



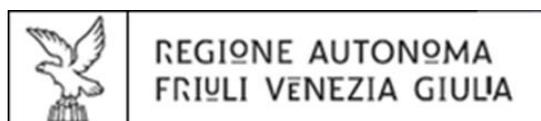
Introduction of Regional Energy Concepts

WP4.6.1

How to do it well Friuli Venezia Giulia Region (PP12)

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1.Introduction energy objectives and targets, domestic commitment

The general regional energy objectives by 2020 are set by the regional energy law n°19/2012. Although the law is now being overhauled general objectives will steer the actions and measures of the future energy plan. In fact the energy plan is now ongoing and its key energy measures up to 2020 can be summed up as below:

- **Support energy efficiency in public buildings, transport and industry**
- **Overhaul the energy distribution system defining the main energy corridors and implementing smart grids**
- **Support energy audits**
- **Support to towns that joined the Covenant of Majors (Decree 2201/2013)**
- **Enhancing sustainable transport and in particular electric mobility and intelligent charging stations**
- **Define the optimal energy RES and not RES mix and the use of local energy sources like biomass from sustainable short supply chains, hydropower and geothermal sources**
- **Contribute to reducing regional GHG emissions**
- **Economic support measures (i.e.bank of white certificates etc)**

RES targets

The FVG Region has mandatory targets on RES by 2020. In fact the Legislative Decree n° 28/2011¹ includes provisions for Regions in order to meet the national RES 17% target by 2020. The national target on RES-Heat and RES-Electricity has been passed on to Regions that will contribute each by a binding regional target. The Friuli Venezia Giulia Region has been assigned a target of 12,7% of RES by 2020 as Table 1 shows. The target is broken down in RES-Heat and RES-E sub not-mandatory targets, whereas each region can adjust the overall RES –E and RES-H targets increasing more or less renewable heat and electricity, depending on the most cost-effective measures, the availability of local renewable sources and local constraints. The regional target will be monitored every tow years and a target trajectory is set for every regional target.

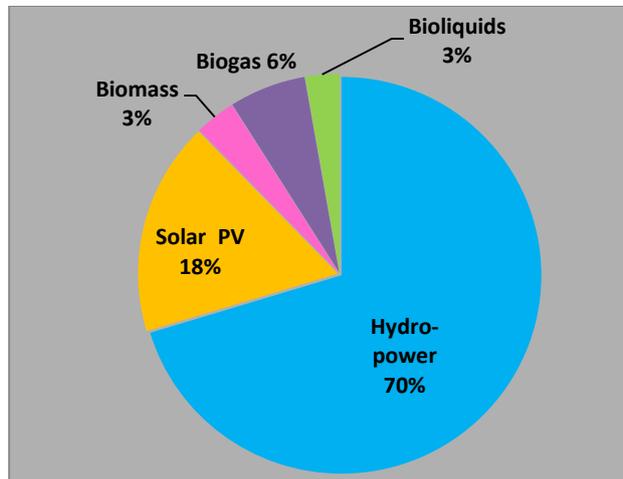
Table 1. Friuli Venezia Giulia RES objectives and RES share

Friuli Venezia Giulia Region	Electricity from renewable energy source (ktep) indicative	Thermal energy from renewable energy source (ktep) indicative	Total (ktep. %)	% of total energy consumption from RES by 2020 (mandatory)
RES targets 2020	213.2	228.6	442	12,7
Share of RES-Heat % 2012	-	-		-
Share of RES-Electricity % 2012	22%	-		
Share of RES 2012	Around 12%		10 % (indicative)	

¹ Official Gazette 28 March 2011

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Figure 2. RES-Electricity share in the FVG Region in 2012



Source: GSE 2012

Energy efficiency

With regard to energy efficiency the FVG Region has not mandatory energy savings commitments although final energy savings are part of the measures to increase the RRS share on overall final energy consumption.

However Italy has a national Energy Efficiency Plan that is periodically overhauled. The latest National energy Efficiency Plan (July 2014) sets the three following national targets:

- 15,5 M tep annual savings in final energy consumption by 2020 or 24%
- Avoid 55 M annual tCO₂
- 8 billions savings in energy imports

Although these targets have not been passed on to Italian regions, a set of measures have been identified in order to meet these targets. These measures represent also the main instruments at regional level to improve energy efficiency in the residential, industrial and public sectors.

The main measures of the National energy efficiency plan that target primary energy savings are the followings:

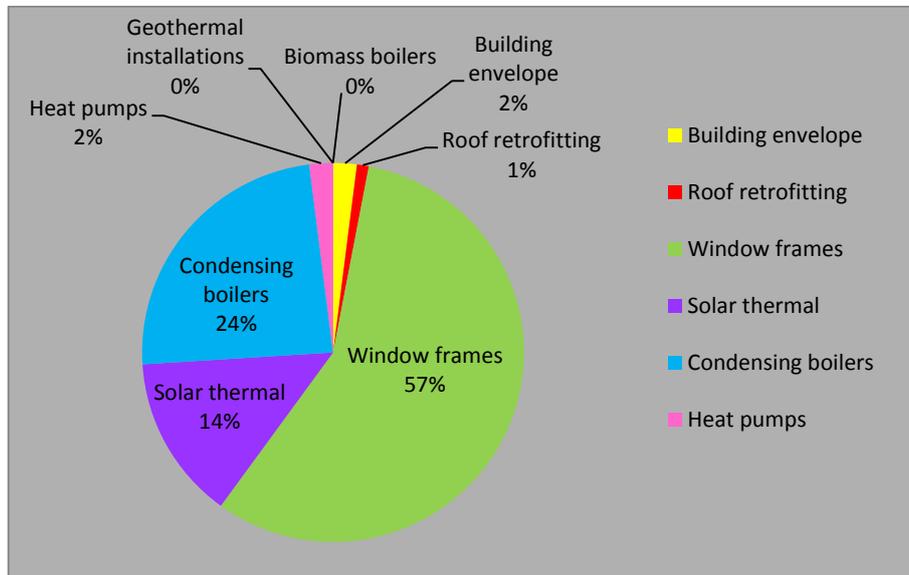
- Minimum energy efficiency standards in buildings
- Fiscal rebate on expenses for buildings refurbishment
- White Certificates – a mechanisms that allows to cash in from energy efficiency savings in KWh
- Support to cars freight update

