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Wind Energy Integration in the Urban Environment

**WP3 Report
Administrative and legal barriers
France**

Intelligent Energy  Europe

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1.INTRODUCTION

Generally in Europe today, the legal and administrative framework concerning large-scale wind energy development is precisely defined.

However, various European manufacturers have recently introduced new kind of smaller wind turbines suitable for built-up areas, known as urban turbines (UT). Interest in installing these smaller wind turbines in urban areas is high, particularly amongst local authorities and city municipalities.

However, in France, as in most other European countries, the needed regulations, procedures and guidelines related to the integration of these small wind turbines in urban areas are not yet in place. This is hindering the implementation of pilot installations and larger scale deployment of small ‘urban’ wind technologies.

The aim of Work Package 3 of the WINEUR project, entitled “Legal and administrative aspects”, is to identify the different legal and administrative barriers in the UK, France and the Netherlands and suggest some solutions.

The present report is a country report focusing on France and covering the current legal and administrative framework, the legal and administrative barriers to urban wind and a suggested blue print for a procedure for planning permits for small wind turbines in France.

2.ADMINISTRATIVE AND PLANNING FRAMEWORK

2.1 NATIONAL PLANNING

2.1.1 POLICIES SUPPORTING WIND ENERGY

- **Ratification of the Kyoto Protocol**

In 1997, France ratified the Kyoto Protocol. This implies that its greenhouse gas emissions will have to stay stable until 2010, and then decrease. In order to achieve this renewable energies will have to be developed, in particular wind energy as France has the second highest wind energy potential in Europe after the UK.

- **Report n°3415 written by Members of Parliament Birraux and LeDéaut**

This text, submitted to the French Parliament and to the Senate in November 2001, presents a study, lead by the Office of Scientific and Technical Choices Evaluation, on the current state and perspectives of renewable energies. It recommends an improvement of the wind energy competitiveness, especially by increasing the turbines unitary rated power but also through the development of off-shore wind energy.

- **Report n°1153 written by Member of Parliament Poignant**

This report, submitted to the French Parliament by the Commission of Economic Affairs, Environment and Territory in October 2003, presents a list of measures likely to improve the standing of renewable energies. It suggests that it is necessary to redefine the energy tax system in order to make it more ecological friendly. In addition, the author mentions a reinforcement of the financial support for renewables, in particular an increase of the tax credit for the acquisition of renewable energy producing equipment up to 50%.

- **Feed-in tariff policy**

- Decree of March 13th 2003

The French Electricity Company (EDF) guarantees to buy the production of a decentralized installation for 15 years. The tariff calculations are based on the number of operating hours in full power (energy produced in a year divided by the rated power). From year one to five, this tariff is fixed at 10.4c€/kWh for less than 36 kW turbines.

2.1.2 LEGAL FRAMEWORK

- **European guideline 2001/77/CE, September 27th 2001**

This text deals with the promotion of electricity produced out of renewable energy sources, the government intends to increase it from 15% up to 21% of its total electricity production in 2010. An evaluation on the administrative and legal framework concerning wind turbines installation has been made, leading to concrete actions listed below.

- **Law on modernisation and development of public electricity service, January 2nd 2003**

This law specifies the electricity buying conditions for producers fulfilling the requirements necessary for the buying obligation. It also defines the technical characteristics for the producing installations. The Electricity Regulation Commission, the Ministry of Energy and the Ministry of Economic Affairs are in charge of these procedures. The decree voted on May 10th 2001 sets feed-in tariffs for wind energy.

- **Law on Town-Planning and Habitat, July 2nd 2003**

This law establishes a legal framework for wind turbines implantation as well as rules concerning the public consultation. It announces the creation of regional wind energy schemes. A chapter, named "Wind Turbines" and containing four articles, was added to the Environmental Code. The Town-Planning Code was also completed by an article.

- **Interdepartmental Bill, September 10th 2003**

This bill, signed by the Ministers of Equipment, Industry and Ecology, gives Prefects several guidelines for the application of the law on Town-Planning and Habitat voted on July 2nd 2003. Co-visibility, harmony and visual balance are part of the topics treated. State services are asked to promote wind energy development by providing to project-carriers early information on how to build up a construction permit application.

- **Program law fixing the orientation of the energy policy, July 13th 2005**

Through the voting of this law, France has set four main objectives:

- To contribute to the national energetic independence
- To guarantee a competitive price for energy
- To reduce the greenhouse gas emissions
- To make access to energy possible to every citizen

2.1.3 PROGRAMMES AND PLANS

- **EOLE 2005**

In 1996, the Minister of Industry launched a programme called « EOLE 2005 », which goal was to develop the wind energy sector. The main objective was to reach 500 MW of installed power by 2005. The French electricity company (EDF) guaranteed stable buyback prices for a period of 15 years for selected projects. Nowadays, France has got 800 MW of installed power.

