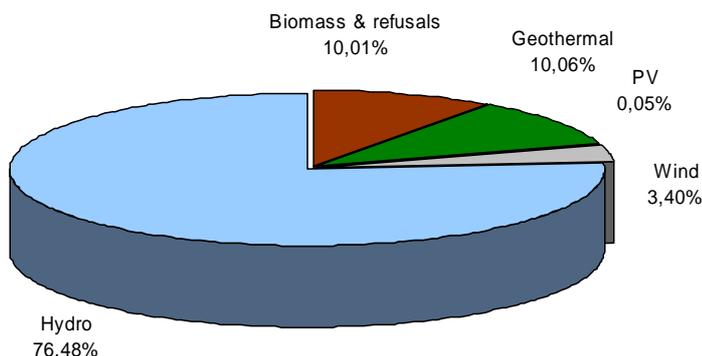


The state of RES exploitation in Italy with a focus on Liguria.

Electricity production from renewable energy sources in Italy in 2004 represented about 16% of the gross total consumption. If we analyse the data we can compare the different sources of electricity production:

Electricity Production from Renewable Sources in Italy (2004). Source: ENEA.

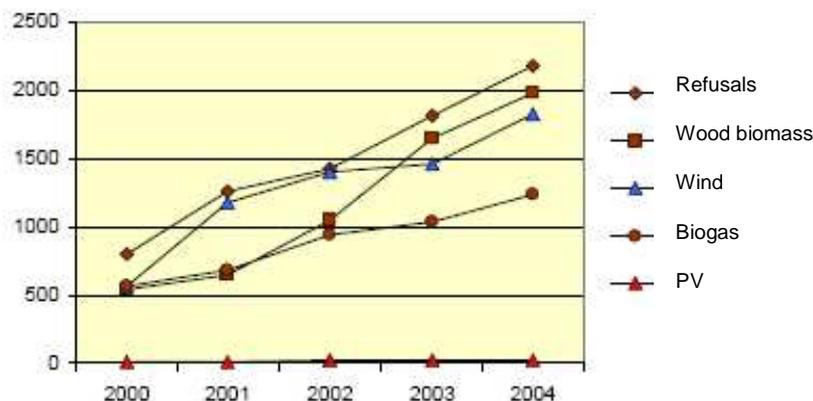


With a 17 GW power plant and a production of more than 41 TWh in 2004, hydro power covers 75% of renewable energy production. Nevertheless the installation of new hydro plants seems possible only for small size turbines (besides increasing the efficiency of the existing ones): through the restoration of old and obsolete plants and the construction of new ones when the environmental aspects allow the installation. Due to the significant environmental impact, the construction of new big plants has to be excluded.

Regarding geothermal electric energy which made up 10% of energy production from renewable in 2004 with more than 5 TWh, it is not possible to foresee a significant increase beyond the existing 700 MW. Concerning biomass and waste exploitation which is finalised for the energy production (5 TWh in the 2004) as well as for wind power energy (1.8 TWh) however, it is quite a different matter, both due to the positive trend registered in the last five years and above all because of the growth potential which is particularly high for biomass.

Photovoltaic technology from which about 27 GWh of electricity was produced in 2004 is in a singular situation, as it is having to pay for the time lag of the national industry in this particular sector, and furthermore, it is being penalised for the delay with which the new financial incentives in the energy account have been defined.

RES energy production (ktep) in Italy 2000-2004. Fonte: ENEA.



Concerning the energy trim, Liguria shows peculiar features compared to the whole country in general: contrary to the national system, it presents an internal energy production which exceeds the real needs (double the consumption). However, only a small part of this production comes from RES (1.5% of the total primary energy and 0.85% of electricity in 2003).

In 2004 Liguria gave a contribution of about 1% of gross power to Italian renewable plants. This contribution has been achieved mainly through hydro, biomass and wind power plants, while the geothermal source is almost irrelevant. Concerning biomass plants that use wood, it must be said that currently in Liguria there are no thermoelectric plants fed with biomass from wood, but recently a lot of projects of this kind have been developed.

Power Plants for electricity production from renewable energy sources in Liguria in 2003.