At regional level these schemes have been widely implemented and have contributed to reducing energy consumption. An outlook of energy efficiency interventions applied to building refurbishment carried out benefiting national fiscal support measures is shown in Figure 2.

The majority of requests and interventions concerned window frames replacement (57%), followed by condensing boilers and solar thermal.

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Figure 2. Breakdown of energy efficiency domestic measures in 2012



Source: ENEA 2012, Friuli Venezia Giulia

2. The FGV Region approach to smart grids and energy management at local level

The Friuli Venezia Giulia approach to smart grids is well illustrated by the objectives of the RENGOV project, where the FVG is partner together with other FVG public holdings and SITI a non profit organization. RENGOV is an initiative of “SMART ENERGY GOVERNANCE” with the strategic objective to develop innovative energy management strategies at local level, by integrating distributed renewable energy sources (solar, biomass, hydroelectric, etc.) according to a Virtual Power Plant (VPP) approach, creating a regional smart grid and using energy storage capacity. The project includes the active involvement of local authorities, private entities and investors, creating models of public-private partnership oriented towards value oriented mechanisms. Local authorities, energy producers from renewable sources, energy transmission and distribution operators, energy storage systems producers, financial institutions, regional companies are therefore an integral part of this smart approach, that will also trigger virtuous mechanisms of communication and participation (awareness raising).

RENGOV is based on energy clusters, composed by groups of power plants based on renewable sources, where the impacts on the current business models (generation, distribution, transmission) of the potentialities offered by technology can be simulated and / or operationally assessed, providing useful elements for the forecasts of innovative energy systems market development. The set of clusters represents a Context of Operational Experimentation (CSO) unique in Europe. In a second phase of the project buildings in urban areas will be considered as energy prosumers (producers and consumers), part of the VPP of the system. Therefore, inside the CSO it will be possible to bring about the real benefits of the adoption of coordination mechanisms aimed at optimizing the overall production of energy and its placement on the network, thus overcoming

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congestion phenomena and other technical limitations. The aim is on one hand to maximize the economic returns for each production unit, on the other the creation of networks stabilization mechanisms and new qualified job opportunities (in particular new smart businesses). On the basis of the actual data generated by the CSO, it will be possible to make appropriate calculations and financial and economic simulations, in order to build innovative business models.

3. A regional benchmark model of a sustainable biomass supply chain

The Friuli Venezia Giulia Region is rich of biomass sources and in particular of woody biomass stocked in natural forests. However only a small fraction of woody biomass is being used as biomass due to several economic and infrastructural barriers. However some small communities in the mountain areas managed to set up a sustainable model to exploit forest biomass for bioenergy purposes.

Forni di Sopra, a small community in a mountain area within the boundaries of the regional Park of the Dolomiti Friulane, set up a bioenergy supply chain that can work as a benchmark model for other town in mountain regions. The small town in the last years has turned a potential weakness, lying in a mountain valley far from the main service and industry hubs into an element of success, in terms of energy and social development. The town has managed to set up a short bioenergy supply chain exploiting local forest resources in a sustainable way and develop a decentred energy models based on several RES sources that will lead to energy self sufficiency.

The bioenergy supply chain was originally developed to serve public buildings with renewable heat generated by a biomass plant. The biomass plant and the first block of the district heating network were built in 2008 and in the following years they were enlarged to serve a wider network of consumers, mainly public buildings and a few private houses.

The overall annual average energy distributed over the years 2010-2014 amounted to 1000-1200 MWth or 22% of the overall energy consumption in the public sector. With regard to the biomass, 50% comes from local forests that are sustainably managed and certified according to the PEFC scheme. The remaining woody biomass comes from local sawmills.

Key technical features of the Forni di Sopra sustainable supply chain

Forni di Sopra bioenergy supply chain - Key features

Biomass plant 1,4 MW

Use of local biomass from PEFC certified forest - 1270 mc/year

Biomass traceability:

50% biomass from local sawmills

40% from forest maintenance

10 % from private forests - local employment

Heat generation: 10153 MWh Heat use 6600 MWth

2008 – 2014 - 13 public buildings connected to the DH system

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Fig. 3 District heating and biomass plant in Forni di Sopra



The town vision on sustainable energy is to become energy self sufficient. To this end it has widely implemented a model of energy distributed generation that include on and off grid solar PV panels on buildings and solar thermal installations. In addition to that a smart wireless remote control system has been adopted to monitor energy use in public lightning, parking spaces and waste collection platforms.

The town has also adopted Green Procurement in public tenders and has introduced LCA (Life Cycle Assessment) principles in the all public buildings construction.