



Good practice

SILA NATIONAL PARK – ITALY



Co-funded by the Intelligent Energy Europe
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Biomass potentials SNP

About 80% of the Park territory is covered with forests. More specifically, about 60.000 hectares, out of the 73.000 of the SNP area, are forests, distributed as follows:

- Conifer forests 36.000 hectares (60,0 %)
- Hardwood forests 15.700 hectares (26,0 %)
- mixed forests 8.300 hectares (14,9 %)

Conifers

The forests of Sila National Park that are potentially suitable to supply biomass occupy an area of about 28.000 HA, entirely in zone C. More specifically, the area involved in the plan is up to **13.000 ha** conifers, representing 50% of SNP areas, almost exclusively composed by Corsican Pine *var Calabrica* or Corsican Pine mixed with beech.

Present day scenario

From the analysis of data concerning land cover in SNP, it can be argued that the production of biomass for energy purpose, based on conifer forests.

The availability goes down again due to lack of forest management plans is, currently up to around **5.200 tons/year**.



Hardwoods

As regards hardwoods, 12.000 ha of SNP area, also included in zone C, will be involved.

More specifically, hardwoods forests can be identified into **9.000 ha** of beech forests and beech forests mixed with other hardwoods. Most of these SNP forests are not included in any Forest Management Plan, therefore, their exploitation is up to the owner (either private or public) who asks Calabria Region for a cut permission.

Present day scenario

From the analysis of data concerning land cover in SNP, it can be argued that the production of biomass for energy purpose, based on hardwood forests. The availability goes down again due to lack of forest management plans, is currently up to around **3.035 ton/year**.



Legislation and sustainability issues

Forest cuts in the Park area are subject to three main regulations:

- **Calabria Region's forestry law (L.R: n.45 2012) "Management, protection and valorisation of the regional forestry heritage"**

laying down general rules and guidelines to improve sustainable forest management designed to preserve the territory and fight against climate change. This law aims at strengthening forestry supply chain starting from the production level in a way that ensures, in the long term, the multi-functionality and diversity of forest resources. This law also says which forestry interventions can be realised.

- **General Provisions and Forest Police Provision (GFPF) laying down technical and administrative rules for the use of forests.**

These provisions state that, in order to obtain cut authorisations, public and private forest owners have to present a project drafted by a qualified expert. The following rules apply:

Coppice

Depending on species, the choice of forestry practices have to comply with technical guidelines included in the chapter "Sustainable forest management" of the Regional Forestry Plan.

The choice of seedlings have to be made according to criteria laid down in art. 43 (coppice of two rotations system) and art. 44 (coppice with standards).



•High forest

The planned felling quantity is determined according to section IV of the chapter “Sustainable forest management”. The management system has to involve, depending on the forest population and temperament of species, a selective regeneration cut “for small or very small groups” not larger than 200 square metres.

Thinnings, in natural formations have to consist in selection interventions “from below, of low or moderate degree” in relation to population structure, temperament of species and plant health conditions.

SNP management plan

- **Art. 23 – Interventions in forests and tree cuts**
- **Zones A (integral natural reserve)**

Any silvicultural intervention is forbidden

- **Zones B (oriented general reserve), C (protected areas for traditional uses) and D (areas of economic promotion)**

Silvicultural interventions (forest utilisations, thinnings, prunings, plant health cuts, etc...) must be authorised by the Park following explicit request.

- **Zones B**

In corsican pine, beech, oaks and other high forests, forestry utilisations are allowed (based on selection cuts) with an utilisation rate of 1,5%.

- **Zones C and D**

Thinnings can be made according to GPFs.



Definition of the goal

To heat public buildings inside the park area with wood biomass, obtained through the maintenance of protected areas

To heat the offices of the park administration with wood biomass from the park area

To produce wood fuels and sell them to inhabitants inside the park



Possible impacts

IMPACT OF BIOEUPARKS PROJECT

Social impact

During the last years, the massive introduction of natural gas in Calabria determined a sudden and serious loss of energy self-reliance of local communities that had to go through systematic fossil fuel supplies, being exposed to their effects in terms of price volatility.

In general, social benefits connected to biomass use refer to improved life standards, lower emissions compared to harmful fossil fuels, job opportunities for locals and sustainable use of woodlands.

In this project, the substitution of boilers and the introduction of biomass fuels will allow the Sila National Park to play a leading role in the community: the use of local biomass represents and added value for local economy.

