

The mobilisation of agricultural solid biomass for local energy

Brussels, 15th February 2017

Promoting enterprise network and local
supply chains for the energy valorisation of
agro-prunings in Italy



Co-funded by the Intelligent Energy Europe
Programme of the European Union

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In Italy, the SUCELLOG project provided support in promoting synergy between the agricultural and energy sectors, currently distant.

The **project focused on a possible solution to the widespread problem of residual agro-prunings**, common to many Italian regions, providing a valid alternative for their valorisation.

The agro-prunings value chain as solid biomass with energy purpose was created thanks to the project's efforts in **building supply chains, promoting enterprise networks, indicating possible sources of funding, developing opportunities for other local projects on similar topics, fostering collaborations between agro-industries and stakeholders such as associations of category, universities and innovations holders, manufacturers of energy systems, of agricultural residues harvesting and pre-treatment equipments.**

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Target Regions:

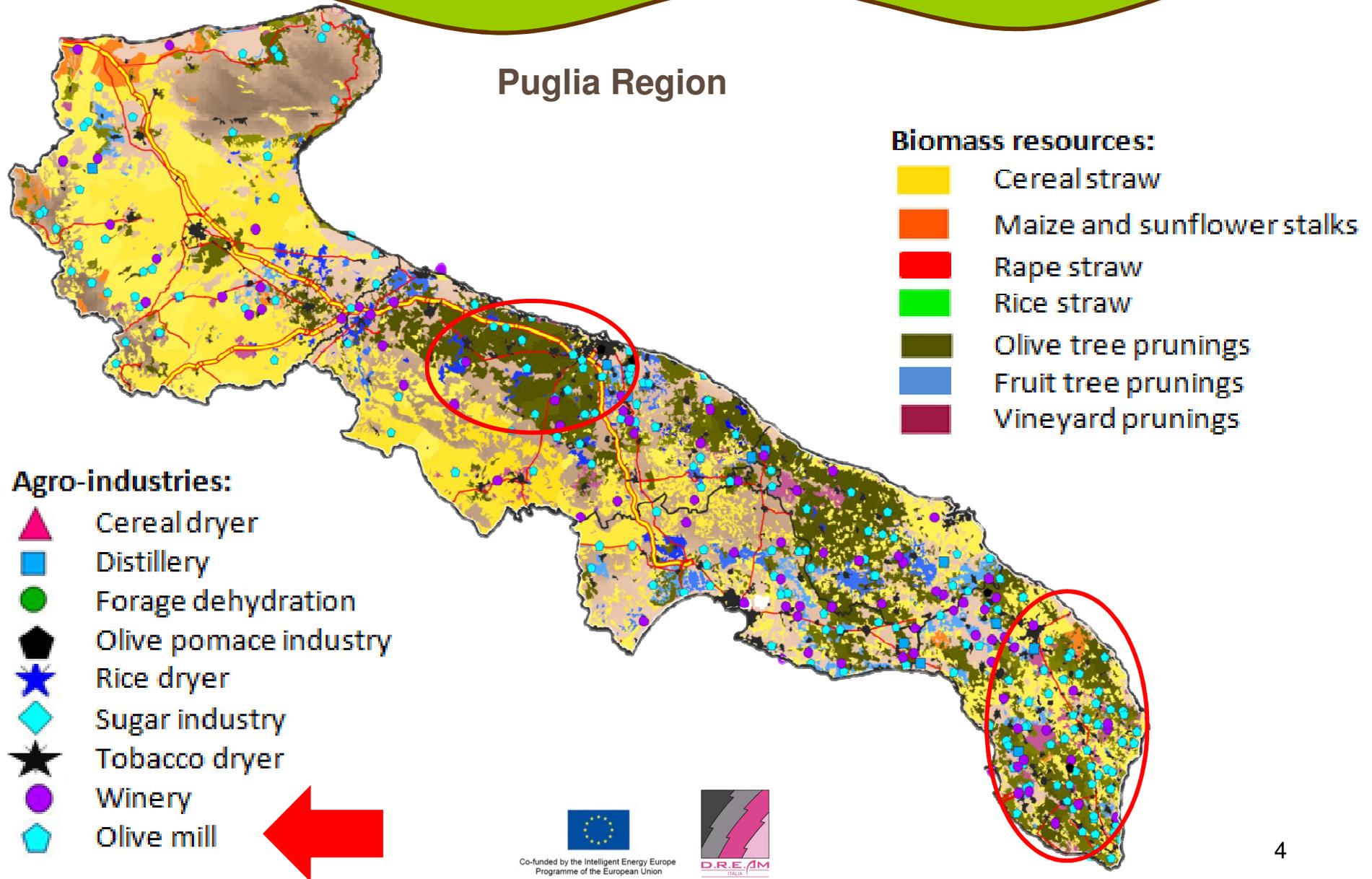
- Emilia-Romagna
- Toscana
- Marche
- Puglia
- Sardegna

