gouverneur. Interview on 10.03.2010

ENTSOE (2010): European Networks of Transmission System Operators for Electricity (ENTSOE), Ten Year Network Development Plan 2010-2020, Brussels

ERDF (2010) : Électricité Réseau Distribution France; Marc Bussieras; Interview on 20.04.2010

FEE (2010): Fédération Énergie Éolienne; Sonja Lioret. Interview in Paris on 02.03.2010

Fröding (2010): Véronique Fröding, Gide Loyrette Nouel. Interview on 11.03.2010

Gossement (2010): Arnaud Gossement, SELARL Huglo-Lepage & Associés Conseil. Interview in Paris on 02.03.2010

Hydro (2010): France Hydro-Électricité; Anne Penalba. Interview on 24.02.2010

Nordex (2010): Nordex France S.A.S.; Barbara Portailler. Interview in Paris on 02.03.2010

RTE (2010): Réseau de Transport d'Électricité (RTE); Brigitte Peyron. Interview on 05.05.2010

SER (2010): Syndicat des Énergies Renouvelables; Alexandre Courcambeck/ Wael Elamine/ Damien Mathon. Interviews in Paris on 01.03.2010, 02.03.2010, 12.03.2010 and 16.04.2010

UFE (2010): Union Française de l'Électricité; Anne Chenu/ Soizic Hémion/ Hélène Robert. Interview in Paris on 02.03.2010

8 Issue 8 Power Grid Issues

8.1 Introduction

The French power grid is first and foremost characterised by long delays during the grid connection procedures and a shortage of connection capacities in a number of French regions, limiting the development potential for RES. In addition, there is no priority feed-in rule in favour of RES technologies, but only a guaranteed access to the grid. Furthermore, no long term plan for comprehensive grid reinforcement of the entire French network has been developed.

8.2 Description of barriers & solutions

8.2.1 Detailed description of the barriers and solutions

Barrier 8.1 - Problems concerning grid connection

The question of grid connection is to be defined as one of the major barriers for the development of RES technologies in France. Still it is also to highlight that depending on the technology and the installed capacity, barriers for the various RES technologies might differ (Enertrag 2010; FEE 2010; Fröding 2010; Gossement 2010; SER 2010,):

For **wind power systems** (**onshore** as well as **offshore**):

- **Shortage of connection capacities:** In some regions in France, there is a lack of connection capacities for wind power projects. A further development for wind projects is not possible in these regions and urgent grid expansion works are required to overcome this situation (Enertrag 2010 ERDF 2010, Nordex 2010, SER/FEE 2010);

- **No cost sharing of grid connection costs possible:** the current legal framework for grid connection does not provide for the possibility to share costs for grid connection (particularly costs for connection point and tension step upgrade) among several wind projects, if these projects are not connected at the same time. Costs for grid reinforcement have to be borne by the first project to be connected – "first mover disadvantage". A retroactive transfer of costs to projects, which are connected at a later stage, using the reinforced grid, is forbidden by law (Enertrag 2010; Fröding 2010; Gossement 2010,; SER/FEE 2010,); These circumstances have to be qualified as barrier in the sense of this report, as a larger share of projects is pending due to the fact that developers are holding their grid connection application until another first developer has initiated his project; thus assuming the costs for the required grid reinforcement works (ERDF 2010, SER 2010).

The Grenelle II – draft law is envisaging in its § 25 a change of this barrier in the judicial framework, as it provides for a mutual share of costs among RES project (SER 2010, UFE 2010).

- **Delays during grid connection procedures:** Stakeholders highlighted the existing delays during the grid connection process as barrier for the development of RES in France. Delays in the process are particularly caused due to a missing delay for action of the grid operator between the signature of the financial and technical proposal (PTF – proposition technique et financière) and the connection agreement (convention de raccordement). No delay is set out by law to force a swift and timely action of the grid operator after the signature of the PTF. For wind installations an average delay of 8 months must be observed between the PTF and the connection agreement (convention de raccordement), and then 18 months between the PTF and the completed physical grid connection (Enertrag 2010; FEE 2010; SER 2010). RTE, being the French TSO, though stressed that delays are often caused by legally compulsory consultations and not by the intentional inactivity of the TSO (RTE 2010).

