KIS-PIMS

" Knowledge Intensive Services in the Planning, Installation, Maintenance, and Scrapping services (PIMS) for renewable energy production systems "

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D1.4 BARRIERS TO KNOWLEDGE AND SKILLS TRANSFER

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EXECUTIVE SUMMARY

This report aims at identifying remaining barriers that SMEs of the renewable energy sector still face when willing to commercialize innovative services. Hence, some recommendations are formulated to improve support schemes targeting innovative SMEs.

The barriers identified are of five types:

1. technical: these are barriers that prevent SMEs from delivering their services at the required levels in terms of performance and time;
2. skills: these are barriers to the acquisition of the required knowledge to deliver appropriate services to the customers;
3. financial: these are barriers to the access to financial means to develop, industrialize and commercialize innovative services;
4. social: these are barriers set up by the citizens against the rapid deployment of renewable energy technologies;
5. regulatory: these are the national constraints given by top down decisions.

Once the main barriers identified, this report makes recommendation for improvement of the support schemes to RE service SMEs.

GLOSSARY

"EC" stands for the European Commission.

"KIS" stands for Knowledge Intensive Services. It is meant services involving science-based and technology-based innovations, process and business model innovations.

"PIMS" stands for Planning, Installation, Maintenance and Scrapping services.

"RE" stands for Renewable Energies, meaning the professional activity sector.

"RES" stands for Renewable Energy Sources. Main technologies under scrutiny during the KIS-PIMS project are solar, biomass, wind, small hydraulic and geothermal, without excluding the other ones.

"RET" stands for Renewable Energy Technologies. It is meant the technologies that enable the conversion of RES into usable energy (electricity, heat, cold), and optionally by-products.

"RTD" stands for Research and Technical Development and designate the related activities.

"SME" stands for Small and Medium size Enterprise, as defined by the European Commission (see http://ec.europa.eu/research/sme-techweb/pdf/sme-definition_en.pdf).

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1. INTRODUCTION

This report is Deliverable D1.4 of the KIS-PIMS project. It aims at **identifying the remaining barriers that still prevent knowledge and skills transfer towards PIMS ventures** in Austria, Finland and France.

Deliverables D1.1 and D1.2 of the KIS-PIMS project depicted the growth challenge faced by the players acting in services in the renewable energy sector, and their needs in terms of science & technologies, training & skills, business models and financial supports.

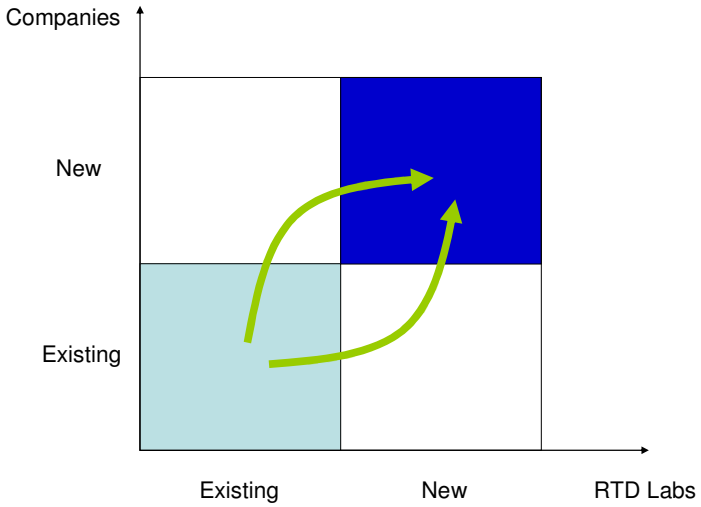
It is when matching SMEs' expressed needs with the knowledge & training supply (see Deliverable D1.3) that some gaps have been identified. In this Deliverable, these gaps are described in terms of barriers which prevent from meeting the expressed needs. Hence, Deliverable D1.5 will conclude on designing a new support scheme adapted to remove the barriers to the suitable development of services in the renewable energy sector.

D1.4 is the result of a work led by Vincent Morfouace from TECHNOFI with the support of Serge Galant, CEO of TECHNOFI, and Simone Landolina from the EUREC Agency. It includes contributions from DGE–PIPAME–ADEME[1], Michael Heidenreich with regards to their respective national specificities.

[1] Report « DIFFUSION DES NOUVELLES TECHNOLOGIES DE L'ENERGIE (NTE) DANS LE BATIMENT - Conclusions du groupe de travail interministériel », Direction Générale des Entreprises, Pôle Interministériel de Prospective et d'Anticipation des Mutations Economiques, Agence de l'Environnement et de la Maîtrise de l'Energie, October 2008.

2. SHORT TERM BARRIERS TO KNOWLEDGE AND SKILLS TRANSFER TO PIMS SME

Gaps are are either expected when SMEs' needs require non existing technologies (therefore new research & development activities to develop them) or when no SME has been formally identified to acquire and commercialize research and development results.



Knowledge transfer configurations

SMEs' needs which do not find technology developers today are recalled hereafter per barrier type. The same sorting is used to pinpoint technologies which have not yet found industrial adopters.

2.1. Technical barriers

The technical barriers are those which prevent service SMEs from accessing the appropriate technologies to meet their market needs, i.e. to deliver well tuned services to their customers.

2.1.1. In the Solar business

Barrier 1: High cost of the technologies leading to poor return on investment.

The initial investment cost per kWh produced with PV systems is the highest of all the energy production technologies. From the installer point of view, it is impossible to sell the

technology without State incentives. To a lower extent, solar thermal technologies for water heating or space heating need also incentives to penetrate the market, since the payback depend necessarily on fluctuating fossil fuel prices.

Existing measures:

In Austria - Since 1997 the Austrian PV market is increasingly dominated by grid-connected systems and significant market dynamics until 2003. Since then a slowdown took place due to change of the regulatory framework as it is published in the *twelfth edition of the international survey report on Trends in Photovoltaic Applications* [2] that:

"To date public support schemes for PV in Austria have been mainly characterized by discontinuity. The domestic market situation for PV remains unclear and unsatisfactory. The revision of the main framework, the Green Electricity Act, which was agreed during 2006, does not provide any substantial support for PV implementation and further complicates the situation.

During 2006 the decline of the domestic PV market continued further due to the absence of a federal incentive for PV market implementation. Following the all-time peak of 6,5 MW installed capacity in 2003, the annual PV market has been declining for three years in a row, dropping to 1,56 MW in 2006. This is the lowest figure since 2001. Late in 2006 a revised feed-in tariff scheme under the Green Electricity Act 2006 came into effect. The whole support scheme, including applications, is now managed by ÖMAG, a company established by the Austrian Ministry of Economy. However, as the first contracts were signed in November 2006, the new support scheme did not have a notable effect on the market in 2006. The amendments of the regulatory framework (Green Electricity Act) are analysed by the European institutions and are expected to come into force in summer 2009. "

For acting against this trend the regions and municipalities decided to launch promotion programs for financially promoting Photovoltaic as well as Solar-thermal applications (among other RET) such as the rebate programs of Lower Austria (see also http://www.noe.gv.at/[3]. These programs were originally introduced in the period 2004 to 2005 to overcome the lack of federal incentives after the cap of 15MWp Photovoltaic for federal support had been reached and for domestic solar-thermal applications. As an example table 1 provides a survey about promotion programs in eight selected municipalities in Lower Austria.

[2] TRENDS IN PHOTOVOLTAIC APPLICATIONS Survey report of selected IEA countries between 1992 and 2006, Report IEA-PVPS T1-16:2007, http://www.iea-pvps.org/products/download/rep1_16.pdf

[3]http://www.noe.gv.at/Bauen-Wohnen/Heizen-Energie/Solar-Waermepumpen-Photovoltaik-Foerderung/Solar_Waermepumpen_Photovoltaikanlagen_Ansuchen.html

Table 1: Funding rates of 8 municipalities in Lower Austria, Source: FHWN Wieselburg