Other involved Region:

- Calabria



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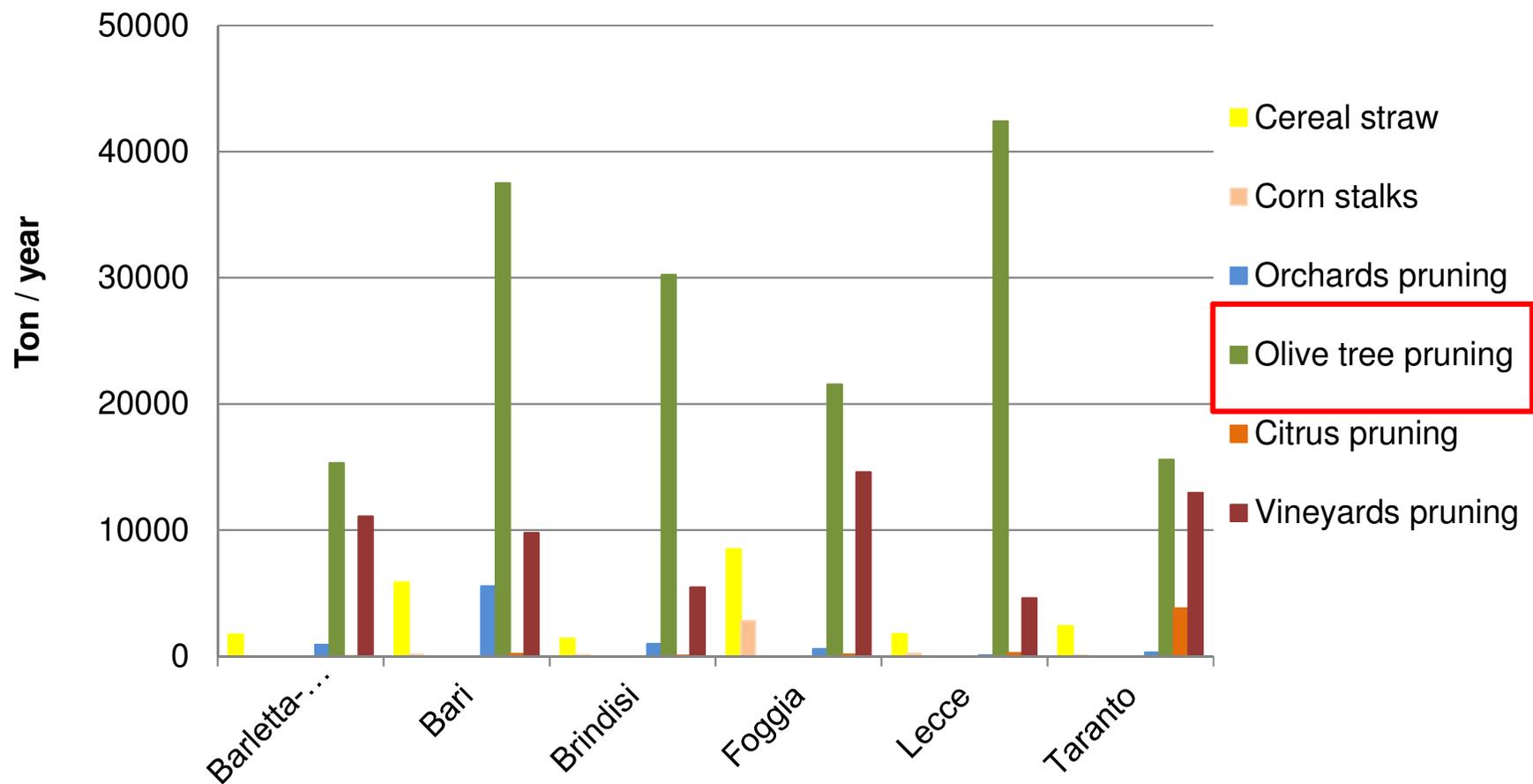