- **Capacities and connection points in small distribution grids:** Beside ERDF, as nationalised operator for the distribution grid, there are several smaller "non-nationalised operators" in the French grid system. Here no full transparency is available in regard to installed capacities respectively remaining connection capacities and connection points. Still this problem is only of minor importance as the grids of these operators are only responsible for a small share of the grid in comparison to the nationalised grid of ERDF (SER 2010; Wind Facts 2010).

For **PV power systems**:

- **Delays during grid connection procedures:** The before outlined barrier for wind power systems regarding delays during the grid connection procedures is also relevant for PV power systems. Here a delay of 6 to 12 months has been quantified by stakeholders, depending on the capacity of the installations (ENERPLAN 2010; SER 2010,). In addition, grid operators underestimated the development of photovoltaic systems in France, especially concerning small and medium PV installations; thus not introducing an administrative procedure that is able to process the high number of applications of the last years. The current administrative structure was not designed to encompass this high number of application and is causing decisive delays; consequently limiting further development of PV in France (SER 2010). In this regard, the DSO has called the current circumstances "violent" and clarified that the DSO is only hardly able to keep up, with this exceptional and unpredictable development (ERDF 2010).

- **Shortage of connection capacities:** As outlined above for wind, a shortage regarding the connection capacities in a number of regions is also to be identified as barrier for PV. Especially the region of "Bretagne" and regions in the South-East of France have a decisive shortage in this regard; thus limiting the diffusion of RES in these regions. Here comprehensive grid reinforcement is required to allow for further development of RES technologies. Still, stakeholders also highlighted that for the time being grid

reinforcement is only done in a punctual and selective way; thus, not addressing the nationwide problem in this regard in a comprehensive way (ENERPLAN 2010).

Barrier 8.2 - Problems concerning grid access

- **No priority grid access for RES:** The French Law No. 2000-108 of 10. February 2000 regarding the modernisation and the development of the public electricity service determines in its Article 2 II 2° that the grid connection and the grid access to the public transportation and distribution grid has to be assured in a non-discriminatory way. The rule provides thus only for an guaranteed and equitable grid access for all forms of electricity generation, being RES generated or conventionally produced electricity (coal, gas, nuclear); thus, satisfying only the minimum requirements of Article 16 II b of directive 2009/28/EC, which demands for a guaranteed or priority access of RES to the grid. Stakeholders highlighted this situation as a limiting factor for the further development and diffusion of RES in France (SER 2010), especially as even the guaranteed grid access is occasionally not respected by grid operators, arguing primarily with the security of the grid and thus justifying the temporary disconnection of RES installations (Cassin 2010).
  RTE, as French TSO, is opposing to this view. In their opinion, a guaranteed access is by no means of minor value than a priority access (RTE 2010). They argue that under a guaranteed access system, the producer is assured that his RES electricity production is collected by the grid operator, which is the most he could ask for (RTE 2010). Grid security aspects are additionally taken into consideration with the introduction of a newly introduced forecasting system for wind power installations in late November 2009. RTE stressed that this new system will allow for a two day forecast of wind conditions and production capacities from wind power installations, though allowing for a reliable prediction of capacities coming from this RES source (RTE 2010).
  Possible options: Priority access of RES generated electricity to the grid would foster the situation of these new forms of electricity generation, especially under the French circumstances with a share of 85% of electricity generated from nuclear sources.

- Additionally, the **procedure in case of grid overcharge** was identified by stakeholders as (temporary) barrier for the RES development (Cassin 2010). Still RTE as TSO was strongly opposing to this view.
  Some stakeholders outlined that electricity generating installations are disconnected from the grid for a temporary period of time, to relief the grid from the overcharge. They argued that under the current condition of RES having only guaranteed access to the grid, there is always the risk that RES installations are disconnected before any other conventional installation, especially with reference to the grid security (Cassin 2010).
  RTE (being the French transportation grid operator and responsible for the procedure) in contrast outlined that security of the grid, especially regarding a secured supply of energy to the country is of primary importance for the work of RTE. RTE opposed to the assumption that RES installations were disconnected firstly in case of overcharges (RTE 2010). It was argued that always the most efficient solution is chosen for disconnection to bring relief to the grid, being it a conventional or a RES installation (RTE 2010). RTE also highlighted that such situation are extremely rare, occurring at best every 5 years under the present electricity production conditions (RTE 2010).