Municipality		Purgstall		Scheibbs		Wieselburg		Mödling	
Program acronym		Ökologische Wohnbauförderung		Klimabündniszuschuss, Althaussanierung, Alternaitivenergieanlagen		Ökoförderung		Alternativenergie-förderung	
Power generation		**basis**	**maximum**	**basis**	**maximum**	**basis**	**maximum**	**basis**	**maximum**
Photovoltaic		€100 [1]	€ 300	€ 400 [6]	€ 800 [7]	20% [9]	700 €	30% [9]	1.100 €
Solar thermal systems (water for domestic use)			€ 220	0	0	20% [9]	700 €	30% [9]	1.100 €
Solar thermal systems (water for domestic use and room heating)			€ 220	300 [8]	400 [9]	20% [9]	700 €	30% [9]	1.100 €
Biomas boiler in new buildings		0				0	0 €		
Boiler change (fossil to biomass)			€ 300 [2]	€ 300		20% [10]	700 €	25% [9]	1.450 €
District heating interconnection fee				€ 300				25% [9]	1.450 €
Condension boiler (fossil)		n/a	n/a			0	0 €		
Heatpump (water for domestic use)		n/a	n/a	€ 300		0	0 €	25% [9]	725 €
Heatpump (water for domestic use and room heating)		n/a	n/a	€ 400				25% [9]	725 €
Buffer store			€ 75 [3]						
Insulation of buildings		**Basis**	**Maximal**	**Basis**	**Maximal**	**Basis**	**Maximal**	**Basis**	**Maximal**
Insulation of ceiling		€ 1,60; €2,20 [4]	€ 150; € 220 [4]	€ 2,50; € 3,50 [4]	€ 500; € 700 [4]	20% [10]	700 €	n/a	n/a
Insulation of walls		€ 2,20 [5]	€ 220	n/a	n/a			n/a	n/a
Insulation of cellar ceiling		n/a	n/a	n/a	n/a			n/a	n/a
Window change		n/a	n/a	n/a	n/a			n/a	n/a
Ecological building materials		n/a	n/a	n/a	n/a	n/a	n.b	n/a	n/a
Consulting		**Basis**	**Maximal**	**Basis**	**Maximal**	**Basis**	**Maximal**	**Basis**	**Maximal**
Energy advice service		n/a	n/a		€ 150	n/a	n/a	n/a	n/a
Energy performance certificate		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Municipality		Böheimkirchen		Zwettl		Korneuburg		Tullnerbach	
Program acronym		Energieeffizienz-zuschuss		Umwelt-förderungen		Solaranlagen- und Wärmepumpen-förderung		Klimaschutzförderung	
Power generation		**bais**	**maximum**	**basis**	**maximum**	**basis**	**maximum**	**basis**	**maximum**
Photovoltaic		€30 [14]	€ 360	20% (o.Montage)	730 €	€ 0	€ 400	10% [13]	727 €
Solar thermal systems (water for domestic use)		€30 [14]	€ 360	20% (o.Montage)	365 €	€ 40 pro m²	€ 400	0,1	450 €
Solar thermal systems (water for domestic use and room			€ 360	20% (o.Montage)	365 €	€ 40 pro m²	€ 400		
Biomas boiler in new buildings			250	3%	365 €			15%	150 €
Boiler change (fossil to biomass)			€ 250	3%	365 €			€ 150 [11]	€ 150 [11]
District heating interconnection fee					365 €				
Condension boiler (fossil)									
Heatpump (water for domestic use)			250	10%	220 €	ab 1.200	400-600 €	€ 150 [11]	€ 150 [11]
Heatpump (water for domestic use and room heating)			250	10%	220 €	ab 1.200	400-600 €		
Buffer store									
Insulation of buildings		**Basis**	**Maximal**	**Basis**	**Maximal**	**Basis**	**Maximal**		
Insulation of ceiling		€4-7 15)	€ 400	10%	365 €			30%	300 €
Insulation of walls		€ 2-6 [14]	400- 1200 €	n/a	n/a			0,15	450
Insulation of cellar ceiling				n/a	n/a				
Window change		€ 50 [14]	500	n/a	n/a				
Ecological building materials				n/a	n/a			n/a	n.b
Consulting		**Basis**	**Maximal**						
Energy advice service				n/a	n/a			12)	12)
Energy performance certificate				n/a	n/a			12)	12)

Legend:

1) Per kWp
2) For boiler and hot water storage, € 220 for boiler only
3) If the existing boiler is a wood biomass boiler
4) Per m2 if the heat transfer coefficient is <0,2 W/m²K; <0,15 W/m²K
5) Per m2 if heat transfer coefficient is <0,2
6) Up to 3 kWp
7) > 3 kWp
8) Collector area 4 and 15 m², at least 300 liter water storage
9) Flat collector – collector area at least 15 m², Vacuum collectors – collector area at least 12 m²
10) net costs
12) Prerequisite is an energy consultancy
13) feed in incentive for 5kWp bzw. 2 kWp per system
14) per m²
15) per m², 4 Euro = Insulation > = 24 cm, 7 Euro = Insulation >= 30cm

In France, the existing incentive schemes are made of:

- Feed-in tariff for PV electricity injected in the grid (30 c€/kWh or 40 c€/kWh for overseas territories), including a bonus when the PV system is integrated to the building architecture (55 c€/kWh in total)
- 50% Tax credit on certified equipments when installed by qualified professionals
- Regional or local add-on incentives, as depicted in the table built by ENERPLAN in ANNEX A
- Carbon credits for big solar energy producers

These measures, implemented since 2006, appeared sufficient to let the demand grow. However, such a support scheme will vanish when the learning curve will make investments more attractive.

Research programmes are funded at European and National scales which French research centres (CEA-INES, CNRS mainly) and industrial companies (Photowatt, Apollon Solar, Giordano Industries, etc…) participating to find pathways towards better cost effectiveness of the solar systems.

Barrier 2: Lack of equipment reliability

Today, solar systems distributors still face reluctance from house owners to trigger purchasing. They experience insufficient return on investment (for example with regards to maintenance costs when inverters crash at mid system life or when sanitary water tanks get calcified). They claim a guarantee of performance and full life cost of ownership commitments.

The reliability barrier has been well addressed in the recent years through research and development programmes at European, National and Regional scales. Quality labels delivered to the high performance equipments also contribute to the wide spread of the best technologies. But improvements are still expected by the O&M personnel.

Barrier 3: Absence of guarantee of performance

Improving on reliability will help overcome a lack of performance guarantee, which slows down the market penetration of solar applications. This barrier has to be removed in the future by appropriate progress on the technologies and by new tools given to the solar system designers (simulation, production forecasts, etc) and retailers (mask calculation, measurements, etc) that allow for guaranteeing the system performances.

Barrier 4: Time to certification of equipments

Part of the possible "guarantee of performance" will come from equipment performance certificates. Such certificates are already delivered, but the procedure to pass through is judged too long and the efforts demanded for administrative preparation by the professionals, so that they cannot always propose state-of-the-art technologies to their customers.

Barrier 5: Lack of coordination for the development of building integration standards

Solar systems designer and installers face difficulties to integrate PV systems to new and refurbished buildings due to limited availability of space and/or compatibility with standard building components.

Boosted by governmental incentives, efforts have been initiated in the field of R&D for building integration of PV and solar thermal systems. But the lack of coordination of all the projects leads to myriads of technical solutions which field operators have to acquire. Standardization and compatibility of the components are still strongly awaited by installers.

Barrier 6: Weakness of structural designs

Regarding refurbishment applications for roof-fitted solar systems, the building is rarely sized to receiving significant more weight on the roof. Therefore, it entails a big share of the solar roof market. Most of it is consequently limited to new buildings.

2.1.2. In the Wind business

Barrier 7: Weakness of structural designs

The above barrier 6 is also applicable to small wind turbine designed for building roof implementations.

Barrier 8: Lack of accuracy of the wind resource assessment

Evaluation of wind resource is the key factor for stating the viability of a wind farm project. Past years show that wind resource has been often overestimated, not only to make some more projects eligible but also due to a lack of accuracy in wind measurements. Measurements are often limited to 1 year, which is not necessarily representative of the whole life of the wind farm.

Barrier 9: Lack of accuracy of the energy production forecasts

In relation to the wind resource assessment, the day to day energy production forecast of a wind farm must be improved. Because wind energy is intermittent by nature and electricity networks must balance in real time production and demand, the accuracy of the prediction of electricity injected in the grid from day to day is critical. New tools are needed to face the bonus/penalty fee imposed by the current charging mechanisms.

Barrier 10: Accessibility of new implementation sites

The complexity of the sites suitable for wind farm implementation increases. This is true for land sites as well as for offshore plans. The installation and maintenance techniques must therefore be adapted to this increasing complexity, which will require further research.

Barrier 11: Inappropriate erecting techniques

Wind turbines unit power will soon approach 10 MW. At such power, hence such size, traditional erecting techniques are no longer appropriate. New methods have to be invented and validated.

2.1.3. In the Biomass business

Barrier 12: Underestimation of biomass fuel supply chains

Several biomass power plant owners face low return on investment or even worth, due to the fact that the biofuel supply has been insufficiently secured. Bad lessons learnt impact the replication potential of biomass power plants, although biomass is abundant in the three countries under scrutiny (Austria, Finland and France), especially wood. Moreover, biomass fuel sources are multiple. Fights for different end uses can occur in some cases, which would lead to price raises (e.g. between energy and food for crops, between biodiesel processing and incineration for organic wastes, etc).

Better organization of the supply chain is needed, together with better planning of the supply during plant operation at planning stage.

Barrier 13: Limited deployment of heating networks in some areas

Historical energy choices of the local authorities influence the renewal technology decision. Biomass power plants require fuel supply. Consequently, a natural barrier to its deployment relates to the logistic constraints. Most often collective biomass energy

installation are implemented in rural areas, and preferably where heating networks are already constructed (which is rare in France for instance).

Barrier 14: Debates around the environmental impact

Fuel supply of biomass power plants calls transport, which is fossil fuelled today. It is agreed that the CO_2 cycle of biomass energy is balanced in principle (CO_2 emitted by biomass power plants is not higher than CO_2 absorbed by the biomass during its lifetime). Yet, their balance does not exist any more when transport is included in the life cycle assessment. Clearly, green transport means are awaited in this area.

Secondly, biomass quality is an asset for downstream emissions of the power plants. Quality standards have been developed, but still need practical generalisation.