	Number of plants	Total installed capacity (MW)	Typical installation size
WIND	3	4,8	750 kW
WOOD BIOMASS	0	0	0
BIOGAS	4	3,5	1000 kW
PV	86 (28 public)	0,561	3-15 kW
HYDRO <10 MW	41	67	400-1500-5000 kW

As regards data for 2003 in the table above, electricity production from renewable energy sources in the region has doubled concerning wind energy due to the enlargement of the plants in Varese Ligure and Calice Ligure. Also hydroelectric power is increasing, thanks to the recovery of small size plants in disuse and to the exploitation of the aqueducts potentials, as well as photovoltaic plants that are being boosted by new incentives at national level.

Economical and financial aspects.

The introduction in the market of new technologies has always been strongly influenced by the incentives.

The actual system in Italy is based mainly on the so-called "green certificates" which are specific bonds given to electrical energy producers from RES. In particular, every plant which achieves the IAFR qualification title (Renewable energy fed plant), with an annual production of more than 50 MWh, has the right to ask for a certain number of Green Certificates which belong to the energy production of the first eight years of operation.

The Ministerial Decree approved on the 24th October 2005 granted biomass plants with the right to receive Green Certificates for a further four years which corresponds to 60% of the net annual electricity production.

Therefore, Green Certificates represent an economical added value to that plants which produce energy from renewable sources: as a matter of fact they could be assigned at a kWh price that is subject to the mechanisms of the electricity market governed by the GME (Manager of the Electric Market).

On the contrary, incentives for installations with an annual electricity production that is lower than 50 MWh, are not foreseen; these systems are considered as being installations for the production of the owners consumption only (according to Law n. 133/99), and therefore, are not subject to fiscal impositions.

As for many renewable sources, it must be noted that technological innovations have caused a considerable reduction of costs in comparison to the past and so nowadays it is often possible to intervene even if there is no financing, as for example in the case for wind or hydro power.

In other cases, as for example photovoltaic, financial aids have been developed to overcome the barrier which is represented by the investment costs involved in the production of energy from renewable sources. Regarding photovoltaic technology we are referring to Ministerial programmes such as the “photovoltaic roofs” or the recent “Energy account”.

The “energy account” is a programme aimed at giving incentives for electricity production from the photovoltaic conversion of solar power promulgated in August 2005 and subsequently updated with a Ministerial Decree on the 6th of February 2006.

It consists of a tariff system for electricity that is produced by the photovoltaic conversion of solar energy for a twenty year period.

The “energy account” promotes the installation of 500 MW photovoltaic plants, of which:

- 360 MW each smaller than 50 kWp
- 140 MW bigger than 50 kWp.

The tariffs are subdivided into three classes based on the nominal installation power:

PV Plant	Power in kW	Tariffs €/ kWh
Class 1	1 ≤ P ≤ 20 (with exchange on the spot)	0.445
Class 2	20 < P ≤ 50 and 1 ≤ P ≤ 20 (without exchange on the spot)	0.460
Class 3	50 < P ≤ 1000	0.490 (max amount subject to public tender)

To access the Energy Account tender, the plant owner must send the request, accompanied by a preliminary project, to the appointed authority. The authority shall then draw up a list of the applications received and add all those who fulfil the necessary requirements for the “energy account” financing until the threshold that has been established at a national level isn’t reached.

These tariffs will not be applied to those installations that make use of other kinds of incentives such as public subsidies in capital accounts that exceed 20% of the total investment cost or bonds (green certificates).

Several credit institutes have developed specific financial aids for the promotion of electricity production using photovoltaic systems. Some of these include loans which however are still being planned (for both private owners and companies or public bodies) aimed at financing 100% of those photovoltaic installations that can access the “energy account” over a ten year period with low interest rates. For a certain period of time the income of the plant is used to pay the loan instalments, but later this becomes part of the owner’s income.

It must also be said that the installation of solar panels on residential buildings can apply for an IRPEF deduction of about 41% as this is seen as an intervention of extraordinary maintenance on the plant.

Authorisational aspects.

Authorisation.

The renewable market development is more influenced by the procedures needed to obtain authorisation for the realization of the plant than by the economical and financial aspects.

Regarding renewable sources, the Italian legal framework adopted decree n. 387 in 2003 according to the European directive 2001/77/CE on the promotion of renewable electricity in the internal market. The directive binds the EU member nations to reduce the legal obstacles, to rationalize and to boost the procedures at an administrative level in order to increase the electricity production from renewable sources. The directive also established that regarding the transmission grid, the renewable plants had to have the priority and that the distribution network had to be guaranteed.

Decree n. 387/2003 in accordance with the directive, establishes the main targets at a national level regarding renewable sources, presents the certificate of origin and clarifies some legal and technical aspects about introducing "green" electricity into the energy market. It also introduces some specific provisions to promote biomass from wood and foresees economic subsidies to promote the diffusion of small size plants, i.e. with a nominal power lower than 20 KW.