Barrier 8.3 - Problems concerning TSOs and DSOs

For the time being, **no long-term plan for nationwide grid reinforcement** of the transportation as well as of the distribution grid has been established by the grid operators and approved by the French Government (ENERPLAN 2010; SER 2010). Grid reinforcement is at present only realised in a punctual and selective way, to solve regional shortages in the grid. The realisation of the national objectives for the development of RES 2020 in France however will require a comprehensive analysis and reinforcement of the entire existing French grid to encompass future developments (SER 2010).

In this regard, the Grenelle II – draft law sets out the obligation for grid operator to develop a long-term plan for the development and reinforcement of the grid. However, taking in consideration the required time to implement the Grenelle II provisions as well as the required time for grid reinforcement works, stakeholders doubted that a comprehensive grid reinforcement is realisable before 2020 (SER 2010).

Still, stakeholders consider the relation between the grid operators (TSOs and DSOs) and RES system operators generally as rather good in France (SER 2010). An institutionalised exchange between grid operators and grid user has been set up in form of the CURDE (Comité des Utilisateurs du Réseau de Distribution d'Électricité) for the distribution grid and the CURTE (Comité des Utilisateurs du Réseau de Transport d'Électricité) for the transportation grid. Both committees encompass the grid operators as well as producers and suppliers of RES energy (SER 2010).

8.2.2 Best practice elements and indicators

No.	Technology	Benchmark	Result
8.1		**Are the rules on cost sharing and bearing of grid connection objective, transparent and non-discriminatory ?**	
	wind onshore > 10 MW	Texts rather complicated, due to missing grid capacities costs are often too high (the FiT is set in a way to cover the costs of a simple standard connection only).	Average
8.2		**Is the denial of grid connection by TSOs and DSOs a common problem, constituting an important barrier for RES development?**	
	wind onshore > 10 MW	Denials of connection virtually do not exist.	Average
8.3		**Number of months for getting grid connection (considering also approval of grid connection)**	
	wind onshore > 10 MW		6 to 24
8.4		**Estimated connection costs in Euro (in case producer pays)**	
	wind onshore > 10 MW		500,000 to 1,5 Mio.

8.3 Literature

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9 Issue 9 Gas Network Issues

9.1 Introduction

The injection of biogas into the natural gas grid is still at its very beginning in France. No biogas plant feeds gas into the grid until now. The relevant political framework decisions for enabling biogas injection are expected in mid-2010.

The main gas grid operator in France is GrDF (Gaz Réseau Distribution France). GrDF was created in 2008, as a consequence of the EU Directive of 2003. Whilst the companies are formally separated, GrDF still belongs 100% to GDF-SUEZ. Moreover, the wide majority of the employees of GrDF are shared with ERDF, the power grid operator, which on its turn is a subsidiary of EDF. In other words, the gas distribution network in France is still de facto controlled by companies that are also heavily involved in sales and import of natural gas and in electricity generation, the natural competitors of biogas.

A working group composed amongst others of representatives of GDF-SUEZ, GrDF, universities and biogas industry associations has been established by the responsible ministry and has developed a report with recommendations, also taking up proposals from the relevant actors in the biogas sector. The recommendations are in general considered as positive by the biogas industry associations and are anticipated to be rather favourable to the development of biogas injection if applied as planned. The planned rules include a feed-in tariff making it equally attractive for biogas to be fed into the natural gas grid as to be converted into electricity. They are expected to be implemented in about a year's time (ATEE 2010; Méthéor 2010).

To date, about 40 biogas projects have asked for grid connection through GrDF and are waiting for the legal framework to be established in order to get the final permission to inject biogas into the grid. The criteria for grid connection have already been published by GrDF. However, these criteria are considered to be rather dissuasive for biogas plants (ATEE 2010; Méthéor 2010).

9.2 Description of barriers & solutions

9.2.1 Detailed description of the barriers and solutions

Barrier 9.1 – Problems related to the upgrading process

- GrDF requests a very low concentration of oxygen of 0.01%. This is only feasible with severe technical and financial efforts and seems exaggerated if compared to

other European countries where a concentration of oxygen of 0.5% or even higher is accepted for biogas injection (ATEE 2010; Méthéor 2010; Solagro 2009).

Possible solutions: Instead of requesting such a low oxygen value, it could make sense to request lower concentrations of substances that pose a danger in combination with oxygen, such as water or hydrosulphide. It is much easier to reduce the concentration of these substances than it is the case with oxygen (Solagro 2009).