2.1.4. In the Hydro business

Much of the large scale hydropower resource within Europe has been exploited; the adverse environmental impact of large scale hydropower schemes makes such further developments unattractive. Nevertheless, the future looks rich in opportunities for PIMS ventures dealing with "small hydropower" (SHP, ie plants up 10MW of installed capacity).

However, several barriers slow down the deployment of small hydro power.

Barrier 15: Difficult environmental impact assessment

Small hydro power plant planning induces costly and difficult environmental impact analyses involving regulatory constraints (classified sites, fish species preservation, etc)

Barrier 16: Lack of accuracy of the resource assessment

Further improvement in hydrological assessment methods would greatly benefit the whole sector. This involves the development of low cost but efficient measurement techniques and hydrological site evaluation software techniques.

2.1.5. In the Geothermal business

Barrier 17: Lack of accuracy of the resource assessment

Exploration and the identification of sites suitable for geothermal sites requires improved tools for resource mapping, a better understanding of techniques to prolong the lifetime of existing boreholes and the re-interpretation of existing geophysical, geological and

geochemical data to identify patterns that suggest the presence of a good underground geothermal resource. Numerical models of geothermal bores must be improved to better predict the bores' long-term behaviour.

Regarding high temperature sites, corrosiveness of the hot source is also an issue against bore material behaviour.

Barrier 18: Deep drilling requires innovative technologies

Some interesting geothermal sources are located deeply underneath the Earth crust. Reaching more than 3000 metres requires new techniques. Some are still under development and need to reach demonstration and first market applications to show viability.

Barrier 19: No guarantee of performance of heat pumps

Recent improvements on the reliability and performances of heat pumps have led to a high growth market, both in new building applications and in retrofit of fossil fuelled heaters. However, customers are claiming guarantees of performance over the life time of the equipment that installers are unable to achieve. Performance certificates which have been implemented so far make a significant step forward, but have not allowed for the requested quality assurance reach all the end users so far.

2.1.6. Cross-cutting technical barriers

Barrier 20: Weaknesses of the electrical networks

Some renewable energy production projects face resistance to their authorization due to weaknesses of the local electricity grid. RES have demonstrated imperfections in the past, which generated quality defects in the power lines. Therefore, projects can be slowed down due to priority reinforcement of the electricity network.

Barrier 21: Management of myriads of power plants connected to the network

The rapid deployment of the RES connected to the electricity grid raises quality and demand vs production balancing issues, but also balancing management issues, relying on different possible electricity storage capacities. New software-based tools used by service providers are needed to help grid operators ensuring the highest electricity supply standards in time.

Barrier 22: Lack of experience with the insurance of RES power plants

New RES power plants open the door to new potential hazards, which insurance companies have not yet modelled. Therefore, their tariffs are surely not optimized, neither for the installer nor for the end user.

2.2. Skills barriers

European Institutions are aware of the importance of specialized training to foster the development of the renewable energy industry in Europe. The final text[4] of the Position of the European Parliament with respect to the above mentioned Renewable Energy Directive clearly affirms that *"Information and training gaps, especially in the heating and cooling sector, should be removed in order to encourage the deployment of energy from renewable sources"*.

The recently adopted European Directive on Renewable Energy contains a specific provision in the article 14(3) for Member States to *"ensure that* ***certification schemes or*** *equivalent* ***qualification schemes*** *become or are available* ***by 31 December 2012*** *for* ***installers of small-scale biomass boilers and stoves, solar photovoltaic and solar thermal systems, shallow geothermal systems and heat pumps****"*.

Qualification needs for the personnel have been well defined for each of the PIMS services (see D1.2 section 1.2). However, barriers may prevent from achieving the above targets.

Barrier 23: A lack of trainers and consequently of quality education and training classes

Training needs have been identified, but training programmes lack skilled trainers. For instance in the wind energy sector, wind farm planning requires a rare combination of skills, which have been acquired mostly inside the companies dealing with wind energy.

Barrier 24: Rapid evolution of the technologies

Technology performances are increasing very fast, as well as the number of equipment suppliers. Retailers and installers face difficulties to keep at the state-of-the-art of knowledge. Employers meet training management problems to upgrade skills of their operators.

Barrier 25: Multidisciplinary technologies and cross-sectoral skills

[4] Position P6_TC1-COD(2008)0016 of the European Parliament adopted at first reading on 17 December 2008 with a view to the adoption of Directive No .../2009/EC of the European Parliament and of the Council on the promotion of the use of energy from renewable sources

Most of the education programmes in the energy sector lead to some specialization of the students. Consequently, electricians will face problems to understand mechanicians, thermicians, geologists or biologists. This segmentation of disciplines leads to lacks of interoperability of the staff in RE enterprises, which is even more visible in the service sector.

RES require both technology polyvalence and team work to cope with field issues.

Barrier 26: Reluctance to acquire the required competences to operate onsite power plants.

In France, industrial managers show reluctance to acquire the competences needed to implement and operate dedicated power plants or waste-to-energy units. They claim subcontracted services having the required expertise. Such services remain scarce today, so that investment decisions in RET are postponed or given up.

2.3. Financial barriers

Barrier 27: Investment level is high and return on investment often hazardous

Like all the energy production technologies, RET investments are significant whichever the customer category. Therefore financial schemes must be found to trigger investment decisions.

As far as the production of heat is concerned, a significant barrier to the deployment of bioheat is represented by the high investment cost associated with the conversion installations of biomass into bioheat and the costs for dismantling existing heating systems. These investment levels are still much higher than fossil fuel based systems. This is mainly due to the lower calorific value of biomass (larger units needed for the same thermal power output), to the need of larger biomass storage capacities, to the worst economy of scale compared to fossil systems, and to the installation costs of the system.

In Austria, Photovoltaic lacks favourable economic conditions. This technology strongly depends on the regulatory incentives decided by each country or region.

Barrier 28: Investment decisions depend on the fossil fuel price

European citizens have invested in the past in either fossil fuel power units or electrical ones. In both cases, when time for change has come, the investment decision is comparatively based on the current situation. When fossil fuel market price is low, no RET technology can compete against traditional fossil fuel systems. Therefore, RET retailers meet difficulties in educating their clients to adjust to the future trends. Their exit strategy has often to be based on customized financing schemes.

2.4. Social barriers

Social and organisational factors as well as psychological elements have become increasingly important to encompass the dimension of the sustainability issue. Thus sustainable paths can only result both from changes in investment/consumption practices as well as from changes in organisational/institutional structures and social behaviours.

RET project planners have to deal with social and environmental impacts assessment (the second one being often a consequence of the first one). For big power units, the final decision goes to the local authorities, who are very sensitive to the social climate.

Barrier 29: Lobbying

In Austria, Wind power is facing opposition from various interest groups such as hunting and home owner associations. In France, wind parks have been damaged by opposed people to their landscape visual impact.

Hydro and solar power plants project can be hindered by grid connection fees imposed by local monopolistic electric network operators or by organizations delegated for the protection of remarkable and classified sites.

Barrier 30: Public health concerns

Biomass fuelled power plants are especially targeted by emission issues, whichever their physical state: gaseous, liquid & solid or acoustic, or even smelly. All these potential environmental impacts require prior consultation and education of local populations before implementation.

Barrier 31: Bad sorting quality entails the potential of organic municipal wastes valorisation

European countries face high discrepancies in the potential for valorisation of municipal wastes. Nordic countries, especially Sweden, have made significant progress towards ethic social behaviours in this field, but most of the European countries lag far behind.

2.5. Regulatory barriers

Policy measures have to be part of integrated strategies using policy instruments and combined with economic and social added value for the players. As the assessment of many national/European energy efficiency programmes has demonstrated, the

integration of key members of the target groups into the design and implementation of programmes increases the acceptance and effectiveness of the measures.

Barrier 32: Necessity of better regulations

Energy prices are such a strategic issue at national level that regulators are in charge to monitor the regulated companies so to allow a fair and transparent access to the networks. Regulations are made of rules that can change over time, and must be appraised before entering energy markets.

Hence in Austria, incentives to develop the internal PV and solar thermal markets are too low to allow for an acceptable return on investment in most of the cases.

3. RECOMMENDATIONS TO REMOVE BARRIERS PREVENTING FROM MEETING THE 2020 TARGETS

3.1. Recommendations to overcome technical barriers

The removal of technical barriers lies mainly in the partnership building for various types of joint activities like:

- Research and development collaborative or cooperative projects
- Industrial partnerships
- Manufacturing outsourcing
- Distribution and supply partnerships

However, it can reveal difficult to really investigate the risk related to the potential competition and to find the appropriate partners when sought competences are rare or abroad.

Recommendation:

SMEs need access to networks that have the required connections to find out the right competences. Networks have been developed by innovation intermediaries, which SMEs should use more to accelerate. They also need technical expertise to confirm the viability of their technical proposition.

By establishing long term collaborations with European research centres, SMEs could find important answers to several of the technological barriers that still prevent the growth of service businesses in the renewable energy industry. Through public-private partnerships with renewable energy research centres, SMEs could achieve one or more of the following:

- reduce costs at the component and/or system level;
- increase the overall performance of the systems, including aspects of increased and harmonised component lifetimes, reduce losses and maintain performance levels throughout system life;
- improve the functionality of the systems, so adding value to the electricity, heating or cooling produced;
- improve the aesthetics of systems to be integrated in the built environment and in the surrounding landscape, to win public support for large-scale deployment.