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Puglia Region

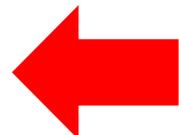
Biomass Resources



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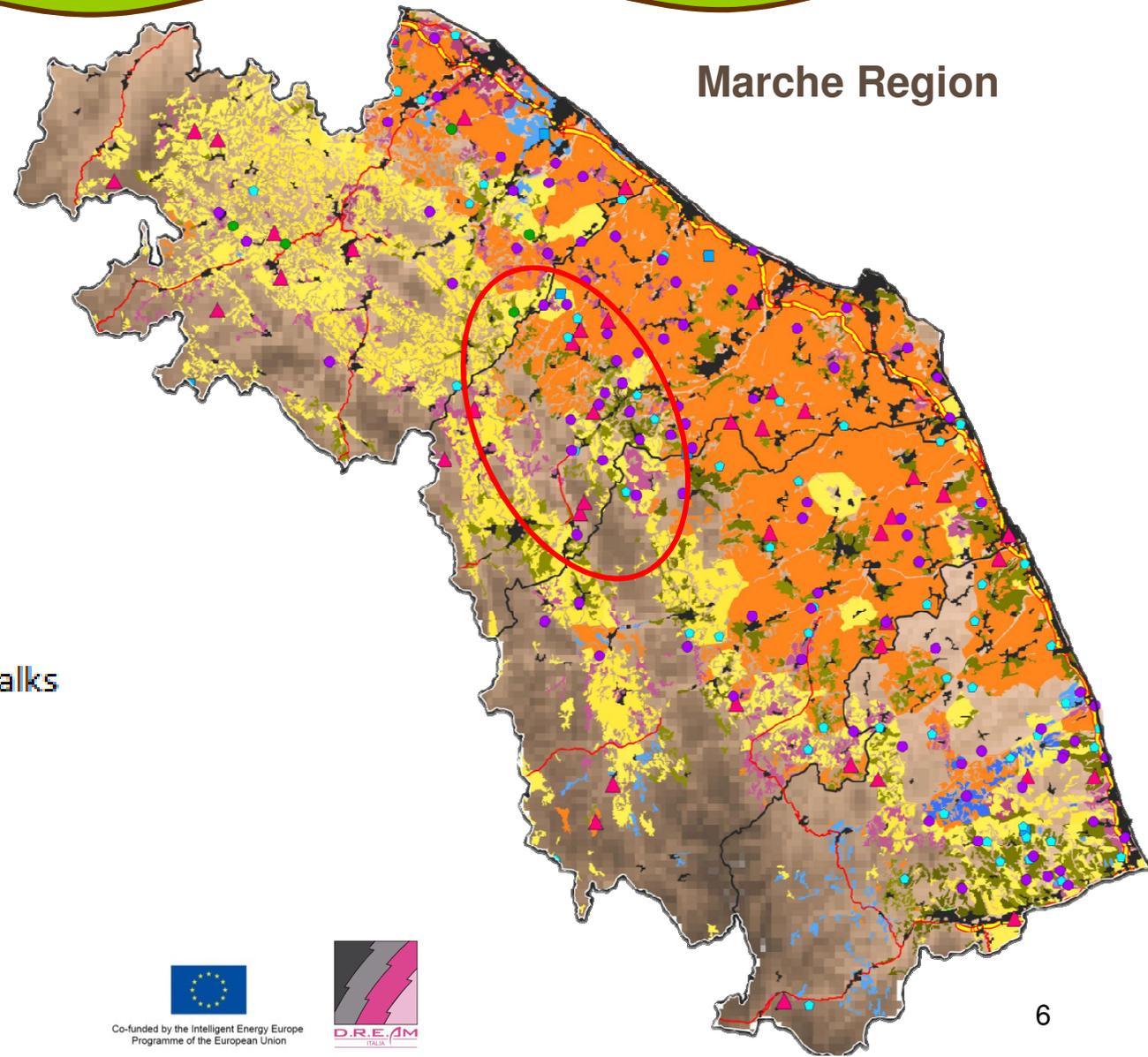
Agro-industries:

-  Cereal dryer
-  Distillery
-  Forage dehydration
-  Olive pomace industry
-  Rice dryer
-  Sugar industry
-  Tobacco dryer
-  Winery
-  Olive mill



Biomass resources:

-  Cereal straw
-  Maize and sunflower stalks
-  Rape straw
-  Rice straw
-  Olive tree prunings
-  Fruit tree prunings
-  Vineyard prunings