- **Semi-annual investment planning on electricity production**

The article 6 of the “electric” law voted on February 10th 2000, mentions a semi-annual investments planning, which will become the concrete application of the national energy policy. It will draw guidelines to achieve the objectives fixed for 2010. The wind energy should have the most important progression, reaching 14000 MW of installed power for a production estimated between 20 and 35 TWh/year.

2.2 LOCAL AND REGIONAL PLANNING

2.2.1 REGULATIONS AND STANDARDS

- **Town-Planning**

According to the Law on Town-Planning and Habitat, July 2nd 2003, the Town-Planning document (“Plan Local d’Urbanisme”) lets cities decide whether they authorise wind turbines in their territories or not in urban areas. On one hand, if there is no explicit interdiction, wind energy projects could be authorised. On the other hand, the town-planning document should be revised to give clearer guidelines. However wind turbines, if not used for self consumption, are considered as general interest equipment, therefore they can benefit from a simplified revision procedure.

In some cities, another town-planning document is used: “Plan d’Occupation des Sols”. This documents lists every authorised equipment in the different zones. If wind turbines do not figure on that list, then they cannot be installed. Therefore a revision of this document may have to be done.

- **Noise pollution**

In the urban environment, laws are very strict concerning noise pollution. The following legal texts deal with neighbourhood noises:

- Law on noise pollution, December 31st 1992
- Decree n° 95-408, April 18th 1995
- Interdepartmental Bill, February 26th 1996

- **Grid connection**

In France, the grid connection for electricity producing installations is regulated by the following legal framework:

- Regulation 61400 published by the International Electrotechnical Commission in 2001.
- Decree of March 13th 2003 fixing the technical principles of connection to public electric networks for autonomous generating stations.
- Decree of March 27th 2003 setting the obligations imposed to energy producers that have a purchase obligation contract.
- Procedure of connection to networks inferior to 100 kV for decentralized electricity producing installations adopted on June 7th 2004.

For further information, the reader is invited to consult the report entitled "Grid Connection report" written by the WINEUR partners and that can be found in the project address: www.urban-wind.org.

- **Safety**

When installing a wind turbine on a rooftop, two main issues can jeopardize the safety of the persons and the properties : the electric connection, and the fact of working at height.

Electric connection

In France, the safety precautions concerning electric installations are listed in the following texts:

- **Regulation NF C 15-100**

The latest edition of this regulation was published in July 1st 2003. It details every safety and technical aspect for low voltage installations. The user will for example find a list of tools and equipment accepted by the current regulations and the electric company.

- **Promotelec Guide**

Promotelec is a non-lucrative association created in 1962 that promote safety and quality for electric installations. It gathers all the actors of the electric sector (electric companies, architects, users...). This guide sums up some safety precautions when realising electric works.

It is important to recall that some works during the grid connection phase is to be done by the user and not the electric company (EDF). He then becomes responsible for the safety of the persons involved in those works. That's why he must be well aware of all the safety measures and make his insurance company would cover the expenses in case of an accident during the works.

Works on rooftops

Urban wind turbines were designed to be installed on building rooftops. Even if those rooftops are often flat and relatively easy to access, some safety precautions must be respected. The French legal framework concerning works on rooftops is based on the following European guidelines:

- Guideline 89/391/CEE, June 12th 1989 on the improvement of the safety and health conditions of workers
- Guideline 92/57/CEE, June 24th 1992 on the minimum safety prescriptions for temporary and mobile workings
- Guideline 2001/45/CE, June 27th 2001 on the minimum safety prescriptions for the use of working equipment.

2.2.2 PERMIT SYSTEM

When installing a small turbine in an urban environment, the project-carrier has to achieve several administrative procedures. The paragraph below will show how to obtain the permits and licences needed. We will focus on the urban turbines power and size specificities.

- **Town Planning**

This paragraph sums up the different town-planning constraints concerning the implantation of wind turbines in an urban area, they are based on the current legal framework detailed above:

- The implantation of a wind turbine which height is inferior to 12 m does not need a construction permit.

→ **A declaration of work is necessary, but this issue is not clearly defined.**

- The height of an installation is defined as the one between the bottom of the tower and the top of the nacelle, blades are excluded.