The decree also contains precise instructions on how to introduce renewable energy into the national electricity network.

Those instructions are different for plants with a power capacity that is higher than 10 MVA and for installations with a power capacity lower than that value or regardless of the size, as long as they run on renewable sources such as wind, solar, geothermal, waves, tidal and hydro.

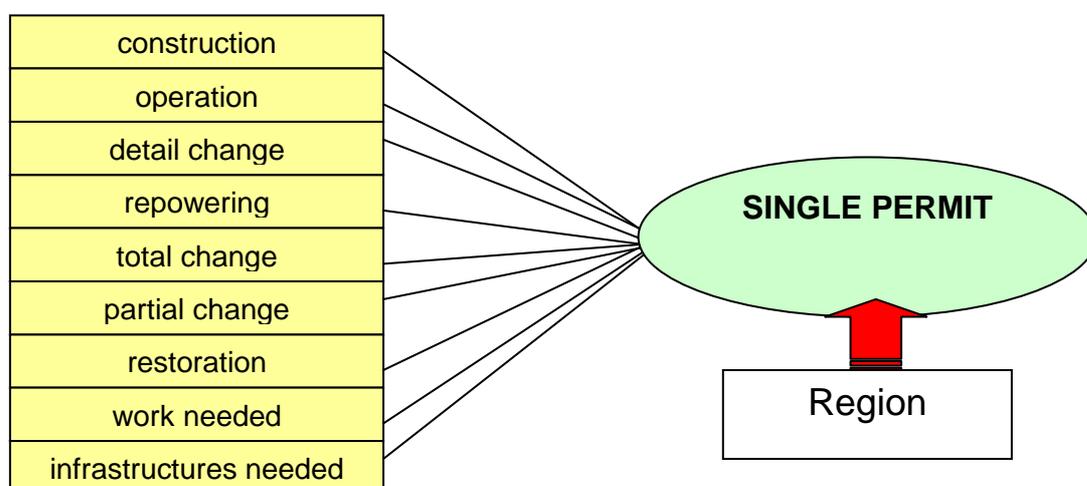
In the first case the energy is put on the electricity market in conformity with the dispatching rules defined by the Grid Manager according to decree n.79/1999.

On the contrary in the second case after the owner's request, the energy produced is collected by the Grid Manager to whom the installation is connected. The Authority for electricity and gas defines the formal procedure for the purchase referring to the economic conditions of the market.

The Net Managers are obliged to give the renewable plant owner who applies for the connection, information about the best solutions for connection, cost estimation and their allotment.

The iter to obtain authorisation for renewable plant installation and operation is defined in general terms in decree n. 387/03 and more detailed in regional and provincial laws. In fact, at present local Bodies are the ones who play an essential role in the renewable energy production planning in their own areas.

Article n. 12 of decree 387/03 rationalises and simplifies the procedures for authorisation and establishes one single permit for plants that run on renewable sources.



The single permit is issued by the Region or by another appointed body in compliance with the existing laws on the environment, landscape and historical-artistic protection; it is issued following a single procedure which involves all the Administrations.

There is no authorisation necessary for some kind of installations such as for example electricity plants that are smaller than 3 MW_t and located inside waste disposal plants, fuelled by waste gas.

Concerning the documents that are required to obtain the authorisation, for plants with a capacity lower than 20 kW, it is enough to send the DIA (Start of works declaration) to the relevant municipality and as long as the historical, landscape and architectural rules of that area are respected.

For bigger size plants the authorisation request must be accompanied by the appropriate permits (construction permit, environmental impact evaluation study if necessary, request for connection to the grid ...), as well as the specific authorisations for the use of the specific renewable sources (for example the water diversion concession for hydro power plants).

The single permit concept, even if it is still not being used concretely, has in any case directly or indirectly, helped to simplify several procedural problems, as for example those connected with the definition of land use: the renewable plant is seen as being a public utility and so its construction takes precedence over others.