The money needed to buy pellet to fuel boilers will no more be destined to other countries or to oil transnational companies: on the contrary, it will create a virtuous circle for the local community.

Keeping the money within the local economy will, in turn, help revitalise other activities.

Environmental Impact

Environmental benefits deriving from the use of biomass for energy purpose are widely acknowledged.

The use of biomass rather than fossil fuels allows to avoid the emission into air and soil of huge amounts of CO₂ and other polluting elements. While burning, biomass emits the same amount of CO₂ it has accumulated during its life. Moreover, emissions linked to the transportation of biomass to thermal power stations will be avoided.

Economic Impact

The use of biomass, mainly from forestry processing residues, will favour the development of a local, forest-based economy where companies and experts may start businesses and create jobs with concrete impact on the territory. The demand of wood for energy purpose stimulates the re-organisation and development of the supply chain, involving agriculture and silviculture, wood-processing companies and transport companies and providing them with opportunities for more income or the start of secondary activities.



Process of participation and capacity building in the area

- **Stakeholders involvement process**
- ***Methodological approach***

The Local Action Plan for the creation of a biomass supply chain was conceived as a living document, undergoing a process of co-planning with local stakeholders likely to be involved directly or indirectly in the supply chain.

The Sila National Park has drafted this strategic overview of the plan based on the analysis of the available data and feedbacks from awareness-raising events held between September and November 2013, which local stakeholders (forest owners, forestry companies, transport companies, public authorities) actively took part in.

During these events, the SNP made the decision of drawing the detailed plan after further discussion that would take place in specific meetings scheduled in February/March 2014, with the goal of starting the supply chain activities in the beginning of April 2014.

During these specific meetings, some crucial themes were approached: energy and plants, Structural Funds incentives, financial management of the supply chain, forestry and energy certifications. Besides the key-actors of the supply chain, trade associations, professional organisations, research institutes, local authorities and representatives of Calabria region were invited.

The result of this process is the detailed identification of:

- ❖ companies interested in supplying services and products linked to biomass-based heating, with particular reference to the sector of heat/electricity generators linked to district heating systems and solid biomass cogeneration;
- ❖ project designers, building companies and owners of buildings (both public and private ones) interested in installing biomass heating systems in buildings under their property or responsibility;
- ❖ economic actors interested in developing cooperation in the sector of biomass heating, including biofuel supply chain.

The final goal of this participation process is to identify forms of cooperation, under the direction of SNP, between one or more fuel suppliers and final users, in order to ensure, for each plant, a stable supply in terms of quantity, quality and cost.

The SNP' supervision will ensure the environmental sustainability and the environment-friendly nature of all processes.



The sector of forest biomass for energy purpose has rapidly developed over the last years, in Calabria too. This development is related to the most recent policies in the energy field that, on the one hand, caused an increase of fossil fuels prices and, on the other hand, provided regulations and incentives for the exploitation of renewable sources of energy. Indeed, the largest part of wood extracted from Sila National Park (SNP) is currently used by thermal power plants in Crotona and Cosenza provinces.

Thus, thanks to the Bioeuparks project, a new approach to forest biomass exploitation within the Park area has been adopted. This approach is based on principles of environmental and social responsibility that include using biomass to supply small and very small-sized plants, as close as possible to the production area, looking to create a sustainable and socially accepted model.

To favour this process, during the start-up phase of the supply chain the SNP authority has played the role of final user of the biomass produced in the Park area or within 50 km distance from its borders. The supply chain was started by publishing a tender for the supply of pellet by local producers.