→ **This definition is not clear concerning turbines on rooftops, is the height of the building counted ?**

- If the rated power installed is inferior to 2.5MW, no impact study nor public survey is needed.

→ **An impact notice is necessary.**

- The operator is financially responsible for the disassembly of the installation and the rehabilitation of the site.
- When the energy produced is destined to self consumption, the authority to be consulted concerning the construction permit (or the declaration of work) is the Mayor.
- When the energy produced is destined to be totally sold, this authority is the Prefect.
- The revision of a town-planning document leads to a public survey also known as the “Bouchardeau survey”.

Table 1 below summarises the documentation / surveys and studies needed for different size of wind turbine. Although urban wind turbines are only usually a few kilowatts they still have the same requirements as installations of 2.5 MW.

Table 1. Administrative steps towards a wind turbine installation

Height	< 12 m	12m < H < 50 m	> 50 m
Necessary documents		<ul style="list-style-type: none"> • Impact notice • Construction permit 	<ul style="list-style-type: none"> • Impact study • Construction permit • Public survey

- **Grid Connection**

According to the current legal framework on grid connection listed above, the procedure for private producers is composed of four main steps. These are listed below and illustrated in Figure 1.

1. Authorisation of exploiting application

For installations inferior to 4.5 MW, a declaration delivered by the DIDEDE (Energetic Markets Agency, under the authority of the Ministry of Industry) is required (decree 2000-877, September 7th 2000). This authorisation is also required for self-consumption installations.

DIDEDE

Télédoc : 172

61 Bd Vincent Auriol -
75703 Paris Cedex 13

Tél : 01 44 97 08 98 - Fax : 01 44 97 05 10

2. Purchase obligation certificate

The Electricity Control Division of the DRIRE (Industry Research and Environment Regional Agencies), represented by the Prefect is in charge of delivering the certificate of purchase obligation by the grid administration (decree March 27th 2003). Energy producers must send a file containing the following elements:

- If it is a physical person, a name and an address. If it is a moral person , its social status, its juridical form, the address of its corporate headquarters, its identity number (n°SIRET) and the position of the signer
- The location of the installation
- The primary energy source and technology used
- The installed power, the estimated production and operating hours at full power

3. Electric energy purchase contract

In order to obtain an electric energy purchase contract, producers have to apply to the Purchase Obligation Agency. This agency will indicate which tariff will be applied.

Agence Administration des Obligations d'Achat Sud Ouest

M. Jean-Claude GRAND

2 impasse du Ramier des Catalans – BP78516
31685 Toulouse cedex 6

4. Grid connection contract

The grid administrations (RTE and EDF-GDF SERVICES ARD), in collaboration with professional syndicates and the Electricity Regulation Commission, have created a specific procedure for the grid connection of decentralised energy producing installation (mentioned above).

Installation inferior to 10 MW are managed by EDF-GDF SERVICES ARD. All the applications are concentrated in the ARD agency of Tours.

The producer must fill in a general data sheet for the ARD to carry out an exploratory study. The public agency will then study the technical feasibility study of the grid connection, which will be at the agency's expenses, and produce a Technical and Financial Proposition (TFP). The producer will finally be financially responsible for the connection works.