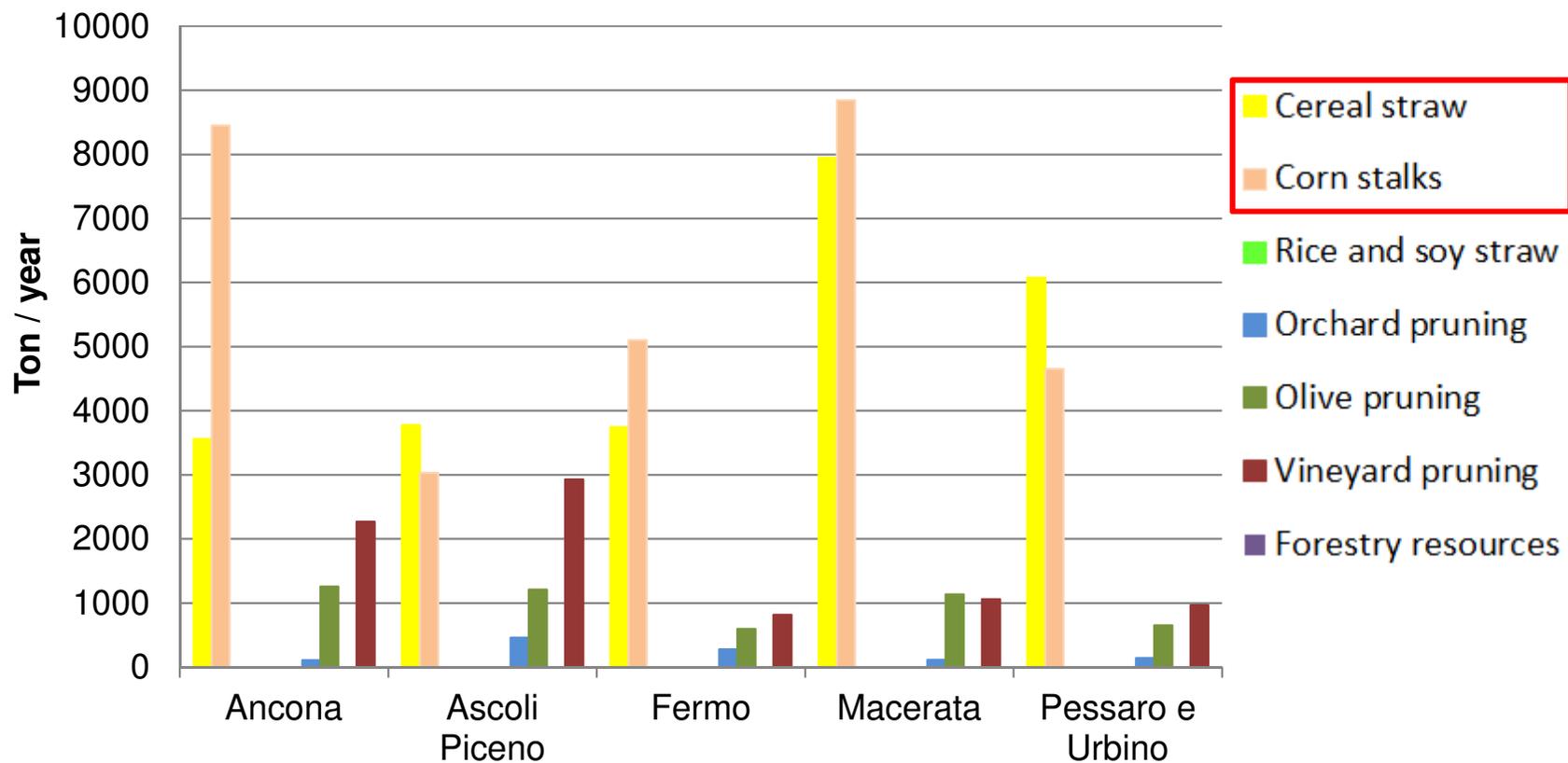
Marche Region

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Marche Region

Biomass Resources



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- Italian **agro-industries supported** by SUCELLOG project:
 - dairies;
 - oil mills;
 - farms;
 - wineries

- In Italy SUCELLOG has triggered the use of the following **biomass resources**:
 - prunings from olive trees or vineyards or orchards;
 - silo dust;
 - straw;
 - grape stem and pomace;
 - olive pits;
 - corn cobs;
 - wood brenches

- **Agro-biomass end use**:
 - self-consumption:
 - Energy self consumption
 - Energy production
 - production for the solid biomass market



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Barriers for the development of SUCELLOG concept:

1. Large excess of wood biomass in the market.

Therefore, there is no interest in alternative solid biomass sources from agricultural residues, or wood biomass prices are very low making it difficult for agricultural by-products to compete in the wood biomass saturated market.

Actions taken:

Search of agro-industries interested in self-consumption and in solving the problem of own by-products disposal



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Barriers for the development of SUCELLOG concept:

- 2. Lack of political commitment:** Wood biomass is used as the reference. Agricultural biomass is not recognized, particularly mentioned or distinguished when addressing sustainable energy issues on national or regional level.

Actions taken:

Search of agro-industries interested in self-consumption and in solving the problem of own by-products disposal



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Barriers for the development of SUCELLOG concept:

- 3. Lack of appropriate technologies (boilers, combustion burners and gasifiers) on the market at a reasonable price (low demand, low activity of specialized boiler producers) for transformation of agro-fuels into energy.**

Actions taken:

Fairs, local meeting, technical visits



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Barriers for the development of SUCELLOG concept:

- 4. **Higher investment costs and cost of maintenance that with wood**



Actions taken:

Search of agro-industries interested in self-consumption and in solving the problem of own by-products disposal

Suggest loans by collective guarantee company to facilitate access to bank credit for cooperatives, consortia and participating cooperative companies.



Provide information about public aids/financing for purchase of equipment



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Barriers for the development of SUCELLOG concept:

- 5. **Lack of funding and low financial capacity to invest on facilities to become a logistics centre or to consume agro-biomass**



Include agro-industries as beneficiary in other similar projects (SCOPE project) in order to study in detail the energy savings generated also by the use of residual biomass

Actions taken:

Support in developing a proposal for a request of local funding (RDP) to start the new logistics centre

Support the technical design of a project where SUCELLOG concept is incorporated

Provide information about public aids/financing for purchase of equipment

Suggest loans by collective guarantee company to facilitate access to bank credit for cooperatives, consortia and participating cooperative companies.