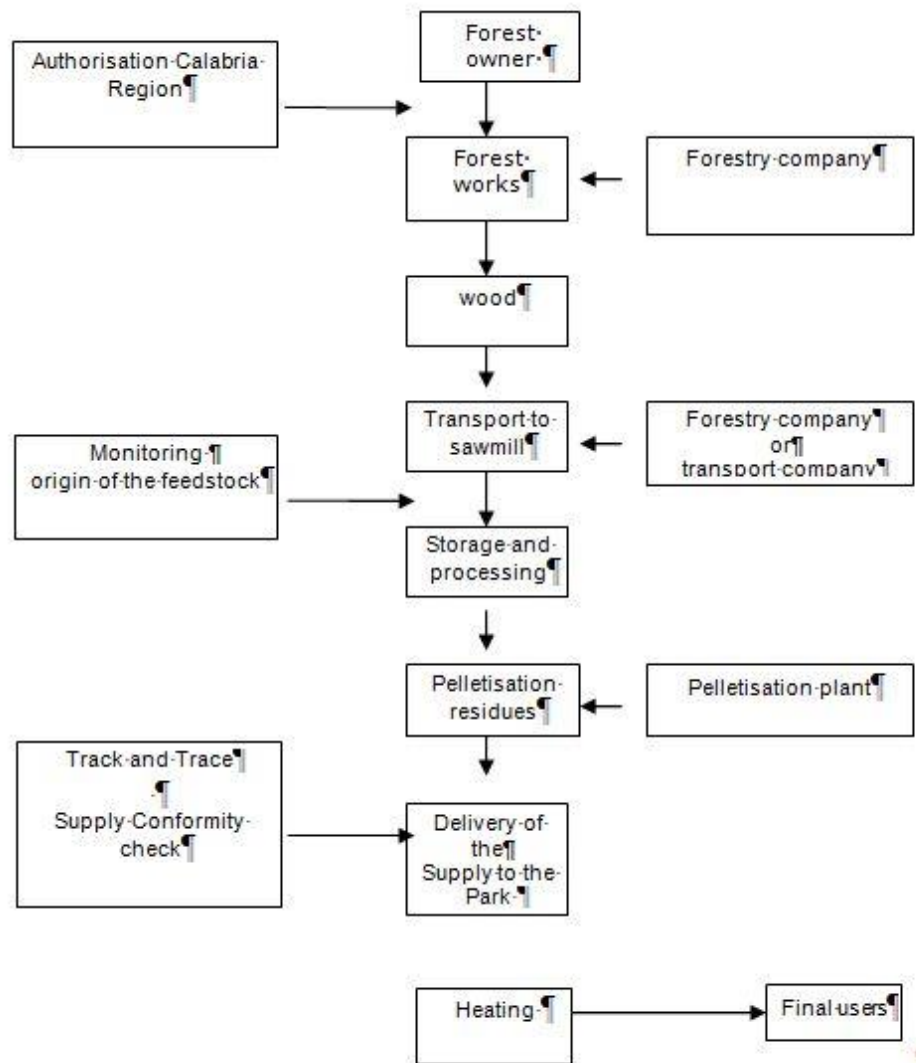
The process of building the supply chain started with the involvement of territorial stakeholders to analyse the present-day biomass market situation and the feasibility of a short supply chain based on environmental, social and economic sustainability.

During numerous public meetings and roundtables, it emerged that biomass produced in the Park area is entirely absorbed by thermal power plants of Crotona and Cosenza provinces.

The Park has therefore started a process to elaborate and share with stakeholders a different approach to forest resources management whose pillars are the short supply chain, environmental and social sustainability and the promotion of local scale energy districts.



Sila park supply chain



Energy production

- **ENERGY PRODUCTION**

The production of electricity and thermal energy is realised through thermal machinery fired with wooden fuel (chips, pellet, etc...) that may have different functioning and different performances in terms of efficiency.

The figures concerning potential energy production, depending on the potential conifer and hardwood biomass supply described in the previous paragraphs, are showed in the table below. As the table points out, there is currently no production of thermal energy. Indeed, no district heating system using the thermal energy produced by plants within a range of 50 km distance from the SNP territory exists up to this day.

As regards the planned stations, the ones located in the Park seat and in Longobucco, technical specifications are described below:

Technical specifications - SNP seat station

The boiler the Park is going to start will represent an effective alternative to traditional boilers fed with gas or liquid fuels (methane, LPG, gasoline), thanks to its cheap management due to the low market price of fuel. The boiler will be able to burn various kinds of solid, middle-sized fuel, such as wooden chips, sawdust, pine nut and almond shells, pellet, olive pomace, etc.



Besides the boiler located in the SNP headquarters, some boilers for the heating of other buildings (all of them run by the Park) will be operated during this year. In particular:

Chk	Denomin	consumi kg/h	ore funzion.	kg consumi biomassa/kg/anno	kg consumi biomassa/q.li/anno	tipo combustibile	marca	Mod	KW/h	prod KW_termici-2014	prod KW_termici-2015	Comune
1	Sede EPNS	25	2 640	66000	660	pellet	Pasqualicchio	CSB180	208	0	205 920	Lorica
2	Cupone segheria	25	2 640	66000	660	pellet	Pasqualicchio	CSB180	208	0	205 920	Spezzano Sila
3	Cupone centro Studi	9	2 640	23760	238	pellet	Pasqualicchio	CS60	77	0	76 230	Spezzano Sila
4	Longobucco Museo	11	2 640	29040	290	pellet	Pasqualicchio	CSB80	92	0	91 080	Longobucco
5	Lorica-Mellaro	14	2 640	36960	370	pellet	Pasqualicchio	CSB99	114	0	112 860	Lorica
6	CTA-Cava di Melis	3	2 640	7920	79	pellet	Palazzetti	martina 15	15	0	14 850	Longobucco
7	CTA-Carbonello	3	2 640	7920	79	pellet	Palazzetti	martina 15	15	0	14 850	Taverna
8	CTA-Cupone	3	2 640	7920	79	pellet	Palazzetti	martina 15	15	0	14 850	Spezzano Sila