3.2. Recommendations to overcome skills barriers

Recommendation:

Barriers related to skills acquisition by SMEs can be removed by an accurate evaluation of the needs growth in time, similarly to a market study extended by a business plan, and a training supply relying on private or public funding. These programmes must be flexible enough to allow for adaptation to the evolution of the technologies and to cross technology competences required for a systemic approach of the solutions. Training of trainers by experimented professionals will be also required. The existing education and training offer has to be enlarged through the development of new B2B services.

More efforts are essential in education. This includes not only specific studies for renewable energy as a course topic in itself, but more focus on renewable energy topics being included in electrical engineering, mechanical engineering, physics and other traditional technical studies. Post graduate studies, like the Renewable Energy master offered by the EUREC Agency, are an essential education route, not only for young graduates but also to allow retraining to meet the rapidly growing need for skilled personnel in the renewable energy industry. Research training is also an excellent grounding for a career in this rapidly developing sector.

3.3. Recommendations to overcome financial barriers

The main financial concern in the renewable energy sector is the initial investment and its payback time. SMEs and their customers often lack investment capability, so that financial supports are required in both cases.

For SMEs willing to offer innovative services, the question is to find funding sources to develop and market the new concept. This is especially the case when technology goes with the service delivery. Moreover, accessing development funds requires efforts to prepare a proposal with a probability of success under 25%.

The access to financing sources is above all an issue for micro and very small companies, and particularly when implementing innovative projects and ventures. One of the main reasons for this situation is the increased risk adverse behaviour of the banking sector and the conditions laid down by banks and lenders which are not feasible to be sustained by small companies. Therefore, new financial instruments combined with grant programmes have to be offered, in particular for SMEs and for innovative, future oriented RE projects.

Recommendation:

A key tool for catalysing investment in RET in many countries is creating price support mechanisms that provide stability and predictability over the medium and long term.

Such mechanisms reduce the risk premium in the cost of capital, which will increase the amount of investment in RE and lower the price that consumers have to pay. Policy interventions are taking a range of forms including market-based quota mechanisms such as carbon emissions trading and renewable obligation arrangements, and fixed-price schemes such as the feed-in laws in Germany and Spain.

Recommendation:

Many SMEs need external expertise to help them prepare competitive proposals at low cost for them. Funding at least partly this external expertise by public funds is expected to be of high added value.

For customers willing to acquire RET, the question is to access loans or other financial facility which will allow for realizing the investment.

Recommendation:

New clever business models must be developed, in which the customers have minimized initial cash out, and the retailer bears the bank deal for the initial purchases.

3.4. Recommendations to overcome social barriers

Social barriers are very often related to education. It is a project management issue.

Recommendation:

Although the social barrier is probably the most difficult to overcome, it is believed that innovation management techniques can truly address barriers and motivate people to change when RET are at stake.

The European Union should continue to support well-designed awareness initiatives to enhance citizens' confidence in RET. Initiatives such as the EU Sustainable Energy Week, where the KIS-PIMS project was also presented, are very effective in illustrating on one side the rewards that citizens can reap from the adoption of RET, and on the other side the importance of informing many different parts of the civil society on the critical role played by PIMS services for the deployment of RET.

While the public awareness for photovoltaics and biomass technologies has already reached acceptable levels, it is necessary to increase the awareness of end consumers about solar thermal and geothermal technologies and the possibility of their integration in buildings.

A decisive role in the market is played by professional groups such as architects, planners and installers to which the KIS-PIMS project is addressed, who are the interface between

end consumers and industry. These professionals often determine, or have a strong influence on, the end consumers' choice about heating systems.

3.5. Recommendations to overcome regulatory barriers

It is well known in the RE sector that business models strongly depend on the regulatory framework of each Member State. Hence, winning business models on the long run are those which take care of regulation dependence.

Recommendation:

Service SMEs should rely on experts having an overview of the evolving picture for the energy sector to detect how they have to tune their business proposition to existing and future regulation schemes.

Furthermore, the concrete type of support needed to foster the growth of innovative service SMEs in the renewable energy sector, depends very much on the national context and the existence of regulatory provisions which foster the deployment of RET and consequently also the actual content of regional development policies. Hence, policies that support best regional innovation development need to be designed suitably to the environmental and economic conditions of the regions and have to derive from the necessities of the main regional actors (research/industry).

To achieve by 2020 the targets set out by the recent European Directive on the promotion of the use of energy from renewable sources, the **effects of existing incentives and regulatory instruments must be monitored critically and intensified where appropriate**. New incentive mechanisms shall be implemented at Member State level, taking into account a more efficient integration into the grid of renewable electricity and the deployment of RET in rental housing and in non-residential buildings. The foundation underpinning all efforts, however, must be set by **providing effective incentives for substantially increase the demand for innovative renewable energy services.**

ANNEX A: REGIONAL AND LOCAL INCENTIVES 2009 FOR SOLAR ENERGY IN FRANCE

ENERPLAN

Aides régionales et locales 2009 pour l'énergie solaire, en complément du crédit d'impôt de 50%

Dernière mise à jour 13 février 2009

Liste non exhaustive – Informations susceptibles d'être modifiées
Données non contractuelles. Enerplan ne pourra être tenu responsable en cas d'information erronée.
Vérifier auprès de votre Espace Info Energie, du conseil régional ou de la collectivité locale

	CESI	SSC	ECS Collective	Photovoltaïque	Gestion des dossiers et contacts
Alsace	Région : aide forfaitaire de **400 € sur la main d'oeuvre** Collectivités : + Beblenheim, Cté de Com de l'Uffried : **100 €** + Entzheim, Eschau, Scherwiller : **150 €** + Plobsheim : **170 €** + Cté de Com du pays de Wissembourg, Niederbronn-les-bains, Rixheim, Zillisheim : **200 €** + Riedisheim : **225 €** (50% aide Alsace) + Schiltigheim, Illkirsh, Haguenau, Cté Urbaine de Strasbourg : **300 €** + Cté d'Agglo de Colmar : **450 €** + Kaysersberg : 10% (maxi **450 €**) + Mulhouse : **15%** (dans l'existant) Fournisseurs d'énergie : + Gaz de Strasbourg : **20€/m² + 10€/m²** + Elec de Strasbourg : **400 €** + Vialis : **200 €**	Région : aide forfaitaire de **400 € sur la main d'oeuvre**	**Production > 450 kWh/m²** **Coût éligible maxi 1000 €/m² capteur** Secteur public, associatif, social et habitat collectif privé) : **15% ADEME et 25% Région** Gîtes, chambres d'hôtes et campings privés : **15% ADEME et 15 ou 25% Région** (si non bénéficiaire Crédit d'impôt) Secteur agricole : **15%** ADEME et **20%** Région Secteur concurrentiel : **20%** Région	Particuliers : Pas d'aide + Collectivités : + Scherwiller : **150 €** + Kaysersberg : **10%** (max 1000€) + Mulhouse : **15%** (dans l'existant) Collectif : **Raccordé au réseau** Secteur public, associatif, social, habitat collectif privé, gîtes et chambre d'hôtes, secteur agricole, secteur concurrentiel : Appel à projets à partir du premier trimestre et pendant toute l'année 2009 Aide Région : **1,2 €/Wc** (maxi 20.000 €) **Sites isolés : 25 %** ADEME (plafonnés à 4 €/Wc) **+ 25%** Région Alsace	Gestion de la Région avec ses relais Région Alsace Service Environnement 03 88 15 69 17 ADEME Alsace : 03 88 15 46 46 www.energivie.fr
Aquitaine	Région : **Prêt bonifié** (réduction de 2% des intérêts d'emprunts) plafonnée à 500 € Collectivités : - CG 64 : **200 €** (sur main d'oeuvre) - Cté de Com de Soule-Xiberoa : **300€** - Ville de Libourne : **300 €** (2 à 7 m²) - Cté de Communes de Lacq : **700 à 900 €**	Région : **Prêt bonifié** (réduction de 2% des intérêts d'emprunts) sur résidence principale seulement, plafond 1500 € Collectivités : - Cté de Communes de Lacq : **600 à 700 €**	**Parité région + ADEME** Secteur non concurrentiel : Coût du système solaire hors appoint plafonné à **1,75 €/kWh produit / an** Secteur concurrentiel : Coût du système solaire hors appoint diminué des économies d'exploitation engendrées pendant les 5 premières années de vie du système plafonné à **1,75 €/kWh produit / an**	Particuliers : **Prêt bonifié** (réduction de 2% des intérêts d'emprunts) sur résidence principale seulement, plafond 2500€ + Cté de Communes de Lacq : **500 €** en plus d'une install ST Collectif : (hors secteur agricole) *Appel à projets sous conditions* - Secteur non-concurrentiel : **2,4 €/Wc** (entre 5 et 40kWc) - Secteur concurrentiel : **2,4 €/Wc** (entre 10 et 100kWc)	Gestion de l'ADEME Région Service de l'Environnement : 05 57 57 84 04 ADEME Aquitaine : 05 56 33 80 00