Barrier 9.2 – Lack of information

As the exact procedures for biogas injection are not yet in place, the lack of information is not an issue in France at the moment.

Barrier 9.3 – Inefficient authorisation procedures

- Biogas stakeholders argue that the French ministry for energy (MEEDDM) requests exaggerated preliminary studies on the sanitary risks of biogas as a general prerequisite for injection. This question has in contrast never been an issue where natural gas is concerned. A first study on biogas has finally been published by the AFSSET (French agency of sanitary security for the environment and labour) in October 2008, giving a favourable opinion for the injection of certain types of biogas in the distribution grid. Due to missing data on its composition, the approval for the injection of other types of biogas such as sewage or landfill gas in the distribution and transport grid is still pending and will be subject to a further study by the AFSSET (ATEE 2010; Méthéor 2010; Solagro 2009; www.biogaz.atee.fr).

Barrier 9.4 – Insufficient cooperation of grid operators

- With a not overtly hostile but very cautious attitude towards biogas injection, GrDF has a tendency to set exaggerated requirements. The official justification is the wish to exclude all possible risks beforehand. This leads to a situation where new barriers tend to arise as soon as others have been solved and the establishment of a comprehensive framework making biogas injection possible is delayed (ATEE 2010; Méthéor 2010). However GrDF is working with other European gas grid operators to set common requirements for biogas injection in gas grids on a European level (ATEE 2010).

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?	No certificates/subsidies for green gas in place
9.2	Are the costs of grid connection for producers of gas from renewable energy sources objective, transparent and non-discriminatory?	N/A
9.3	Do transmission and distribution tariffs discriminate against gas from renewable energy sources?	N/A
9.4	Average time needed for grid connection approval (from application for grid connection to formal approval) in months (#).	N/A

9.3 Literature

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10 Issue 10 District Heating

Main findings

There is a very significant potential for renewable energy growth through district heating and cooling (DHC) networks in France. In European comparison, France has a very low share of DHC in the heating sector. At the same time the share of renewables within the existing DHC networks is very low, while the share of recovered energy (industrial waste heat and cogeneration) is higher, but could still be improved. Historically, the development of both DHC and cogeneration was hindered by the strong influence of the former power and gas monopolies. The policy framework has improved during the last few years, leading to some first results. As this report is being written, relevant legislative processes are ongoing. Their outcome will determine the pace with which the potential for renewables through DHC in France will be exploited.

10.1 Introduction

France is one of the European countries with the lowest penetration of district heating in the heating sector: considering the district heat share of the final energy consumption (net heat and electricity in the industrial, residential, and service sectors for the EU27, EFTA, Turkey and Croatia), 26 countries are clearly above France, and only six (Malta, Cyprus, Ireland, Greece, Spain and Italy) are behind. Taking into account the high demand for heating and cooling in France, there certainly is a high potential for increasing the DHC supplies.

Given the size of France, this low figure still corresponds to a significant number of DHC networks: currently, 414 district heating and 13 district cooling networks are operating in France, delivering more than 25 TWh of thermal energy per year (Ecoheat 2010). However, France is also the European country with the lowest share of combined heat and power after Serbia and France has an exceptionally high share of heat-only gas burners (Ecoheatcool 2006, Ecoheat 2010).

The low level of use of CHP is connected with the strong influence on the national energy policies exerted by the state owned electricity and gas companies during the last decades. For both of them, the expansion of DHC networks meant a loss of customers and cash-flow. A specific feature of the heating sector in France is the exceptionally high share of electric heaters, which have been proactively promoted by EDF for decades, with the intention to create a strong and predictable demand for the base load nuclear power plants, which cannot react to day/night variations in power demand. Even today, circa 75% (SNCU 2010) of the newly built areas are electrically heated.

Many of the DHC networks operating in France have been created after the first oil crisis within social housing projects that were being built at the time. The overall technical quality of several of these projects was low, with bad thermal insulations and no possibility for the tenants to control the heating input. This was not instrumental in creating a positive image of DHC in the French public. This, together with a large unawareness of the DHC sector, explains why DHC is still often associated with low income and high heat consumption levels. Many efforts are being made to improve the image of DHC in the French population (SNCU 2010).