Due to logistic problems, that is, because it is not possible to store a sufficient quantity of wood chips to feed the boilers, pellet will be used instead. Pellet is produced from residues and waste of first wood processing in local sawmills.



- The concession of the service will take place according to the following procedure art. 125, paragraph 11, of the Code of Contracts.

11. For services or supplies for an amount equal to or greater than forty thousand euro and to the threshold referred to in paragraph 9, the reliance by fiduciary shall respect the principles of transparency, rotation, equal treatment, after consulting at least five operators economic, if there are of sufficient number of suitable, identified on the basis of market surveys or from lists of economic operators provided by the contracting authority. For services or supplies less than forty thousand euro, has allowed the direct award by the head of the procedure



- The total supply will amount to 1974q.li of which will be executed first supply for the months of October, November and December 2015 for an amount equal to 987 q.li in places of delivery specified in the prospectus

PRIMA CONSEGNA : periodo ottobre - novembre - dicembre 2015								
Sede consegna	consumo stimato/anno/q.li	Consumo/mese	consumo /qli/ 3 mesi	peso/kg/buste	n° buste			
1 Sede EPNS (6 mesi)	498	83	249	0,15	1660			
2 Cupone segheria (3 mesi e 1 mese e 1/2)	249	83	125	0,15	830			
3 Cupone centro Studi (6 mesi)	180	30	90	0,15	600			
4 CTA-Cava di Melis (6 mesi)	60	10	30	0,15	200	€/busta	totale euro	
fornitura per 3 mesi	987		493,5		3290	€ 4,20	€ 13.818,00	
fornitura complessiva	1974				3290	€ 4,20	€ 13.818,00	
					fornitura complessiva	€ 27.636,00		

- The second provision will be made in January, February, March 2016 for the same amount above



Monitoring of logistics and biomass transformation

Besides the above-described laws and regulations, the SNP will adopt the so called Track and Trace system in order to verify the origin of wood. This control will apply from the first supply, in October 2015. The supplier will have to submit the documents needed to allow full traceability of the product, in particular:

- Cutting authorisation issued by Calabria Region, identifying the place where cut will be carried out;
- Wood purchase contract;
- Report signed by the forestry works director specifying the processing steps carried out, the place of origin of wood consistently with provisions laid down by the Track and Trace system described in the LSCP (Localized Supply Chain Plan);
- Declaration stating that pelletisation has been made within the SNP area (or within 50 km distance from its borders), in case the pelletisation plant does not belong to the supplier.

The SNP will be responsible for controlling all phases along the supply chain and may ask any accredited laboratory to carry out analyses on the products and assess their compliance to the required standards. Furthermore, all processing steps, both in woodland and during pelletisation, will be constantly verified: check reports will be signed also by the supplier.



Monitoring of project indicators

Due to potential risks linked to an irrational development of the sector, there is the need to identify indicators and some measures for the mitigation of possible negative impacts on legal, environmental, economic, or social aspects.

Legality and social/environmental responsibility

A wood-energy supply chain has to comply with principles of legality and social/environmental responsibility. All actors are tied to the full respect of laws, also considering that the supply chain is realised within a protected area.

The main issues in the context of legality are:

- occupational health and safety, also due to the nature of forestry sector, presenting certain risks for workers. Indeed, forestry works imply health and safety risks linked to steep and uneven soil or to extreme climate conditions. These problems are usually increased by the lack or inadequacy of first aid structures in workplaces and appropriate work clothing.
- Traceability of feedstock, as a parallel feedstock import sector exists. It is important that all wood biomass participants comply with EU regulation n.995/2010 that dating from 3rd March 2013, requires all European actors to adopt appropriate procedures reducing the risk of importing wood products of illegal origin.
 - Prevention of environmental damage: the supply chain involves issues related to the management of woodlands and emission of pollutants.