	CESI	SSC	ECS Collective	Photovoltaïque	Gestion des dossiers et contacts
Auvergne	Chèque Région : **460 €** sur la main d'œuvre (pour une installation < 7 m²) (majorée de 500€ sous condition de ressources) Collectivités : + CG Cantal et Haute-Loire : **460€** + CG Allier et Puy de Dôme - 345 € de 2-3 m² - 460 € de 3à 5 m² - 575 € de 5 à 7 m²	Chèque Région : **950 €** sur la main d'œuvre (pour une installation < 20 m²) (majorée de 500€ sous condition de ressources) Collectivités : + CG Cantal et Haute-Loire : **950€** + CG Allier et Puy de Dôme : **950€**	**Parité région + ADEME + Départements** Part région plafonnée à 25 % du montant total HT de l'investissement (fourniture et main d'œuvre) L'aide est plafonnée à 600 €/m² de capteur, tous financeurs confondus + Collectivités : - CG Haute-Loire : 10% du montant plafonné à **160 €/m²** - CG Allier et Cantal : **200 €/m²** - CG Puy de Dôme : **160 €/m²**	Particuliers : **Aucune aide** + Collectivités : CG Allier : 20% plafonné à **2€/Wc** Collectif : **Aucune aide**	Particuliers : EIE gèrent et assemblent les dossiers et transmet à la Région Collectif : gestion commune ADEME-Région Région Service Environnement 04 73 31 85 85 ADEME Auvergne 04 73 31 52 80
Basse-Normandie	Région : 40 % de la part de l'installation non éligible au crédit d'impôt plafonné à **700 €** Collectivités : - Caen : **300 €** sur main d'oeuvre	Région : 40 % de la part de l'installation non éligible au crédit d'impôt plafonné à **1000 €**	ADEME+Région en parité : 40% du montant de l'investissement (main d'oeuvre et matériel) plafonné à **350 € HT/ m²**	Particuliers : 40 % de la part de l'installation non éligible au crédit d'impôt plafonné à **700 €** Collectif : **2,5 €/Wc** plafonné à 30% HT et à 3kWc	Gestion de la Région Région Mission Environnement 02 31 06 98 98 ADEME Basse-Normandie 02 31 46 81 00
Bourgogne	Région : Forfait de **1200 €** (entre 2 et 7m² de panneaux) Collectivités : + CG Saône-et-Loire : 300 € + Auxerre : 100 €/m² (maxi 500 €) + Beaune : - 2 à 3 m² : 450 € - 3 à 5 m² : 600 € - 5 à 7 m² et > : 750 € + Chalon-sur-Saône : 100 €/m² + Gevrey-Chambertin: 400 € + Fontaine-lès-Dijon : - 2 à 3 m² : 450 €	Région : **2000 €** (capteurs plans >10m², sous vide > 6 m²) Collectivités : + CG Saône-et-Loire : 500 € (capteurs plans >10m², sous vide > 6 m²) + Auxerre : 100 €/m² (maxi 1500 €) + Beaune : - 2 à 3 m² : 450 € - 3 à 5 m² : 600 € - 5 à 7 m² et > : 750 € + Chalon-sur-Saône : 100 €/m² + Gevrey-Chambertin: 500 €	**ADEME + Région :** Bailleurs sociaux, collectivités, associations : 60% plafonné à 600 €/m² de surface d'entrée de capteurs Secteur concurrentiel : 40% à 50% (PME) plafonné à 600 €/m² de surface d'entrée de capteurs + Collectivités : - CG 71 : 10% (pour tout type de maître d'œuvre)	Particuliers : **1€/Wc** (< 3 kWc) + Collectivités : - CG Saône-et-Loire : 700 € - Auxerre : 200 €/m² (maxi 1000€) - Beaune : - 2 à 3 m² : 450 € - 3 à 5 m² : 600 € - 5 à 7 m² et > : 750 € - Longvic : 1 € / kWh sur la base de 1 000 kWh / kWc installé - maxi 800 € - Chalon Sur Saône : 200 € / m² (maxi 3 500 €) - Cluny : 100 €	Particuliers : Région Collectif : Gestion commune ADEME-Région Région Service Environnement 03 80 44 33 00 ADEME Bourgogne 03 80 76 89 76

	- 3 à 5 m² : 600 € - 5 à 7 m² : 740 € + Longvic : 400 € + St Apollinaire : 400 € +Semur-en-Auxois «Lotissement Mont-Drejet III» : 1200 € +Sennecey-lès-Dijon : 4 % du matériel, plafonné à 500 € + Talant : 400 € + Chalon Sur Saône : 200 €/m² (maxi 2000 €) + Cluny : 100€ + Le Breuil : 200 € (limité à 10 opérations/an ; CESI & SSC confondus) + Moroges : 150€	+ Fontaine-lès-Dijon : 740 € + 260 € si intégration + Longvic : 600 € + 200 € si intégré bâti + St Apollinaire : 500 € +Semur-en-Auxois «Lotissement Mont-Drejet III» : 2000 € +Sennecey-lès-Dijon : 4 % du matériel, plafonné à 500 € +Talant : 800 € + Chalon Sur Saône : 200 €/m² (maxi 3500 €) + Cluny : 100 € + Le Breuil : 200 € (limité à 10 opérations/an ; CESI & SSC confondus) + Moroges : 300€		- Moroges : 300 € Collectif : Bailleurs sociaux, collectivités, associations : **50% plafonné à 4 €/Wc** (maxi : 40 kWc) Secteur concurrentiel : **40% à 50%** (PME) **plafonné à 2€/Wc** (maxi 50 kWc)	
Bretagne	Région : *(critère de non imposition)* - 305 € de 2 à 3 m² - 460 € de 3 à 5 m² - 610 € de 5 à 7 m² Collectivités : - CG Côtes-d'Armor : 500 € - Pays de Lorient : 60 €/m² - Ville de Lorient : 60 €/m² - Locquirec, St Domineuc : 300 € - Plougastel-Daoulas, Guilers : 50€/m² dans la limite de 6m²	Région : *(critère de non imposition)* Aide de **1150€ + 760 € si intégration** Collectivités : - CG Côtes-d'Armor : 1000 € - Pays de Lorient : 60 €/m² - Ville de Lorient : 600 € - Locquirec, St Domineuc : 300 € - Plougastel-Daoulas, Guilers : 50€/m² dans la limite de 20m²	**ADEME et Région en parité :** Secteur public : aide maximale de 60% (30%+30%) plafonnée à 400€/m² Secteur privé : aide maximale de 40% (20%+20%) plafonnée à 267€/m²	Particuliers : **aucune aide** + Collectivités : - CG Côtes-d'Armor : 20% du montant Collectif : *Appel à projets*	Particuliers : EIE gèrent et assemblent les dossiers et transmet à la Région Collectif : gestion commune ADEME-Région Région Service Environnement 02 99 27 10 10 ADEME Bretagne 02 99 85 87 00

	CESI	SSC	ECS Collective	Photovoltaïque	Gestion des dossiers et contacts
Centre	Région : **Prêt à taux 0%** d'un montant maxi de 6000 € Collectivités : - CG Cher : - 400 € de 2 à 3 m² - 450 € de 3 à 5 m² - 500 € de 5 à 7 m² - Ville de Bourges (18) : - 690 € de 2 à 3 m² - 920 € de 3 à 5 m² - 1150 € de 5 à 7 m²	Région : **Prêt à taux 0%** d'un montant maxi de 10 000 € Collectivités : - CG Cher : 150 €/m²	**ADEME + Région** : 30% maxi plafonné à : - 300 €/m² pour capteurs plans - 500 €/m² pour capteurs sous vide	Particuliers : **Aucune aide** Collectif : *Appel à projets* (ADEME + Région) **1,5 €/Wc** maximale (< 50 kWc)	Pour les CESI, la pré instruction est gérée par les EIE Région, Direction de l'environnement : 02 38 70 34 41 ADEME Centre : 02 38 24 00 00
Champagne-Ardenne	Région : **600 €** Collectivités : - Cté de Com des Crêtes Préardennaises : 60 €/m² dans le cadre d'une OPATB - Pays Sedannais : 60 €/m² plafonné à 450 € - Cté de Com des 3 Cantons : 60€/m²	Région : **1200 €** Collectivités : - Pays Sedannais : 60 €/m² plafonné à 1000 € - Cté de Com des 3 Cantons : 60 €/m² dans le cadre d'une OPAH	ADEME+Région : Secteur non-concurrentiel : 70% de l'assiette plafonné à **700 €/m2** Secteur concurrentiel : Pas de cadre Collectivités : - Pays Sedannais : 60 €/m² plafonné à 1200 € pour ECSColl et 2000 € pour SSC Collectif	**Aucune aide**	Instruction DR ADEME Région Direction de l'Aménagement du Territoire : 03 26 70 31 31 ADEME Champagne-Ardenne 03 26 69 20 96
Corse	ADEC + EDF-Gaz de France : - **600 €** < à 4 m² - **1000 €** >= à 4 m² + 150 € si éléments séparés et intégrés	ADEC : Aucune aide	Secteur non-concurrentiel : **50%** maxi (plafond à 1400 €/m²) Secteur concurrentiel : **45%** maxi (plafond à 1400 €/m²)	Particuliers : **2 €/Wc** (maxi 2 kWc) Collectif : **1,5 €/Wc** (maxi 75 kWc)	Gestion de la Région ADEC ADEC : 04 95 50 91 00 ADEME Corse : 04 95 10 58 58