Notwithstanding this, the procedural problems remain among the principal reasons for delay in the realisation of plants from renewable energy sources. Some of the most common obstacles noted at a national level are:

- hydropower: uncertainty regarding the time needed to obtain the water diversion concession issued by the competent authority (Region or Province), that takes more than a year and a half in Liguria.
- windpower: the main problems concern the environmental impact and the connection to electrical power grid. In particular in Liguria, there are a lot of protected areas in which it is not possible to install big windfarms. Furthermore, the wind potential is high in windy areas located on the top of mountain ridges; this normally means that those areas are in remote areas and not connected to the electricity network.
- biogas: the procedure for construction is easier but the connection to the Enel network could cause delays.
- biomass: the most delicate aspect of the authorisation procedure is linked to the control of emissions.

Renewables in Liguria: potential, market trend and targets.

The regional energy and environmental policy and the regional plan

In December 2003 the regional Council adopted the regional environmental and energy plan, (PEAR) drawn up by the Regional Government Body together with ARE Liguria and ENEA.

This Plan traces and defines the energy strategy in compliance with the post Kyoto policy and with what was established during the "Conference of Presidents from Regional and autonomous Provinces" which took place in Turin in 2001.

The Plan aims at putting into effect the regional energy policy which is going to be developed and operative until 2010, according to what was established under article 107 of the regional law n.18 that was approved on the 21st June 1999. It represents the starting point of the regional energy policy for these years and for the immediate future.

General contents and methodology

Liguria is peculiar in that it has an internal energy production much higher than its effective needs (more or less double): 58% of pollutant emissions are due to electricity production (16% is related to the transport sector, 13% to industry and 13% to residential buildings). It is clear then that the regional strategies regarding energy (respect for the environment, rationalisation of the higher consumption activities, promotion of production systems that promote the environment, etc.) should be drawn up with this situation in mind.

Secondly, there are two main functions to be considered of Liguria at a national level:

1. 40% of the national mercantile traffic (by road, train or ship) pass through this region, damaging the mobility and the air quality;
2. historical presence of important sectors of heavy industry (mainly in the energy field) contributes substantially to air pollution and how the territory is used, even if it represents an important job source.

The primary target of the regional policy is an energy re-organisation and promotion of a progressive formation of a system of energy production across the whole territory marked by the presence of small-medium sized plants with high efficiency and a low environmental impact.

The targets the Region wants to reach in its energy policy:

1. energy efficiency increase
2. stabilisation of emissions at 1990 levels
3. 7% of the total consumption covered by renewable exploitation.

In particular, as far as the renewable sector is concerned, Liguria expects to reach the 7% target following a step by step intervention programme which involves biomass, solar energy and the smaller hydroelectric plants.

Regarding the authorisation procedures, they represent one of the biggest problems both for operators and Administrations. The survey carried out among the municipal administrations in the framework of the RES-E Regions project confirms that one of the biggest obstacles to the widespread use of renewables in Liguria is the long period of time needed to obtain authorisation.

Over the next few years the Regional Authority is aiming to introduce a functional integration of the different licensing procedures so that there is single permit procedure. In fact, Liguria wants to reach the utmost simplification and swift handling of procedures for installations which use renewable sources.

The technologies

In the near future, renewable energy is not going to replace fossil fuels, but it does however represent a real step towards the diversification of energy sources.

The exploitation of these sources in Liguria plays a strategic role for two main reasons: the first is that their use in many cases could cause the re-evaluation of mountain and remote areas; the second reason is related to the target of enabling a different energy consumption model to take off.

Since putting a restraint on the installation size could mean a lower attraction from an economic point of view of the plants, Liguria has developed a strategy made of compensation tools which foresees the implementation of satellite actions aimed also at boosting the take off of the economy in the areas involved.

During the last few years the Region has carried out studies and forecasts on all the main energy sources which could find a technological and economical sustainable development in Liguria:

- Wind potential;
- Solar potential (thermal and photovoltaic);
- biomass (wood resources, farming by-products zootechnical);
- hydro potential;

Liguria has studied in detail the possible exploitation potential throughout the regional territory and the feasibility of fixing targets and strategies for each source up to 2010.

WIND POWER

In Italy, windfarms are the type of system which has developed more in technological terms and for which the best successes have been obtained as regards market penetration.