Barriers for the development of SUCELLOG concept:

6. Distance between the agriculture and the energy sector



Include agro-industries as beneficiary in other similar projects (SCOPE project) in order to evaluate a Collaborative Management of Energy Consumption.

Actions taken:

Support in developing a proposal for a request of local funding (RDP) to start the new logistics centre involving research/technological centres promoting innovation actions on agriculture and associations dissemination and promoting innovation actions on agriculture /energy



Support the technical design of a project where SUCELLOG concept is incorporated



Introduce personally to manufacturers of energy systems and of equipment for resources harvesting/pre-treatment



Achievements:

22 agro-industries diagnosed

20 agro-industries supported (10 feasibility studies)

211 participants in workshops (still on-going)

35 stakeholders engaged in local meetings

7 meetings with policy makers

119 contacts with stakeholders during the project

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Oleificio Cooperativo Produttori Agricoli Molfetta

Region: Puglia

Sector: Oil mill

The agro-industry met the project in a SUCELLOG workshop in Puglia and thanks to a previous collaboration with DREAM Italia for the European Project TESLA.

The interest of the agro-industry towards SUCELLOG project was born from a **disposal problem** of the residues from its own activity and especially from the cooperative's members.

The cooperative oil mill evaluated the opportunity of create a logistic chain for the agro-biomass that can be strategic for the olive tree prunings management in the territory.

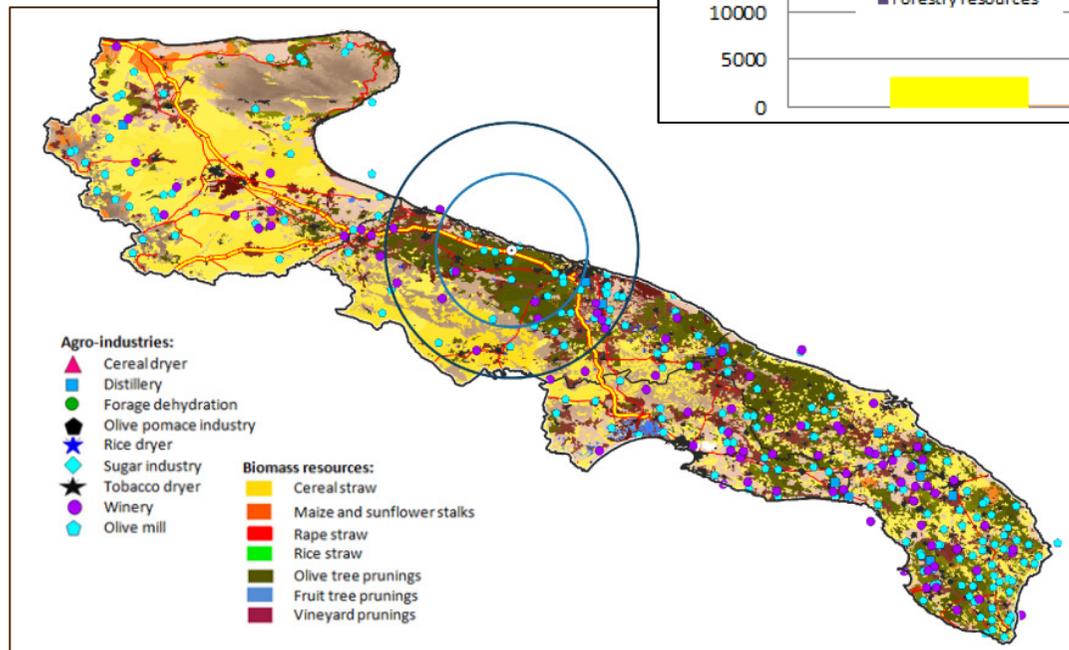
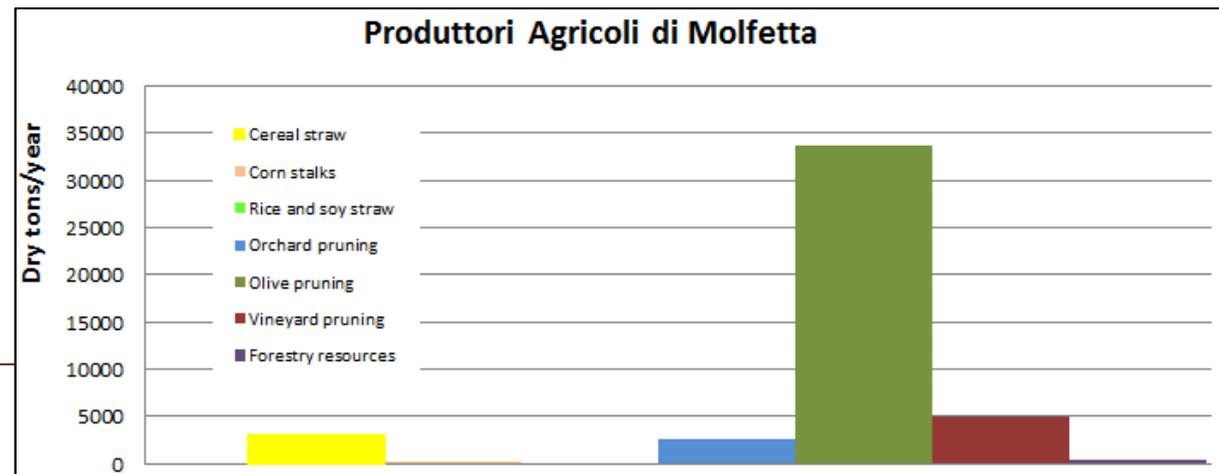
PROJECT: Production of 3,500 t/y of chips from olive tree prunings by the cooperative's members to feed a new cogeneration plant for self-consumption and energy sales