	CESI	SSC	ECS Collective	Photovoltaïque	Gestion des dossiers et contacts
Franche-Comté	Région : **Prêt bonifié** basé sur un montant maxi de 5000€ emprunté Collectivités : - CG Territoire de Belfort : 500 € - Besançon : 300 € - Foussemagne : 150 € - Villiers-sur-port : 1000 €	Région : **Prêt bonifié** basé sur un montant maxi de 5000€ emprunté Collectivités : - CG Territoire de Belfort : 1000 € - Foussemagne : 300 € - Villiers-sur-port : 1000 €	*(Délibérations juin 2008)* **Aides 2007** **ADEME + Région** : Secteur non-concurrentiel : **60% d'aide maximale** Secteur concurrentiel : **40% d'aide maximale**	Particuliers : (2kWc minimum) **Prêt bonifié** basé sur un montant maxi de 10000€ emprunté + Collectivités : - Foussemagne : 300 € *(Délib en cours)* **Aides 2007** Collectif : **4 €/Wc** (plafond à 15 kWc) Projets > 15 kWc : cas par cas	Gestion de la Région Région Service Environnement 03 81 61 61 61 ADEME Franche-Comté 03 81 25 50 00
Haute-Normandie	Région : Aide sur la main d'œuvre dans la limite de **1000 €** Collectivités : - CG de Seine Maritime : 1300 € - Cté d'Agglo des Portes de l'Eure (CAPE) : 500 € sur la main d'oeuvre - Petit Couronne : 300 €	Région : Aide sur la main d'œuvre dans la limite de **1600 €** (Surf capteurs ≥ 12 m²) Collectivités : - CG de Seine Maritime : 1800 € - Cté d'Agglo des Portes de l'Eure (CAPE) : 800 € sur la main d'oeuvre - Petit Couronne : 300 €	Secteur non-concurrentiel : **350€/m²** plafonné à 80 % HT + CAPE : 175 € HT/m² (max 80%) Secteur concurrentiel : **15% HT** max du montant éligible Moquettes solaires : **15% HT** + CAPE : 7,5% HT	Particuliers : Aide sur la main d'œuvre dans la limite de **1600 €** + CAPE : 800€ sur main d'oeuvre Collectif secteur non-concurrentiel : **3,5 €/Wc** (plafond à 15 kWc) + CAPE : 1,75 €/Wc (max 15 kWc)	Gestion par la Région de façon autonome Région Service Environnement 02 35 52 56 00 ADEME Haute-Normandie 02 35 62 24 42
Ile de France	Région : Aide forfaitaire de **800 €** sur la main d'œuvre + Collectivités : - Com d'Agglo Arc de Seine (92) : 50% HT sur main d'œuvre, maxi **900€**	Région : Aide forfaitaire de **1300 €** sur la main d'œuvre + Collectivités : - Com d'Agglo Arc de Seine : 50% HT sur main d'œuvre, max **1500€**	Secteur non-concurrentiel : - Région : **400 €/m²** ou **700 €/m²** dans la cas d'un « plan solaire thermique » - ADEME : **0,38 €/kWh** (productible) hors « plan solaire thermique région » Secteur concurrentiel : Aide maxi ADEME : **0,88 €/kWh** (productible)	Particuliers : (Région) Aide forfaitaire de **1300 €** sur la main d'œuvre + Collectivités : - Com d'Agglo Arc de Seine (92) : 50% HT sur main d'œuvre, maxi **1500€** Collectif : Région : **30%** du coût HT de réalisation pour les projets des collectivités ADEME : maxi **50%** pour les opérations exemplaires pour les projets d'entreprises privées	Région pour ECS collective Région Serv Environnement 01 53 85 56 26 ADEME Ile de France 01 49 01 45 47 Com d'Agglo Arc de Seine 0800 10 10 21

	CESI	SSC	ECS Collective	Photovoltaïque	Gestion des dossiers et contacts
Languedoc-Roussillon	Région : Aide forfaitaire de **400 €** Collectivités : - CG Pyrénées-Orientales : 200 € - Com d'Agglo Narbonne : 650 € - Communauté de Communes Piémont d'Alaric : 500 € - Clapiers : 150 € si foyer ≤ 2 personnes ; 300 € si ≥ à 3 personnes (plafond de ressource > de 30% au plafond Prêt Taux Zéro) - Prades (66) : 250 € - Pignan : 200 €	Région : Aide forfaitaire de **400 €** Collectivités : - Com d'Agglo Narbonne : 650 € - Communauté de Communes Piémont d'Alaric : 500 €	**ADEME + Région :** - Organismes HLM : **Aide maxi de 1,6 €/kWh/an** - Autres secteurs collectifs : **Aide maxi de 1 €/kWh/an** + Collectivités : - CG Gard : 0,3 €/kWh produit - CG Hérault : 130 €/m² maxi - CG Lozère : 10% HT max 670€/m² - CG 66 : 330 €/m² pour établ d'accueil spécialisés et 130 €/m² : autres cas	Particuliers : **1 €/Wc** (max 3kWc / 70% du coût et soumis au plafond de ressource du foyer) + Collectivités : - Com d'Agglo Narbonne : 650 € - Communauté de Communes Piémont d'Alaric : 0,5 €/Wc (max 3000€) Collectif : *Appel à projet* **2,5 €/Wc** (plafond 100 kWc) *Hors appel à projets* : **1 €/Wc** (plafond 150 kWc)	Gestion ADEME et Région commune, décision : Région. Région Direction de l'environnement 04 67 22 80 00 ADEME Languedoc-Roussillon : 04 67 99 89 79
Limousin	Région : Aide forfaitaire de **500 €**	Région : Aide forfaitaire de **1500 €**	**ADEME + Région (en parité)** Secteur non-concurrentiel : 60% maxi du montant (objectif : abaisser le TRI à 10 ans) Secteur concurrentiel : 45% maxi du montant (objectif : abaisser le TRI à 5 ans)	Particuliers : Aucune aide **ADEME + Région (en parité)** Collectif : Maxi 0.5 €/Wc uniquement pour les projets de 5kWc à 20 kWc (objectif : abaisser le TRI à 10 ans)	Gestion de la Région Région Service Environnement 05 55 45 17 58 ADEME Limousin : 05 55 79 39 34
Lorraine	Région : Aide forfaitaire de **700 €** Collectivités : - Cté Urbaine de Grand Nancy : 100€/m² - Cté de Com de la Vallée de la Fave : 500 € - Cté de Com des deux rivières : 300 € de 2 à 5 m², 350 € de 5 à 7 m² - Guénange : 150 €/m² (max 750m²) - Laneuville-devant-nancy : 40 €/m² - Thionville : 100 €/m² - Maxéville, Malzéville, Villers-lès-Nancy : 150 € - Spicheren, Kerbach : 100 €	Région : Aide forfaitaire de **1200 €** Collectivités : - Cté Urbaine de Grand Nancy : 100 €/m² - Villers-lès-Nancy : 150 € - Cté de Com de la Vallée de la Fave : 1000 € - Cté de Com des deux rivières : 500 € - Spicheren, Kerbach : 200 €	Région : **20%** d'aide en standard + 10% pour les projets exemplaires ou démonstratifs (plafond à 300 000€) ADEME : **0,88 €/kWh** productible ; assiette de coût éligible plafonnée à 2,5 €/kWh productible Collectivités : - Laneuville-devant-nancy : 40 €/m²	Particuliers : **1,6 €/Wc** pour la pose dans la limite de 4500 € **50 % du cout du DPE** limité à 250 € de subvention + Collectivités : - Spicheren, Kerbach : 100 €/kWc (maxi 3 kWc) Collectif : *Aucune aide*	Demandes dossiers type pour particuliers : EIE Traitement : Région Région Service Environnement 03 87 33 60 00 ADEME Lorraine : 03 87 20 02 90