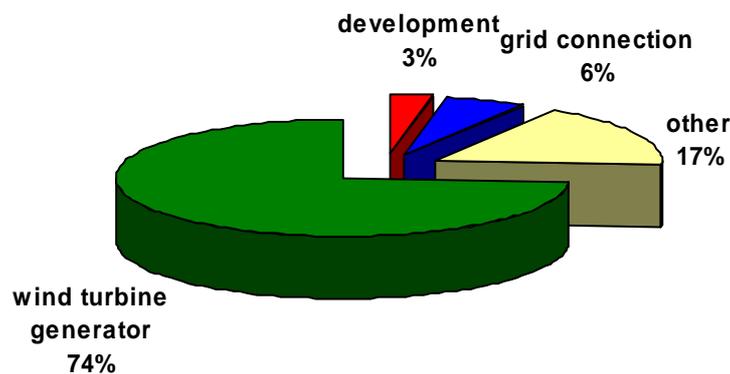
Modern wind turbines present standard, modular features, they are reliable and it takes really a short amount of time to put them on site; they are built to work uninterruptedly with little maintenance and

require almost no personnel for a period lasting more than 20 years. The most common technology is the one with three blades.

The potential technological development consists mainly in the use of innovative materials which will allow bigger sized systems with cheaper prices and will lead to an increase in the efficiency and reliability of the system. As for the environmental sustainability of this technology, the main target is to reduce the whole environmental impact of the system in each phase of its life cycle: during the building phase, the installation and the operational phases (reducing the noise and physical impact) and at the end, during the decommissioning.

Market growth has caused a strong reduction in terms of costs; today the price of a kWh produced by a windfarm has been reduced to a fifth of what it was 20 years ago. Generally in Italy most windy areas are in places with complex morphologies; the costs connected to the site, and in particular to the access and the network connection, play a significant role in the total investment costs.

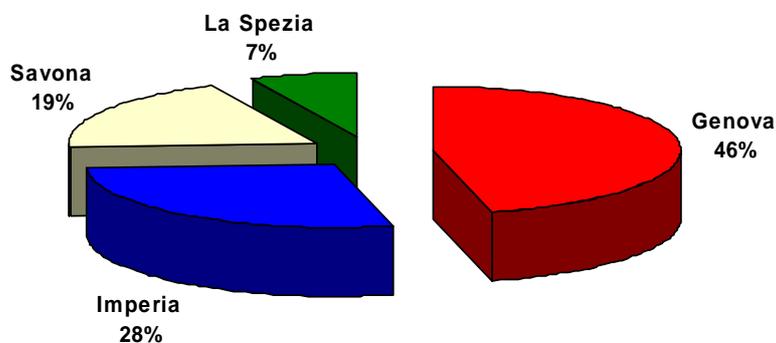
Costs percentage for onshore windfarms.



It must be underlined in particular that over the last few years at a national level, there has been an upward, slow but steady increase in the number of average size turbines that have been installed.

Liguria is swimming against the stream: the peculiar morphology of its territory doesn't enable big size plants. Unfortunately wind energy isn't available throughout the region: at a regional level the potential is quite low but it presents high significant values in some restricted areas. The Province with the highest potential is undoubtedly Genova with 46%, followed by Imperia (28%), Savona (19%) and finally La Spezia (7%). The evaluation of the wind source potential has clearly shown that only 17 places had a yearly value above the 150 tep/year, and among those locations only 11 have a good theoretical potential because the values are more than 300 tep/year.

Wind potential for each Province in Liguria.



Regarding the number of sites, some reliable studies show that most of the locations with a good potential are in the west part of the region, on the higher mountain ridges of the Imperia inland, more or less on the border with the Region of Piemonte to the north and with France to the west (Triora, Mulini di Triora, Carpasio, etc.).

In the central part of the Region, the results of the simulations highlighted three small areas with a good potential that require closer examination. They are situated in the Savona hinterland and as before, they are near ridges or mountainous areas.

Good values have been calculated for the ridges just over the city of Genova and within the Varese Ligure territory in the province of La Spezia.

The next step in the exploitation of wind energy would be to carry out a validation on site of the theoretic potentials in the selected areas to evaluate if they are high enough to justify an installation investment. In any case, the morphology and orography of Liguria bar are a barrier to the development of big windfarm projects.

The specific targets of the Regional Environmental Energy Plan (PEAR) regarding renewable energy sources in Liguria state that by 2010 the target of the 8 MW_e production threshold from windfarms will have been reached.

With the recent increase of the Varese Ligure and Calice Ligure installations we can say that most of the big plant potential has been used and that the 8 MW_e target has almost been reached.

Today in Liguria this technology potential is linked mainly to the use of small turbines (micro-eolic).

PHOTOVOLTAIC

In Italy, after a large investment period during the 80s and at the beginning of the 90s, the photovoltaic market has undergone a strong reduction, which is in contrast to what has happened in the most industrialised nations. During the last couple of years however, this trend seems to have been turned around: the new incentives promoted by the Environmental Ministry and the Regions have determined a certain expansion of the photovoltaic sector.