Market: solid biomass consumption for energetic purpose in the area essentially regards olive pits (16 t/year produced by the cooperative itself) and used by the cooperative itself and some greenhouses located within a 25 km ray, which buy it for 130 €/t. Further, potential biomass consumers are other cooperative oil mills of the area.



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Resources: 4,500 t/y of olive tree prunings from the cooperative's members, that can be purchased for a symbolic price since their harvesting for energetic purpose would solve the disposal issue.



Equipment and facilities: the cooperative owns enough space for the raw material and the final product storage and it will be available during the residual harvesting period. On the other hand, the cooperative is currently not equipped for the agrarian residues harvesting and processing for the solid biomass production.

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Required investments:

- Field harvester/chipper: 75,000 €
- Cogeneration plant: 1,000,000 €

Pay-back period:

3 years (excluding the cogeneration plant)

Triggered steps by/thanks to SUCELLOG project:

- Creation of a group, with other stakeholders of the area, for the development of a cooperative cogeneration plant fuelled with chips from olive trees pruning mainly for energy self-consumption and partially for energy sales, managed by a new working cooperative to be created.
- Involvement of Legacoop Puglia for the spread of the project results.
- Involvement of innovation holders to study a plow prototype for the pruning harvesting and chipping, and how to redeploy the whole plant ash for the fields fertilization.
- Application for funding (15,000 €) on the RDP 2014-2020, for the creation of a working cooperative group formed by the oil mill Molfetta, 3 other cooperative oil mills in the area, the Legacoop of Puglia Region, an office of designers and professional agronomists and environmental engineers, a biomass logistics operator and CREA (Agrarian Research Council and economy analysis).

The potential consumers and suppliers of the project, that are the cooperative members, are interested in developing the biomass logistic centre to save money and time for the residual disposal and to take advantage from the energy production of the cogeneration plant.

1.500.000 € will be the value of the executive project of the cooperative group if its constitution will be financed.

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Serragiumenta Agricola S.n.c.



Region: Calabria

Sector: agricultural activities (olive growing, corn growing, viticulture and wine production) and touristic activities (a rural castle for meetings and ceremonies, a riding school and a tourist accommodation).

The agro-industry knew about SUCELLOG project because it was in contact with DREAM Italia for previous works.

Serragiumenta is interested in installing a cogeneration plant to cover its winery and agriturismo heat demands.

In line with the SUCELLOG concept, the agro-industry would like to improve its own primary products with the use of the by-products from its own agricultural activities.

PROJECT: Production of 1,300 t/y of chips from olive tree, vineyards and orchards prunings by its own agricultural activities and other farms in the area to feed a new cogeneration plant for electricity sales and heat self-consumption

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Resources: around 1,500 t/y of agro-prunings from their own residues and from other local farmers.