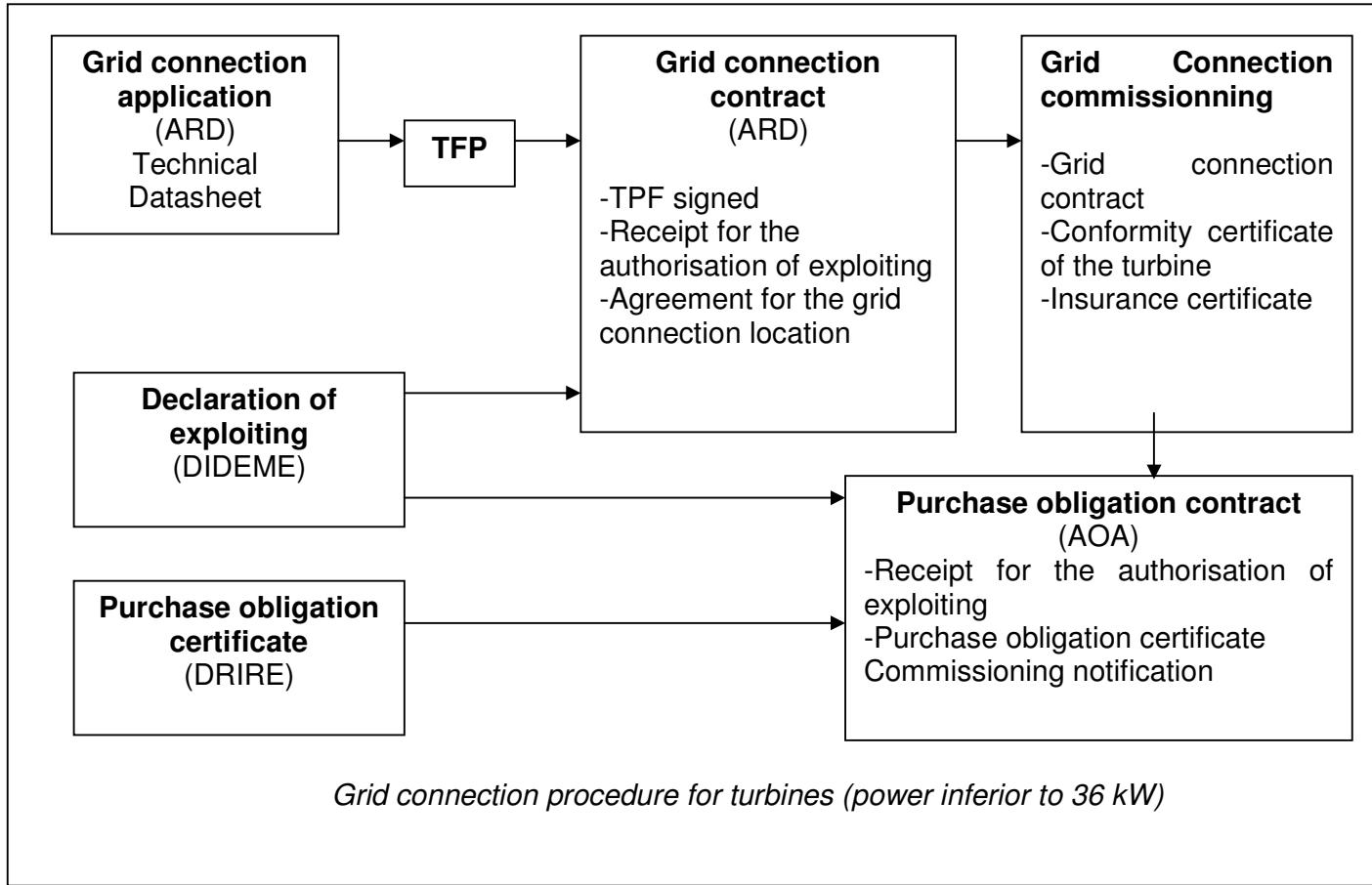
EDF GDF SERVICES - ARD Grand Centre

8 rue de Boutteville – BP 442

37 204 Tours Cedex 03

Tél : 02 47 80 25 67

Figure 1. Grid connection procedure for turbines under 36 kW



3. SUMMARY OF ADMINISTRATIVE AND PLANNING BARRIERS

3.1 TECHNICAL BARRIERS

Noise pollution

Laws on noise pollution state that urban noise is defined through its emergence, which is the sonorous difference between the usual noise of an area, measured in dB(A), and the one created by a specific disturbance.

Day time (7AM to 10PM): the emergence permitted is +5 dB(A)

Night time (10PM to 7 AM): the emergence permitted is +3dB(A)

It is important to point that most urban turbines, especially the ones with vertical axis, are almost silent and would therefore satisfy the criteria of the current regulations. Nonetheless, some precise noise measurements have to be done in each potential installation site in order to avoid any conflict with the residents.

At this point, the French legislation appears inadequate. Indeed, conditions for noise measurements are fixed by the regulation NFS 31-010, December 1996. Measurements must be done with a wind speed inferior to 5 m/s, at this speed most turbines don't rotate and the results won't show the reality of a turbine functioning at its full power. In the waiting of a new regulation, the Health and Environment service of the Regional Sanitary and Social Affairs Agency (DDASS) must be consulted.

Flicker

Stroboscopic flicker is a phenomenon created by the projected shadows of the turbine blades and is considered a public disturbance. It only occurs when the following parameters intervene:

- Position of the sun , depending on season and time
- Weather
- Urban environment (orientation, inclination of the façade...)
- Orientation of the rotor
- Wind conditions (rotation of the blades)
- Screens and masks (walls, vegetation...)

Only statistics programs can predict the probability of such a phenomenon, but we can assume that it is very infrequent. Currently, no regulation is applied concerning stroboscopic flicker in France.