A photovoltaic plant peculiarity in fact is that it needs a big capital investment at the beginning for the installation, but the maintenance costs are quite low. In Italy, the investment cost of a ready-to-start installation, working in parallel with the main network is about 6,000-7,000 €/kW_p, taking into account a simplified costs breakdown that is composed of: panels, inverter, supporting structures, installation and design costs.

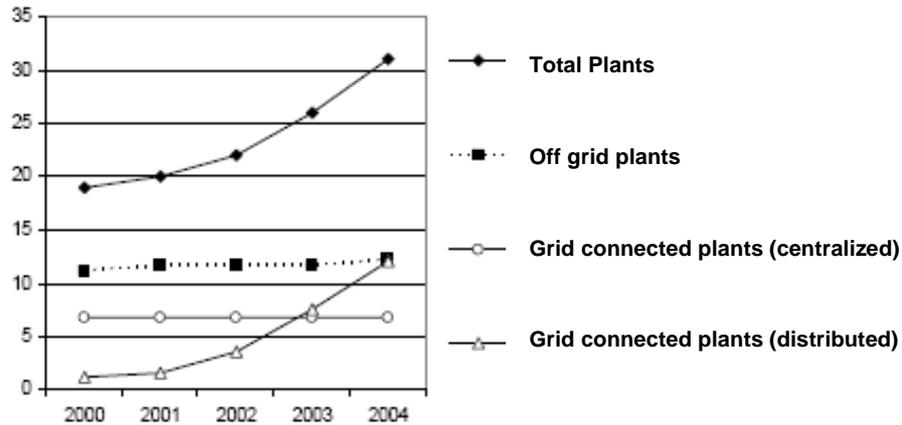
In most cases the electricity costs 25-40 c€/kWh which is still higher than energy produced by a big size conventional thermoelectric plant. For this reason, although the costs have been strongly reduced during the last decade, due to market growth and technological improvements, the installation of photovoltaic plants still seems to depend on any incentives that may be available.

Concerning the cost of the kWh produced, the positive aspects that a photovoltaic plant can have on the users are not considered: fewer losses in the distribution network, independence from the grid manager, reduced environmental impact. Because of all these aspects photovoltaic plants are the most practicable solution for the distributed generation of electricity in urban areas.

Average investment cost for each photovoltaic technology in 2004. Source: IEA.

Type	Prices (€/W _p)
Off-grid up to 1 kW _p	12-15
Off-grid above 1 kW _p	12-14
On-grid up to 10 kW _p	6,6-7
On-grid between 10 kW _p e 100 kW _p	6-6,6

Photovoltaic power installed in Italy (MW_p). Years: 2000 – 2004. Source: ENEA.



In Liguria, because of the regional climate, solar energy represents a considerable source that can be found throughout the whole region with a yearly average value of about 4.3 kWh/m² per day (nearly an oil barrel per year for each square metre).

Due to the significant investment costs, photovoltaic energy represents a lower potential than thermal solar plants. Taking only rooftop installations into account, the annual potential has been estimated as being higher than 300 tep in 39 municipalities in Liguria. The regional environmental and energy plan does not specify particular targets for this technology, but nevertheless the aim is to achieve some MW_e of photovoltaic energy on regional territory by 2010.

Considering that the main obstacle to this technology is the cost of investment, the Region of Liguria issued a tender to promote these plants (July 2006) that is aimed at financing small renewable plants owned by public bodies which have a power capacity that is lower than 20 kW and that want to make use of an "exchange on the spot" of the energy produced.

The "exchange on the spot" service can be used where the energy input and the output connections are the same so that the annual balance (net metering) between the energy production sold to the grid and the consumption taken from the same network is the same. This method allows the owner to use the energy produced by his own plant to cover his consumption.

The financial incentives that are being offered are different for each type of plant: 75% of the total investment for photovoltaic plants and 40% for other renewable sources (mini eolic, mini hydro etc.).

SMALL HYDRO PLANTS

Hydroelectric energy has been competitive with conventional electricity production for many years both on a technical and economic basis. The difference in the investment costs is peculiar to big and small plants alike, as it is linked to the civil building work needed for the realisation of the barrage and the adduction. This is why in Italy the investment cost per installed kW can vary between 1,500 and 2,500 €/kW, with a depreciation period of 60 years for civil work and 30 years for electromechanical jobs. Operational costs are generally between 2% and 3% of the investment costs, for a number of working hours that are about 3,700.

