FIUSIS S.R.L. - A complete pruning residue value chain for **Southern Italy**

FIUSIS

Olive groves cover about 380,000 hectares in the Southern Italian Puglia region and they produce excellent olive oil, exported all across the Country and abroad. Olive trees are pruned on regular interval and the pruning of Apulian olive groves yields over 800,000 t of wood biomass per year, according to the estimates made by **ITABIA** within the scope of the H2020 ENABLING project. The disposal problem caused by such a large amount of residue has been turned into a business opportunity by the company Fiusis, born with the mission of turning olive tree pruning residue into a renewable energy source.

Fiusis started operation in 2010 by commissioning a 1 MWe cogeneration plant aimed to transform 10,000 t of pruning residues per year into 8 million kWh of electricity and heat. Recently, this plant has been equipped with a wood pellet production line that uses excess heat for drying the sawdust and yields about 1 t of high-quality pellet per day. Moreover, future plans include a facility for turning the wood ash generated by the plant into high-quality fertilizer.

Fiusis was able to create an effective supply chain of biomass by developing a system that matches the local farmers' needs. In particular, Fiusis offers free pruning residue collection and disposal services to over 2,000 farms. This prevents farmers from burning pruning residues in the field, thus avoiding widespread and recurring air quality issues. When pruning residue is burned in the plant – rather than in the field – fumes pass through a high efficiency filtration system able to remove all noxious emission, including fine particulate.

The main strengths of the company are:

- Close connection with farmers and agricultural contractors for the recovery of pruning residues.
- Production of clean energy (electric and thermal) from a renewable source available locally.
- Local production of wood pellets, suitable for fuelling high efficiency stoves for residential use.
- Propensity for innovation through scientific research, aimed at life-long learning and continuous improvement.
- Full application of the principles of the circular economy.

The initial investment of 8 M € was made possible through project financing. At present, the company has an annual turnover of around 2 M €, a most important result given the specificity of the local context and the positive effects this initiative generates on the local agricultural sector. Fiusis has created new and qualified employment for 33 workers, in addition to the tangible benefit it generates for over 2,000 farmers by solving the issue of residue disposal at zero cost to them. This is therefore a winning model of sustainability, studied and replicated elsewhere in Italy and abroad.

KEY WORDS

Bioenergy, rural areas, biomass, prunings, olive tree, circular bioeconomy, management, technological innovations, environmental benefits

COUNTRY/REGION

Italy/Apulia

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BRANCHES

BOOSTING RURAL BIOECONOMY NETWORKS FOLLOWING MULTI-ACTOR APPROACHES

ADDITIONAL INFORMATION

While proving a powerful supporter of the local economy and environment, Fiusis also offers significant benefits at the global level. The production of energy from biomass avoids the net emission of 4,500 t CO_2 per year if compared to an equivalent plant fuelled with natural gas, which represent the second best alternative, while a plant fed with fuel oil would emit twice as much carbon.

At the same time, conversion into the Fiusis plant avoids the field burning of 10,000 t/year of pruning residues. While now declared illegal, field burning is a traditional practice that is very difficult to stop in the absence of cost-effective alternatives. Delivery to a landfill results in prohibitive cost, while mulching is only partially effective and still more expensive than field burning. Free collection and removal by Fiusis is by far the best option and that is why it has attracted so many farmers. Wider participation is mainly limited by the plant's capacity, pointing at high potential for replication of the Fiusis model.

In order to maximize the efficiency of fuel supply, FIUSIS has equipped with a large machine fleet including a variety of tractors, pruning harvesters and transportation vehicles. Several models have been adopted in order to match the variable conditions encountered in a relatively large territory. In addition, special software has been implemented to geolocate and survey all the farms participating in the initiative and to trace the origin of all pruning residue loads delivered to the plant.

The adoption of cutting edge boiler and filter technology allowed Fiusis to consistently keep emissions well below the authorized limits for over ten years, which has earned the company several environmental awards, including the eco-sustainability and best practices award from Legambiente 2011, and a mention in Italy's Recycling Report 2017.

The procedures for obtaining product quality certification are being activated for Fiusis pellets. Finally, Fiusis is financing studies (Politecnico of Turin together with the University of Salento) for the production of fertilizers from biomass combustion ashes.

ABOUT BRANCHES

BRANCHES is a H2020 "Coordinaton Support Action" project, that brings together 12 partners from 5 different countries. The overall objective of **BRANCHES** is to foster knowledge transfer and innovation in rural areas (agricolture and forestry), enhancing the viability and competitiveness of biomass supply chains and promoting innovative technologies, rural bioeconomy solutions and sustainable agricultural and forest management.

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