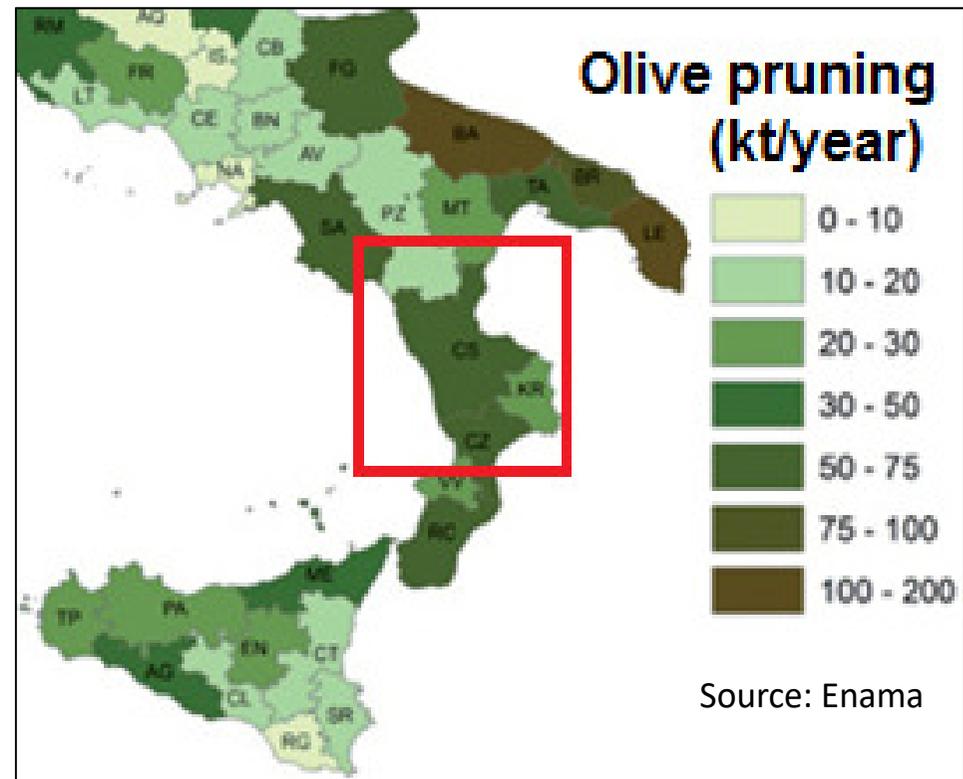
Market: Olive pomace and woody pellets are used in the area.

Equipment and facilities: Serragiumenta Agricola SNC, at the moment, does not have any useful machineries for the production process, but they could afford investments to buy pruning chippers. There are several months in which it would be possible to start the production of solid biomass without large periods of storage. Anyway they have large storage areas and outdoor spaces.

Required investment:

- Harvester: 30,000 €
- Cogeneration plant: 1,500,000 €

Pay-back period of the project: 4 years (excluding the cogeneration plant)



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Triggered steps by/thanks to SUCELLOG project:

- Negotiations with agro-pruning suppliers for the provision of 1,300 tons/year of biomass.
- Tests of the harvesting and chipping processes. Chemical-physical analysis and combustion test will be carried out on samples of the final product to explore its actual quality characteristics.
- Contact with the manufacturers and request for the budget of the needed equipment (cogeneration plant and harvester).
- The agro-industry is preparing the request for the granting of connection to the electricity grid of the cogeneration plant.
- Once obtained the permission by the electric energy authorities, Serragiumenta will apply for funding to the Conto Termico Decree and will look for some equipment fundings through the Regional Development Plan.
- Evaluation of personnel in charge of the management of agro-biomass production and combustion.
- Devising marketing strategies on the produced wine, due to energy supply from the combustion of own by-products

13-02-2017

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Cooperativa Agricola Rinascita Oliena

Region: Sardegna

Sector: dairy

The agro-industry met the project through a SUCELLOG workshop organized in Sardegna.

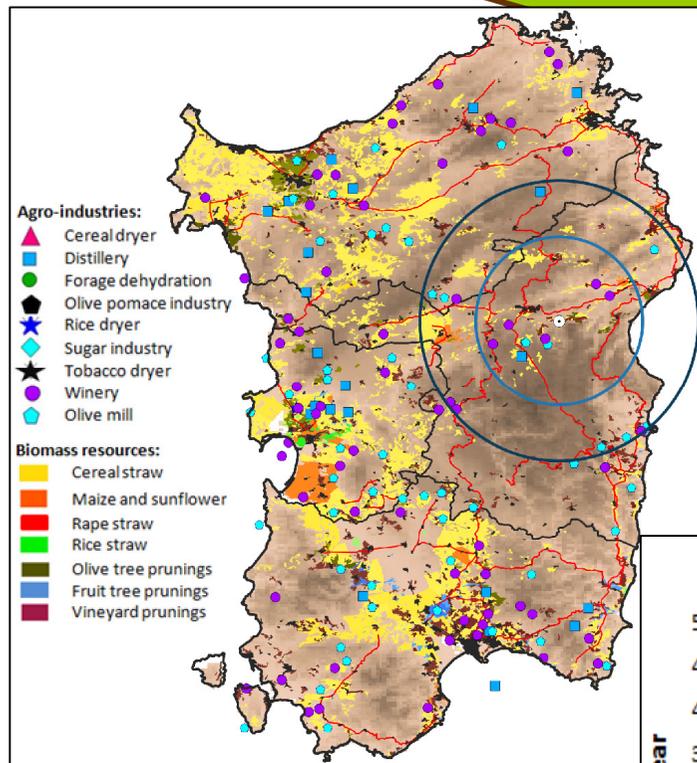
The dairy would like to solve the disposal problem of the pruning residues of its members. Furthermore, the achievement of an energy self-sufficiency is extremely interesting, since the area is not reached by the natural gas pipeline network.