Protection of environment

The use of wood for energy purpose is often encouraged, due to its positive effects on the environment. This is why monitoring the actual environmental impact of the wood-energy supply chain is extremely important. To ensure an appropriate management of raw material, particularly in the early steps of the supply chain (from woodland to sawmill), may help protect forest ecosystems and biodiversity, as well as avoid biomass waste.

Besides protecting the ecological functions of woodlands, an accurate forest management (through thinning interventions and the removal of residues after forestry works), also in hard-to-access areas, reduces the risk of fires and soil erosion.

Carbon neutrality (that is, of CO₂ emissions) represents a fundamental difference between biomass and fossil fuels and is the main justification of public interventions in this field. It is important, therefore, to monitor and reduce emissions caused by the production and transport of biomass during the steps of the supply chain.



Local Development

The creation of the supply chain in the Sila National Park area will build a closer connection between local consumers and biomass harvesting areas. This may present, in turn, a more transparent image of the territory and consequently stimulate local economies.

Furthermore, the creation of local supply chains implies reducing distances for the transport of feedstock and decreasing CO2 emissions. Other important effects include:

- the reduction of “intermediaries” involved in the process, leading to a fairer distribution of the added value among the players and to a better remuneration for biomass producers;
- the sustainability of the production phase, improving the inclusion of local producers in the social context and reducing risks of conflict with the population;
- the promotion of new local markets, creating new jobs along the supply chain, slowing down rural depopulation, and improving local skills related to harvesting, processing and transport of wood.



Stimed Performance

PERFORMANCE INDICATORS : ESTIMATED RESULTS				
SNP con GPL	2013	2014	2015	2016
Consumo GPL/kg	3329,6	11261,6	9282,0	
Emissioni CO2/ton	9,8	33,2	27,4	
SNP - PELLETT				
biomassa prodotta (ton/a)		0	90	153
energia elettrica prodotta Mwh/anno		0	0	0
energia termica prodotta MWh/anno			209	355,73
energia rinnovabile prodotta MW/anno		0	209	355,73
risparmio di energia primaria TOE/anno			21,14	35,94
riduzione gas serra GHG TON co2 /anno		0	80,33	136,56



IDENTIFYING NEW POTENTIAL INVESTORS AND CONSUMERS OF BIOMASS

In this context, being a public territorial body focusing on habitat conservation and environmental education, the Sila National Park authority will merely play the role of creating connections among partners and helping match demand and supply of forest biomass.

The meetings held during the last years have showed that the forest owners and small forestry companies play a minor role in supplying biomass to the thermal power plants of the territory as they hardly manage to aggregate their productions and obtain sufficiently big lots to meet the demand.

On the contrary, small biomass plants, as the one being completed in the Longobucco town hall, and small heating boilers, as those of the Park's buildings are fit for attracting smaller biomass supplies and therefore creating a locally-based virtuous circle.

However, to be competitive on the fuel market, forest owners need to be able to ensure regular and sustainable supplies. In a local energy market characterised by a limited mobility, this could represent a crucial asset.

The buyers of biomass for energy purpose need:

- the supply of biomass on a sustainable basis;
- the assurance of a minimum supply.

Thus, an improved organization of wood fuel production can be convenient for the final users, as it is based on the clear knowledge of the parameters determining the quality of the fuel and leading to the standardisation of the product quality.



At the same time, the development of an efficient logistics will be favoured, together with a close cooperation among the stakeholders and an acceptable level of security and sustainability of feedstock supply. A balanced production system may, in turn, have positive social and environmental impacts.

Finally, the project partners are aware that biomass production for energy purpose can revitalise a stagnating rural economy, in various ways:

- by increasing the value of forestry and agriculture subproducts;
- by favouring a more intense cooperation among the actors of territorial management;
- by allowing a faster recoupment of investments in processing machineries and facilities;

For this reason, even after the constitution of the supply chain, Sila National Park authority has continued to meet with economic actors within the park area in order to enlarge the supply chain.



ENLARGEMENT SUPPLY CHAIN

A questionnaire was sent to these potential stakeholders (e.g. hotel and restaurant owners) in order to carry out a census of biomass boilers operated in their facilities and raise their interest in participating in the supply chain.

The interested stakeholders were then invited to attend a meeting held on the 27/05/2015 e 28/10/2015. The proposal of creating a GAS (Solidarity Purchase Group) –augmenting the overall quantity of biomass to purchase and obtaining a better price from the producers - was made during the meeting.





Thank you!

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