Under these assumptions, the production cost is between 4.5 and 11 c€/kWh. For small size plants the upper limit may well easily be exceeded.

Consequently, to make the cost of the kWh competitive, it is necessary to reduce management and maintenance expenses to the minimum and to ensure the best exploitation of the hydro source available.

Due to the lack of complexity of a small plant, management and maintenance are quite simple activities: the management is carried out by remote control systems which allow the operation and monitoring of the plant.

If in most industrialised nations big hydro plants do not show much development potential, especially because of the environmental impact linked to the necessary work, small size hydro plants maintain a

big potential which is mainly due to the restoration of existing plants and to the exploitation of the gross head in existing hydraulic systems.

Liguria has a considerable hydroelectric potential which has allowed the development of plants that are generally fed by a compensation storage to overcome dry periods. The prevalence of a torrent-like flow of the rivers and their short length represent the main obstacles to fully exploiting and developing this potential and for this reason it is not possible to foresee a significant increase compared to the existing installations.

The entrepreneurial sector shows a certain vitality and interest but nevertheless, the exploitation of the source for energy must be in accordance with the existing territorial planning rules which include basin plans. At the same time the use of the hydro source must be compatible with the other uses (drinking water, agricultural water, etc...) and has to ensure the existence of the minimum vital water flow of the river.

It is the presence of territorial and normative restrictions that represent the biggest obstacle to the development of hydroelectric resources.

The knowledge of the current situation in Liguria has helped us to identify some policy guidelines to define and develop specific actions:

- restoration of existing plants currently not in use with priority to those where there are valid water derivation permits and authorisations with the defined itinerary;
- exploitation of existing hydraulic heads in hydraulic system pipes;
- analysis and specific verifications of existing plants to check for changes which could improve energy production;
- realisation of new environmentally and economically sustainable plants.

According to these policies, ARE Liguria has carried out an evaluation of the hydraulic systems in Liguria by contacting every municipality and analysing their related documents. ARE has drawn up a list of the installations which would make a good investment for a pilot action of two small plants in aqueducts. Furthermore ARE has supported the Region of Liguria in developing an executive project of a small hydro plant in Varese Ligure (SP). Regarding restoration of existing plants, the Region of Liguria has financed, together with the technical support of ARE, restoration of three disused small plants, located in Badalucco, Rocchetta Nervina and Tovo S. Giacomo.

BIOMASS

Liguria is mainly a mountainous region and over 70% of the woods are concentrated in the mountains.

The theoretical potential for biomass from forestwood in the whole region is estimated at about 463 ktep. This potential however, is not equally spread throughout the territory but it is very high and wood represents the greatest renewable source in Liguria. It must be underlined however that the potential is theoretical and therefore, in order to exploit it, a considerable number of organisational conditions need to be fulfilled. Biomass in fact presents a low density per territory unit and it needs to be collected across wide areas increasing its cost. The supply chain organisation to cut, collect and transport the wood chips is very complex and expensive. At the moment small plants which use resources in small areas with good logistics are economically justified.

The obstacles to a policy aimed at launching the use of wooden biomass in Liguria can be summed up as follows:

- land property fragmentation,
- road accessibility,
- steep slopes,
- too many institutions involved and complexity of authorisation procedures.

First of all the choice of plant size or the production technology both for thermal or electrical energy must comply with the local biomass availability and the consumption in the surrounding area because the installations have to be fed with local wooden and they should not justify imports.

The characteristics of forests in Liguria which set the maximum amount of dry biomass available in an area to not more than 30.000 t/a means that the choice of plant is restricted to these two solutions:

- electricity production plants with an electrical power higher than 1 MW_e but not exceeding 4MW_e ;
- heat production plants.

Nowadays from an energy point of view, the best solution for biomass exploitation seems to be cogeneration technology, i.e. the combined production of electricity and heat.

There are considerable advantages of cogeneration because of the possibility of obtaining efficiency values (higher than 80% in swimming pool heating for example) which would otherwise be impossible to have with a separate production of heat and electricity.

Therefore, the regional action plan promotes these installations.

The specific regional target is to install biomass plants with a thermal power not exceeding 150 MW. This target seems realistic in the given period of time. The power value could be reached with the installation of different kinds of technologies and sizes but designed mainly for the heating supply.