	CESI	SSC	ECS Collective	Photovoltaïque	Gestion des dossiers et contacts
Midi-Pyrénées	Région : Aide forfaitaire de **600 €** sur la main d'œuvre *(soumis au plafond de ressource du foyer)* Collectivités : - Cté de Com du Bassin Decazeville-Aubin : 200 € - Alvignac : 300 € - Pamiers : 60 €/m²	Région : **Aucune aide** Collectivités : - Pamiers : 60 €/m²	**ADEME + Région** Bailleur social et gest maison retraite : 70% maxi (<50m² : 700 €/m² maxi, >50 m² : 600 €/m² maxi) Collectivités : 50% maxi (<50m² : 500 €/m² maxi, >50 m² : 400 €/m² maxi) Secteur concurrentiel : 40% maxi (<50m² : 400 €/m² maxi, >50 m² : 300 €/m² maxi) Séchage solaire : 30% maxi	Particuliers : **Aucune aide** Collectif : **Raccordé au réseau** *Appel à projets* - 3 €/Wc (maxi 10 kWc) - 2 €/Wc (>10 kWc et plafond à 50 000 € par projet) **Site isolé** : 35% maxi	Gestion Région Région Service Energie 05 61 33 50 50 ADEME Midi Pyrénées 05 62 24 35 36
Nord Pas de Calais	Région : Aide forfaitaire de **1200 €** Collectivités : - Cté d'Agglo Artois Comm : 100 €/m² - Cté d'Agglo Porte du Hainaut : 300 à 500 € - Cté Urbaine Dunkerque : 400 à 1000 € - Cté de communes Flandres Lys : 300 à 1000 € - Bondues : 250 € - Douai : 400 € - Estrun : 300 € - Fâches-Thumesnil : 75 à 105 €/m² - Hénin Beaumont : 200 € - Harnes : 300 € - Lesquin : 75 €/m² (max 6 m²) - Liévin : 50 €/m² - Lille, Lomme, Hellemmes : 100 €/m² - Loos en Gohelle : 50 €/m² - Marcq en Barœul : 300 € - Mons en Baroeul : 100 €/m² - Orchies : 200 € - Phalempin : 150 € - Rieulay : 300 €	Région : Aide forfaitaire de **3600 €** Collectivités : - Cté d'Agglo Artois Comm: 100€/m² - Cté Urbaine Dunkerque : 400 € à 1000 € - Cté de communes Flandres Lys : 700 à 1500 € - Bondues : 250 € - Douai : 500 € - Estrun : 1000 € - Fâches-Thumesnil : 75 à 105 €/m² - Hénin Beaumont : 500 € - Harnes : 300 € - Lesquin : 75 €/m² - Liévin : 50 €/m² (max 15 m²) - Lille, Lomme, Hellemmes : 100 €/m² (max 10 000 €) - Loos en Gohelle : 50 €/m² (max 15 m²) - Marcq-en-Baroeul : 300 € - Mons en Baroeul : 100 €/m² - Orchies : 500 € - Rieulay : 300 €	**ADEME + Région** Jusqu'à 40% du montant des travaux + Collectivités : - Cté Urbaine Dunkerque : 1000 € - Lille, Lomme, Hellemmes : 100 €/m², plafonnée à 10 000 €	Particuliers : **1€/Wc** (< 5 kWc) + Collectivités : - Cté d'Agglo Artois Comm : 1,5 €/Wc (<2 kWc) - Cté de communes Flandres Lys : 1 €/Wc - Bondues : 500 € - Estrun : 1 €/Wc (max 2 kWc) - Fâches-Thumesnil: 1 à 1,35 €/Wc - Hénin Beaumont : 500 € - Harnes : 300 € - Lesquin : 1 €/Wc (max 2000 €) - Liévin : 1,5 €/Wc (max 2000 €) - Lille, Lomme, Hellemmes : 1,2 €/Wc (maxi 3000 €) - Loos en Gohelle : 1,2 €/Wc (max 2400 €) - Marcq-en-Baroeul : 1 €/Wc (max 2000 €) - Rieulay : 300 € - Roubaix : 1 €/Wc - St André : 25% plafonné à 500 € - Villeneuve d'Ascq : 1,2 €/Wc (< 2 kWc)	Gestion Région et EIE Collectif : mandaté par le CR Région Direction Générale Aménagement Durable & Solidarité : 03 28 82 82 82 ADEME Nord Pas de Calais 03 27 95 89 70

	- Ronchin : 200 à 800 € - Roubaix : 100 €/m² - St André : 25% plafonné à 500 € - Verquin : 50 €/m² - Villeneuve d'Ascq : 350 €	- Roubaix : 100 €/m² - St André : 25% plafonné à 500 € - Verquin : 50 €/m² - Villeneuve d'Ascq : 500 €		Collectif : **ADEME + Région** Jusqu'à 40% HT des travaux (assiette éligible maxi : 1 000 000 € ; Fonds européen FEDER)	
Pays de Loire	Région : Opération de groupements d'achats (http://www.paysdelaloire.fr/?id=5432) Collectivités : - Cté de Com des Herbiers : 50% (maxi 200 €) - Aizenay, Cté de Com du Pays Yonnais: 100 €/m² (maxi 300 €) - Angers-Loire métropole : 600 € - Andouillé : 300 € - Carquefou : 300 € - Chateaubriant : 400 € - Foussais-Payré : 150 €	Région : Opération de groupements d'achats http://www.paysdelaloire.fr/?id=5432 Collectivités : - Cté de Com des Herbiers : 50% (maxi 400 €) - Cté de Com Vie et Boulogne : 1000 € - Andouillé : 300 € - Angers-Loire métropole : 600 €	**ADEME+Région en parité** (convention 2009 en cours de discussion) Projets ECS Coll : **30 à 45%** selon la performance, plafonné entre **300 et 400 €/m²** (max 80 000 €) Séchage solaire : **30 % maxi** plafonné à **30 €/m² de capteur**	Particuliers : Opération de groupements d'achats http://www.paysdelaloire.fr/?id=5432 Collectif : Aucun dispositif	Réception ADEME Gestion Région Région Service Environnement 02 28 20 54 16 ADEME Pays de la Loire : 02 40 35 68 00
Picardie	Région : **230 €/m²** pour une installation de 2 à 7m² de capteurs plans **380 €/m²** pour une installation de 2 à 4m² de capteurs tubes sous vide	Région : **2 300 €** pour une surface minimale de 10 m² en capteurs plans, 6 m² en capteurs tubes sous vide **+750 €** si intégration en toiture	**Région + ADEME** Tous secteurs confondus : jusqu'à 50% sur le montant HT des travaux	Particuliers : Aide Région **2 €/Wc** (entre 1 et 3 kWc) Collectif : Région – Ademe *Appel à projets régional*	Gestion : - Région pour les particuliers - ADEME / Région dans le cadre du FREME Région Direction de l'Environnement : 03 22 97 28 63 ADEME Picardie : 03 22 45 18 90

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	CESI	SSC	ECS Collective	Photovoltaïque	Gestion des dossiers et contacts
Poitou-Charentes	Région : Aide forfaitaire de **500 €** sur la main d'œuvre (sous conditions de ressources et installation sur résidence principale) Collectivités : - CG Deux-Sèvres : 500 € - Delta Sèvres Argent : 300 €	Région : Aide forfaitaire de **1500 €** sur la main d'œuvre (sous conditions de ressources et installation sur résidence principale)	**ADEME+Région en parité** (règlement et modalités spécifiques) Secteur non concurrentiel : **60%** (plafond de l'assiette éligible à 1000 € HT/m² pour les installations collectives ; 1 200 € HT/m² pour l'individuel groupé) Secteur concurrentiel : **40%** (plafond de l'assiette éligible à 1000 € HT/m² pour les installations collectives ; 1 200 € HT/m² pour l'individuel groupé)	Particuliers : (< 3 kWc, sous conditions de ressources et installation sur résidence principale) Maîtrise de l'énergie standard : **0,1 € /kWh.an** sur 4 ans Maîtrise de l'énergie exemplaire : **0,2 €/kWh.an** sur 4 ans Entre 3 et 5 kWc : l'aide ci-dessus plafonnée à 3kWc > 5 kWc : pas d'aide Collectif : (règlement et modalités spécifiques) **2 €/Wc maxi** Collectivités + Associations : jusqu'à 15 kWc Collectivités + Associations + Entreprises : de 15 à 250 kWc	Instruction: ADEME Gestion administrative (convention, paiement) : Région Région Service Environnement 05 49 55 77 00 ADEME Poitou-Charentes 05 49 50 12 12

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PACA	Chèque Région : **300 €** sur la main d'œuvre Collectivités : - CG 04 : 350 € - CG 05 : 300 € - CG 06 : 500 € - CG 84 : 350 € - Cté du pays d'Aubagne : 400€ - Cté de Pays d'Aix : 350 € - Gémenos : 10% HT plafonné à 500 € - Orange : 350 € - Fréjus : 200 € - Le Cannet : 800 € - Cagnes sur Mer : 350 €	Chèque Région : **300 €** sur la main d'œuvre Collectivités : - CG 04 : 1500 € - CG 05 : 1200 € - CG 06 : 500 € - Cté du pays d'Aubagne : 1150€ - Cté de Pays d'Aix : 500 € - Gémenos : 10% HT plafonné à 500 € - Le Cannet : 800 €	Secteur public, associatif et social : 80% du montant HT avec **600 €/m²** de plafond d'aide ADEME + Région et CG 06 aides complémentaires PME/PMI et copropriétés : 70% HT plafonné à **500 €/m²** Secteur agricole : 60% HT plafonné à **500 €/m²** Grands groupes : 40% HT plafonné à **300 €/m²**	**Particulier** : Chèque Région **300 €** sur la main d'oeuvre + Collectivités : - CG 05 : 300 € - CG 06 : 1000 € - Gémenos : 10% HT (max 500 €) - Le Cannet : 800 € (vérifier auprés de la commune) **Collectif** (de 10 à 70 kWc) régi par Appel à Projets : - Projets éligibles à 0,55c€/kWh : Secteur public, associatif, social : aide 0.5 à 3 €/ Wc PME/PMI : aide 0.5 à 2 €/ Wc - Projets éligibles à 0,30c€/kWh : PME/PMI, secteur public, associatif, social : aide 0.5 à 2 €/ Wc - Les exploitations et coopératives agricoles font l'objet d'un appel à projets spécifique: "vers 100 exploitations et coopératives agricoles exemplaires"	Gestion CESI + SSC: Région et départements Collectif : ADEME Région Service Environnement 04 91 57 50 57 ADEME PACA 04 91 32 84 44