However, the framework conditions started improving during the last five to eight years. The necessity of a strong promotion of energy savings and of renewable energies powerfully came on the political agenda in France. At the same time, though slowly, liberalisation and unbundling have been implemented also in France, creating a more positive atmosphere for smaller players and new entrants in the energy markets.

In this context, the government, in the Multi-annual Investment Plan for Heat (PPI 2009), and in declarations of the French Ministry of Energy and Environment J.L. Borloo, has set targets for:

- The expansion of DHC networks, with the aim of tripling the heat delivered from district heating networks (starting from a level of 2 million household-equivalents and 3,200 km of network in 2008)
- And the increase of the share to reach an average of 50% of R&RE sources in their fuel mix (vs. 29% in 2008). R&R means "renewables and recycled" and includes also municipal waste burning and industrial waste heat originally generated with fossil fuels.

These targets have been so far accompanied by measures that started to have some effect. At the moment of writing this report, several relevant policies are being revised and/or created within the "Grenelle II" process. The final outcome of the legislative process, and the ways of implementation of the policies, will largely determine if France will be able to exploit its potential for renewables through DHC during the next decade.

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

In short: starting from a very low level, some positive policies have been introduced, but had not yet the time to fully develop their impact. Further measures are being discussed and, if adopted, would improve the framework conditions.

Among the countries with significant absolute amounts of district heating, France is one of those with the lowest penetration of combined heat and power (CHP) and with high levels of use of fossil fuels (Euroheat 2009). The following table (Ecoheat4EU 2010) shows the share of different energy sources in district heating systems in France in 2008.

DHS fuel mix		Consumed or purchased energies			Heat production	
		Purchase units	Input except CHP GWh	Input for CHP GWh	Quantity (GWh)	Share / Total (%)
Fossil fuels	Coal	447 858 tons	2 868	303	2 759	10%
	Heavy fuel	196 801 tons	2 137	85	1 939	7%
	Heating oil	13 375 m^3	128	4	115	0%
	Natural gas	25 633 654 MWh pcs	7 543	15 472	13 521	49%
R&R Energies	Biomass	267 097 tons	658	142	687	3%
	Biogas	0 MWh pcs	0	0	0	0%
	Recycled gas	195 128 MWh pcs	128	59	138	1%
	Industrial heat	329 945 MWh	330	so	330	1%
	Waste valorisation	5 807 801 MWh	5 808	so	5 808	21%
	Geothermal	869 284 MWh	869	so	869	3%
Other energies	Electric boiler	29 804 MWh e	30	so	30	0%
	Heating pump	7 540 MWh e	38	so	38	0%
	External CHP	253 034 MWh	253	so	253	1%
	External DHS	865 634 MWh	866	so	866	3%
Sub-total fossil fuels		- -	12 676	15 865	18 333	67%
Sub-total R&R energies		- -	7 792	200	7 832	29%
Sub-total other energies		- -	1 187	0	1 187	4%
TOTAL			21 655	16 065	27 352	100%

67% of the heat production used in DHC systems in France (including CHP) comes from fossil fuels, most of it (49%) from natural gas. Of the 29% reported as "Renewable & Recycled" energies, the largest part comes from municipal waste. Biomass and geothermal only contribute a marginal 3% each. Unlike in countries like Austria, Germany, Denmark and Sweden, there are no demonstration projects for solar district heating in France.

Also the penetration of combined heat and power (CHP) within French district heating networks is significantly lower than in the European average. According to data originally delivered from the French district heating association SNCU (Ecoheat 2010), only half (209 of 427, i.e. slightly less than 50%) of the French district heating and cooling systems cover their heat production at least partially with CHP units. According to the same source, the total heat delivered to the district heating networks by the CHP units is 7,704 GWh (thermal), which is only 30% of the 25,256 GWh (thermal) energy deliveries of the DHC networks.