PROJECT: Production and self-consumption of 300 t/y of pellets from olive tree and vineyards pruning, grape pomace and grape stems to feed a new cogeneration plant for its own energy self-consumption and for the energy needs of the adjacent cooperative oil mill

Market: the solid biomass market in the area is not well developed, there are only some householders which consume woody pellet or firewood and a few agro-industries which use olive pits or woody pellet. Solid biomass consumption in the area is seasonal, connected with the heat production and sanitary water.

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Resources: 370 t/y of olive tree prunings, 30 t/y of vineyard prunings, 60 t/y of grape pomace and 60 t/y of grape stems.

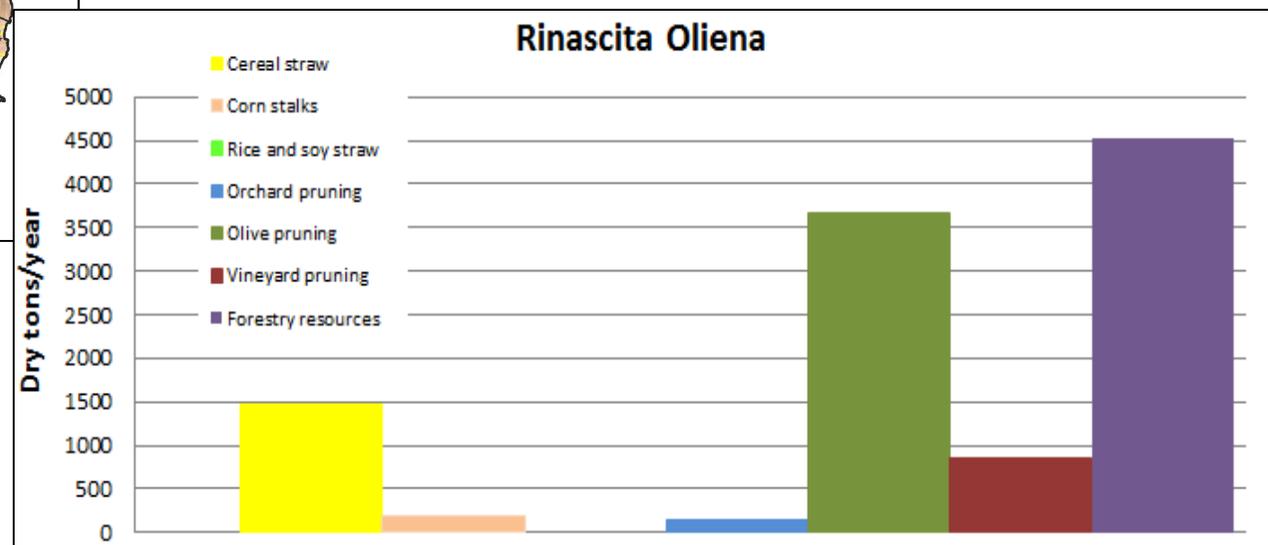
Equipment and facilities: the industry has some outdoor spaces to be used as storage areas for the residual biomass. It will be necessary to realize a canopy to store the raw material. It will be important to carefully evaluate the material storage and the chipping process, because the raw material availability is seasonal, but its usage for the energy production lasts for the whole year.

Required investment:

- Pelletizer line: 70,000 €
- Cogeneration plant: 220,000 €

Pay-back period of the project:

5 years (excluding the cogeneration plant)



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Triggered steps by/thanks to SUCELLOG project:

- Negotiations with potential consumers and suppliers: the adjacent Cooperative Oil Mill Oliena (consumer and supplier) and the Cooperative winery Santa Maria La Palma (supplier).
- Ask for budget to manufacturers for the cogeneration plant and the pelletizer.
- Rinascita Oliena will have an energy audit in the SCOPE project and a consultancy (both free, corresponding around to 3,000 €) for energy efficiency measures
- Training and support from SCOPE project to achieve a Collaborative Management of the Energy Consumption.
- Request of funding according to the Conto Termico Decree.
- Request for RDP funding to buy the needed equipment (tenders are not out yet).
- Legacoop Nuoro, asking them to widespread SUCELLOG project results and the proposal of a supply chain

SUCELLOG impact in ITALY:

SUCELLOG has triggered the mobilisation of:

- more than **2 ktoe of agricultural resources for energy production**;
- an **expected investment** of more than **3 M€** in a short-term

Contribution from SUCELLOG to **DREAm Italia Soc. Coop. Agr. for.:**

- Increase knowledge and skills on biomass issues
- Widen the network of contacts and stakeholders for future business /projects in our country
- Open additional projects in which we can also provide a service in other fields
- Include a series of new capacities on our CV or on the services we can provide to our customers
- Opportunity to generate a specific team working on these issues

Thank you for your attention!!!

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