	CESI	SSC	ECS Collective	Photovoltaïque	Gestion des dossiers et contacts
Rhône-Alpes	Région : **300 €** *(Revenus annuels fiscaux inférieurs au plafond de ressources du Prêt à Taux 0%)* Collectivités : + CG Drôme : 500 € + CG Loire : 200 € + CG Rhône : 100 €, forfait sur les frais du contrat de maintenance annuel de l'installation + CG Savoie : 500 € + Aime : **30% (maxi 150€)** + Aigueblanche : **150€** + Aix-les-Bains : **70 €/m² (maxi 350 €)** + Albens, Chignin, St Badolph, St Pierre d'Albigny : **30% (maxi 300€)** + Albertville : **60 €/m²** + Apremont, Châteauneuf, Cté de Com Chautagne, Cté de Com cœur de Maurienne, Cté de Com Maurienne Galibier, Cté de Com la Rochette Val Gelon, Jacob Bellecombette, Laissaud, Lanslebourg, La Motte Servolex, Les Mollettes, St Etienne de Cuines, St Hélène du Lac : **300 €** + Bassens, Champagny en Vanoise, La Ravoire, Meylan, Modane, Moutiers, Queige, St Alban Leysse, Ste Marie de Cuines, Venthon, Yenne, St-Paul-Trois-Chateaux, Chaussan, Grézieu-la-Varenne, Messimy : **200 €** + Barberaz : **30 % (maxi 200 €)** + Barby, Cruet, Gilly sur Isère, Montagnole, Mouxy, Randens, Rognaix, St Alban des Villards, Termignon, Verel-Pragondran : **150 €** + Chambéry : **60 €/m²**	Région : **1000 €** *(Revenus annuels fiscaux inférieurs au plafond de ressources du Prêt à Taux 0%)* Collectivités : + CG Drôme : 500 € + CG Isère : 800 €, forfait pour un équipement agréé et installé par un professionnel agréé Qualisol + CG Loire : 500 € + CG Rhône : 100 €, forfait sur les frais du contrat de maintenance annuel de l'installation + CG Savoie : 1150 € + Aime : **30% (maxi 150€)** + Aigueblanche : **250€** + Aix-les-Bains : **70 €/m² max 560€** + Albens, Chignin, St Badolph, St Pierre d'Albigny : **30% (maxi 300€)** + Albertville : **60 €/m²** + Apremont, Barby, Bassens, Châteauneuf, Gilly sur Isère, Jacob Bellecombette, Laissaud, Lanslebourg, La Motte Servolex, La Ravoire, Les Mollettes, Queige, St Alban Leysse, St Hélène du Lac, Termignon, Yenne : **300 €** + Barberaz : **30 % (maxi 200 €)** + Chambéry : **60 €/m²** + Champagny en Vanoise, Ste Marie de Cuines, Venthon : **200 €** + Chanaz : **330 €** + Cognin : **20% (maxi 150€)** + Cté de Com cœur de Maurienne, Cté de Com Maurienne Galibier, Cté de Com la Rochette Val Gelon, St Etienne de Cuines : **600 €**	Région : Appel à projet Communes et EPCI < 50 000 hab. et syndicats d'énergie agissant pour le compte de communes < 50 000 hab., bailleurs sociaux public et privés, PME et entreprises en nom propre, associations, copropriétés. Taux d'aide maximum : 20 % Plafond : 50 000 € Collectivités : + CG Loire : Collectivités : 12,5 % à 30 % HT Bailleurs sociaux : 20% HT plafonnée à 200 € / équivalent logement + CG Savoie (collectivité et établissement public) : 20 % du coût subventionnable plafonné à 200 €/m²	**Particuliers** : Aucune aide Collectivités : + CG Isère : **0,5 €/Wc** installé, plafonné à 2 kWc installés + CG Rhône : **0,5 €/kWh** la 1ère année (maxi 500€) + Aime : **30% (maxi 150€)** + Aix-les-Bains : **520 €** + Albens : **30% (maxi 300€)** + Albertville, Apremont, Châteauneuf, Dardilly, Jacob Bellecombette, Lanslebourg, La Motte Servolex, Montmélian, Queige, St Hélène du Lac : **300 €** + Barberaz : **30 % (maxi 200 €)** + Chanaz : **350 €** + Cognin : **20% (maxi 150€)** + Cté Com cœur de Maurienne, Cté Com Maurienne Galibier, Cté Com la Rochette Val Gelon, St Etienne de Cuines : **600 €** + La Ravoire, Moutiers, St Alban des Villards : **400 €** + Modane, St Alban Leysse, Ste Marie de Cuines, Venthon, Chaussan, Messimy : **200 €** + Mognard, St François de Sales, St-Verand : **100 €** + Cruet, Montagnole, Rognaix, Termignon, Verel-Pragondran : **150 €** + Meylan, Mouxy : **500 €** + St Jean de Belleville : **10 €/m² max 100€** + St Martin de Belleville: **400 à 600€**	Gestion Région et départements séparée Région Direction de l'Environnement et l'énergie 04 72 59 40 00 ADEME Rhône-Alpes 04 72 83 46 00

	+ Chanaz : **225 €** + Cognin, Montailleur : **20% (maxi 150€)** + Cté de Com du Pays de Gex : **80 €/m² (maxi 400 €)** + Grézy sur Aix, Le Bourget du Lac : **30 €/m² (maxi 150 €)** + Mognard, St François de Sales : **100 €** + Montmélian : **500 €** + Montvalezan : **30 €/m²** + St Martin de Belleville : **300 à 500 €** + St Rémi de Maurienne : **75 €** + Ugine : **30% (maxi 350€)**	+ Cruet, Montagnole, Randens, Rognaix, Verel-Pragondran : **150 €** + Cté de Com du Pays de Gex : **80 €/m² plafonnée à 960 €** + Grézy sur Aix : **30 €/m² max 150€** + Le Bourget du Lac : **30 €/m² (maxi 300 €)** + Meylan, Modane, Mouxy : **500 €** + Mognard, St François de Sales : **100 €** + Montailleur : **20% (maxi 250€)** + Montmélian : **1150 €** + Montvalezan : **30 €/m²** + Moutiers, St Alban des Villards : **400 €** + St Martin de Belleville : **600 à 1000€** + St Rémi de Maurienne : **75 €** + Ugine : **30% (maxi 500€)**		+ St Rémi de Maurienne : **75 €** **Collectif** : Région : Aucune aide + CG Savoie (collectivité et établ public) : **20%** plafonné à **3,8 €/Wc**	

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	CESI	SSC	ECS Collective	Photovoltaïque	Gestion des dossiers et contacts
Guadeloupe	*Pas d'informations*	*Pas d'informations*	*Pas d'informations*	*Pas d'informations*	ADEME Guadeloupe 05 90 26 78 05
Guyane	EDF + Région : **375 €/m² maximum**	**Aucune aide**	**Programme Régionale de Maîtrise de l'Energie (PRME)** (Région, Département, ADEME, EDF) Si défiscalisation des investissements : **350 €/m² max** (dans le cadre du PRME) Si projet hors défiscalisation : ADEME : **350 €/m² max** et part totale du PRME dans les limites de l'encadrement communautaire pour le secteur concurrentiel à 75% d'aides pou les entreprises	*Particuliers et collectif* Electrification rurale (site isolé) : - Assiette éligible Région/FEDER : **4 €/Wc** - Aide EDF : **2,17 €/Wc** Production d'électricité raccordée au réseau : - ADEME : **1€/Wc** (projet exemplaire ou de démonstration) - Région/FEDER : **0,8 €/Wc** dans le cadre d'appel à projets Pour les projets portés par des collectivités : **30%** au cas par cas selon TRI	ADEME Guyane 05 94 31 73 60
Martinique	Aide EDF : **200 €/unité** (référence 200 litres)	**Aucune aide**	ADEME+collectivités au cas par cas Dans la limite de l'encadrement communautaire, et du plafond ADEME de **0,64 c€/kWh produit** (modification prévue en 2009) Aide à la décision (50% des coûts d'études)	*Particuliers et collectif* Electrification rurale (site isolé) : ADEME+FEDER : **4 €/Wc** ou FACE+ADEME à **95%** Production d'électricité raccordée au réseau : Aide possible au cas par cas par dérogation au système d'aide, pour projets exemplaires	ADEME Martinique 05 96 63 51 42 EIE 05 96 59 19 60
La Réunion	Aide EDF : **217 €/unité** (référence 300 litres)	**Aucune aide**	Social locatif : 80% maxi de l'assiette HT (assiette de 4 000€/logt dans le neuf et de 4 800€/logt dans l'existant) (pas d'aide pour le résidentiel en accession et le locatif privé) Agriculture, industrie et tertiaire : 60% maximum du surcoût solaire HT Grands groupes : 50% HT maximum Climatisation solaire : 50% maximum (+10% PME/PMI)	*Particuliers et collectif* Electrification rurale (site isolé) : Aide FACE (79%) + complément ADEME (16%) Production d'électricité raccordée au réseau : 2.5€/Wc maxi dans le cadre d'appels à projets concernant uniquement les projets d'intégration au bâti.	ADEME Réunion 02 62 71 11 30

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