The Regional environmental and energy plan, the RES-e Regions project and the definition of regional strategies for renewable energy

ARE Liguria has taken an active part in the planning stages of this Plan and is therefore the natural candidate for promoting and putting the regional energy policy into practice.

Beside its institutional duties and thanks to the RES-e Regions participation, ARE Liguria has become a privileged interface with the different stakeholders within the regional territory. ARE takes the initiative to organise meetings between the local authorities (not only at a regional level, but also with provinces and municipalities) and stakeholders belonging to the sector.

In the framework of this project ARE has been able to deepen the dialogue with administrators, institutional officers and associations belonging to the same category, creating a platform to compare the different production and institutional realities that are involved. In this way ARE was able to identify the main difficulties which prevent a widespread use of renewables on a regional level.

A steering Committee has been set up with the Environmental Councillor, the Region of Liguria Energy section Director, representatives from universities and Industrial Associations. Apart from the organising the Regional Seminar, this steering committee was also the study group that highlighted the main problems experienced by the producers in promoting renewables. These topics are going to be deepened during the Planners Meeting and the Regional Info Meeting. The Steering Committee has also suggested some interesting guidelines for renewables in accordance with the Regional Environmental and Energy Plan.

Beside the difficulties pointed out by designers and producers, mainly related to problems with the procedures, ARE Liguria has studied in detail the barriers from the local authorities point of view by preparing the questionnaire that is part of the WP3. Among the problems, the financial aspects have the priority together with public approval which is often difficult to obtain for new and unknown technologies. In this way the survey carried out by ARE Liguria involving a vast test group of Ligurian inhabitants, has helped in selecting the technologies which ought to define better its information campaign. The survey found that not only is the public generally well inclined towards renewable energy sources, but also that people would like to be better informed about the technologies they know less about (in particular mini hydro and biomass). The information campaign organised by ARE as part of the project, has taken into account the survey results and it made a good use of the WP1 regional seminar and the brochures for the public, technicians and local administrators, to fulfil their needs in the best way possible. The success of the initiatives was measured not only through the attendance to the regional seminar, but also considering the number of phone calls received by the hotline.

Most of the municipalities have indicated problems related to the design phase as the main obstacles to the development of renewables in their territory. This problem also emerged during the phone calls

that ARE received during the months before the hotline construction and in the requests for advice made by the Administrations.

Therefore, ARE Liguria, together with the Region has started a technical support programme which involves many municipalities in Liguria of every size (from few hundred inhabitants to several thousand). The selection was made by sending out a questionnaire to the administrative committees of the municipalities aimed at highlighting the energy saving actions and the exploitation of renewables. The 64 municipalities which answered were put on a list, and points were awarded according to the quantity and relevance of information that had been received and depending on how many regional projects were present in the area. From this list, the first forty were selected.

The municipalities involved in the 2006 ARE action plan are listed below:

- Province of Imperia: Caravonica, Cesio, Costarainera, Dolceacqua, Mendatica, Pornassio, Sanremo, S.Stefano al Mare;
- Province of Savona: Alassio, Andora, Arnasco, Calice Ligure, Carcare, Casanova Lerrone, Cosseria, Vado Ligure, Loano, Magliolo, Mallare, Nasino, Orco Feglino, Ortovero, Piana Crixia, Pontinvrea, Quiliano, Sassello, Varazze, Vezzi Portio.
- Province of Genova: Borzonasca, Casarza Ligure, Favale di Malvaro, Gorreto, Rezzoaglio, S.Stefano d'Aveto, Vobbia;
- Province of La Spezia: Bonassola, Carro, Carrodano, Riomaggiore.

The project, which started in June 2006, includes an analysis of the energy critical points of the municipal buildings and plants and support in the realization of new plants which could exploit the renewable sources available in the area. As far as the proposals and the intervention possibilities are concerned, the investigations on the spot that have already been carried out highlighted the considerable interest in solar technologies, in particular regarding photovoltaic, and hydro plants when the refurbishment of small plants in disuse or the exploitation of heads within municipal aqueducts are possible. Concerning the use of biomass, the municipalities are in favour of the choice of interventions aimed at heat production. Others, following the shining examples of Varese Ligure and Calice Ligure, are interested in studying in detail their wind potential; however it must be underlined that the possibility to exploit this technology in our Region consist strictly of small size installations.

ARE Liguria is supporting the selected municipalities in designing feasibility studies and also in searching for financing which could make the realisations possible. At the time of writing a series of preliminary meetings have already been carried out and several important projects are the subject of a deeper and detailed study.