3.2 ADMINISTRATIVE BARRIERS

Grid connection

One of the steps of the administrative grid connection procedure described above is the Authorisation of exploiting application addressed to the Energetic Markets Agencies (DIDEME). However, amongst the information needed by these agencies to complete the application, a specific establishment number is required : the SIRET number. The problem is that only companies can obtain a SIRET number, therefore a local community won't be able to achieve an Authorisation of exploiting application.

Property issues

Wind turbines can not overhang any neighbouring property without the authorisation of the owner. The overhanging of the public domain is submitted to an authorisation of public domain occupation.

3.3 ECONOMIC BARRIERS

Project financing

At the moment, several factors represent real barriers when it comes to finance a urban turbine project. First, the lack of a specific feed-in tariff combined with the high prices proposed by the constructors implies a very long time to reach a return on investment. This leads to the second barrier which is the lack of institutions offering subventions for urban turbine projects. There is currently no governmental agency that manages this sector.

4. STANDARDS FOR SMALL WIND TURBINES: STATE OF THE ART

Nowadays there is no specific standards concerning urban wind turbines in France, they have actually no legal status. Legally they can be considered as regular wind turbines with low height and power. However, the procedures of installation remain the same but some steps like the instruction of a building permit can be avoided due to the low power and height of urban turbines.

To date, only one urban turbine has been installed, in Equihen-Plage in Northern France. This particular project will be useful in order to enlighten the different standards needed concerning the installation of urban turbines in France.

The EED engineering office, in collaboration with the Nord Pas-de-Calais Environment and Energy Agency (ADEME) and the Nord Pas-de-Calais region, has installed a Windwall turbine on the rooftop of the residence Grand Air in Equihen-Plage in January 2006. This 6 kW installation should produce around 8MWh/year covering the collective lighting needs of the building. It was partly financed by the three partners. The cost of this installation reached 70 000€.

Being the first urban turbine ever installed on a building in France, this project has brought to light a lot of barriers on urban wind energy implantation. Concerning town-planning no particular application was done but the project took advantage of the close collaboration between the project-carrier and the different consulted authorities. As far as grid connection is concerned, some last minute expenses had to be made because the electricity company EDF required an additional safety system, which they provided. By now EED is planning on installing two more urban turbines in Northern France.

5. BLUE PRINT FOR PLANNING PERMITS

The following table shows the chronologic administrative procedure in order to install a wind turbine. It takes into account the specificities of urban turbines in terms of height and rated power. It is actually simpler and shorter than the procedure applied to regular big scale wind turbines.

Table 2. Blue Print for Planning Permit

Legal framework	Authority	Intervention	Conditions	Maximum deadline
Law on Town-Planning and Habitat, July 2 nd 2003	Mayor	Town-Planning documents revision	If the project is not authorised by the Town-Planning documents	Can be done during a City Council meeting
Law on Town-Planning and Habitat, July 2 nd 2003	Regional Environmental Agencies (DIREN)	Evaluation of the impact notice	Power < 2.5MW	Between 1 and 3 months
Civil aviation code	Territorial civil aviation services	Conformity to aeronautical and radio-electric submissiveness	Depending on the height of the turbine	
Decree of September 7 th 2000	Ministry of Industry (DIDEME)	Authorization of exploiting	Power < 4.5 MW	2 months
Decree of March 27 th 2003	Prefect (DRIRE)	Purchase obligation certificate	Power < 12 MW	2 months
Procedure of connection July 7 th 2004	Electric company (EDF ARD)	Grid connection contract	Voltage < 100 kV	Up to 10 months
Decree of July 29 th 1927	Prefect	Declaration of works of grid connection	Voltage < 63 kV	21 days

6. THE WAY FORWARD

As we explained before, there is currently no specific regulation for urban turbines installation. Most of the legal and administrative procedures listed above are based on power levels, some of them are based on the energy source.

Large scale wind power is very well defined by French legislation. However, small power generation is generally associated to photovoltaic energy, especially in urban areas and there is little if any detail relating to small wind turbines.

All this legal information can be found in the following webpage: www.legifrance.gouv.fr. This site displays all the legal French texts and is updated every day. Several juridical codes, useful for this particular report, can be consulted such as:

- The environmental code
- The town-planning code
- The health code

In order to improve the development of urban turbines in France, authorities should apply some particular measures. First, a precise legal status should be given to these machines and specific regulations and standards should follow according the needed importance to matters such as the security of the persons and the quality of the current injected to the grid. Then, a specific feed-in tariff should be allocated to the energy produced by urban turbines following the model applied to the photovoltaic energy in urban areas.