France is one of the countries with the best biomass and geothermal resources in continental Europe, and it also offers good conditions for solar district heating. Therefore, there certainly is a very significant potential for increasing the share of renewable energies in existing district heating networks. Some policy measures have been adopted to promote the increase of the "Renewable & Recycled" share of the energy used in DHC networks:

One of the most effective measure in the recent past has been **the reduced VAT rate for DHC networks with a high share (50% or more) of R&R** (SNCU 2010). Following the amendment of the EU VAT Directive a few years ago, France included district heating in the list of goods and services that may benefit of a reduced VAT rate. The reduced VAT rate is applied to the fixed element in the bills of the district heating users

(whatever the fuel mix), to eliminate the distortion in favour of gas and electric heating, which were already previously benefiting of a reduced VAT rate. However, for the variable elements, i.e. those related to the amounts of delivered heat, the reduced VAT rate only applies if the fuel mix consists of at least 50% R&R (renewables and recycled) energies. This kind of incentive is particularly interesting for local authorities, which often own or at least partially control the local DH network, because it makes their citizens and voters benefit from the investment necessary to increase the share of renewables in the DHC network. Currently, technical details e.g. the definition of a DHCS and the fuel mix calculation method are being drawn or revised (SNCU 2010).

The **white certificate scheme** did so far not have an important impact on DHC networks. For the trading period 2006-2009, the district heating sector was assigned a reduction target of 0.7 TWh. The larger DHC network operators were subject to the obligation of surrendering certificates at the end of the period. In principle, the scheme explicitly foresees investments in renewable energies as a way to fulfil the target for DHC operators. The white certificates are an important tool in energy savings and developing R&R energy use, but the credits granted for DHC investments are not high enough to be the sole or even the main reason for investing in R&R Energy (SNCU 2010).

The French district heating association SNCU performed a survey among managers and stakeholders during the first months of 2010 (Ecoheat 2010). This survey showed the following main perceived barriers to the increase of the share of renewables in the French DHC networks:

- The biomass supply chain should be strengthened. France disposes of large biomass resources from forestry and agriculture. However, these are markets with a strong policy influence. As long as significant uncertainties concerning the supply of the raw materials exist, it is difficult or prohibitive for a DHC operator to invest in a switch to biomass. It is therefore necessary to promote the creation of a stronger and predictable supply chain.

- Legal provisions forbid to burn certain types of wood for energy purposes, which can be burned in other European countries. This is for the instance the case for waste wood that has not, or little, to be treated (some pellets or furniture wood, for instance, that can be burned in Germany but not in France).

- The current method of calculation of the energy performance of buildings (2005 Thermal Regulation) is biased against district heating. For instance, a building served by a district heating system 100% based on renewable energies would be rated at a less attractive level than a building with an efficient individual gas heater (SNCU 2010).

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

The expansion of DHC networks and even more the initiation of new ones are long term investments, which typically require a strong and lasting political will of the local authorities. Whilst the political will at local level cannot be imposed from above, policy making at national level can create a regulatory framework that facilitates the creation and maintenance of this will.

These are the main barriers perceived by the French district heating operators:

- **Local authorities have too little powers for zoning.** Zoning is intended as the power of a local authority to determine that all new buildings in a specific area must satisfy their heating and/or cooling needs with the local DHC network, or at least be connected to the network. Like other network-based utilities, a new DHC network presents high upfront investment costs, but rather low operating costs. The financial feasibility of the investment depends on the economies of scale and thus on the expected volume of heat loads. The Law n° 80-531 of July 15th 1980 allowed zoning in principle. However, it was almost never applied (only one exception) because the procedures required by the law were excessively complex and not "user friendly" for the local authorities. A revision is currently ongoing under Grenelle II. Stakeholders expect a substantial simplification of the procedure for local authorities to impose zoning. For the growth of renewables it would be most suitable, if zoning would be allowed only if the fuel mix of the DHC network is largely based on renewables.

- Like in other EU Member States, DHC network operators complain that the implementation of the **greenhouse gases emission trading schemes (ETS)** has created a distortion against DHC and in favour of individual heating devices, which usually have a higher environmental impact. The reason is that only large emitters are subject to the cap which creates the basis for the ETS. Medium and large DHC operators belong to this group, whereas individual heating systems are free from the costs of the ETS.

- Furthermore, DHC operators perceive the fact that **social tariffs for low income energy users** are implemented for electricity and gas users, but may not be implemented for district heating users, as a distortion of competition. This reduced the popularity of district heating and thus also the incentive for local authorities to support the creation of new DHC networks, or the expansion of existing ones.

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
10.2	Are there policies to promote the initiation / expansion of DH networks?	Yes
10.3	Percentage present renewable share (see e.g. ECOHEATTOOL)	29%
10.4	Percentage CHP share (idem)	30%

10.3 Literature

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