

BeBOP Project

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Biomass exchange: By-product Optimizer Portal.

Nearby and always available biomass.

EU is encouraging sustainable development, which is based on **circular economies** in response to Climate Change adaptation. These policies motivate BeBOP's **eco-innovation** vision.

The aim of the BeBOP project is to develop **short value chains** that use residual biomass for multiple applications in local markets, thus implementing circular economies. Residual biomass is a ligno-cellulosic by-product of plant origin, commonly produced by agriculture (orchards, vineyards, olive groves, cereal crops, but not horticultural) and forest utilizations (e.g. treetop and branches). Residual biomass have a great potential for energetic and industrial applications; it is converted into wood chips, pellets, briquettes etc... Such transformed raw material can be used in several field, the most common is as energy source, litter or as "green building materials". If logistics are optimized, such economies can thrive with positive impact on society and local markets. Companies who use residual biomass are already present, but they often find several obstacles and problems related to cost prediction for managing the biomass (e.g. storage). They are also frequently connected to a specific sector which provides residual biomass only during a limited period of the year. This situation forces these companies to accommodate relevant quantities of biomass for a later usage.

BeBOP project aims at applying latest technology and research related to **modeling features of the biomass market in the space and time domain**, implementing these tools as ICT (web) services. The products of the project will address and solve the technical and logistics problems mentioned in the previous paragraph by connecting sources and sinks (i.e. supply and demand) thus improving the utilization of raw biomass material turning it in multifunctional products. The profit will be obtained from what is today seen as waste material, thus implementing a new and circular economy. The residual biomass will be considered as "shared value" going beyond problems related to availability by collecting sources from different sectors. Supply and demand will be matched in an optimized way by using an interactive tools that manage also fragmented biomass supply and demand (small quantities unevenly distributed), thus adding value for both buyers and sellers. The new ICT services and tools will foster and improve the utilization of residual biomass, which thus becomes viable business, by means of the BeBOP Portal which provides a mechanism like a conventional stock exchanged, with the advantages of georeferencing. These features allow to activate a seamless short chain. We want to offer a low cost service, to add functional and economic value to a raw material, exploiting technology and research related to modeling and ICT. The Portal will allow to manage a certain product of agriculture and forestry in an integrated and optimized way, linking private and public costumers.

PROJECT AIM Main Objectives Specific Objectives Actions

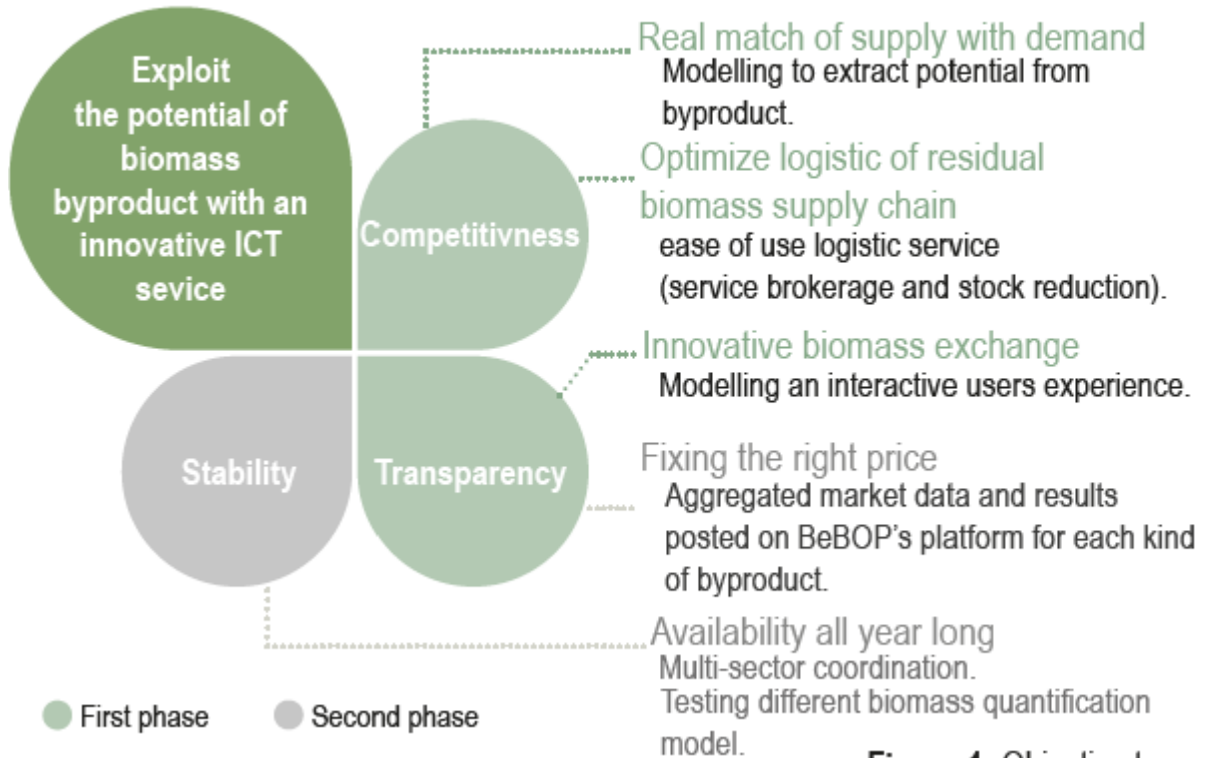


Figure 1: Objective tree

The novel feature of our Project will be is to create a digital portal where geocoded biomass information is available by means of an interactive map. Multiple information for each biomass area will be available to create an innovative market based on stock-exchange mechanisms and a digital Biomass Trade Centre, where the same subject can be both producer and consumer (**prosumer**) allocating or collecting biomass excess of production in different periods of the year and between multisite actors.

Project expected impact:

- **promote local economies:** develop short value chains in the coastal environment of the project
- **Marketable Residual Biomass digital Portal:** Internet and Mobile services for a transparent match of supply with demand, in view of a circular economy.
- **Optimize logistics** (collection, transport and transformation) of supply chains (spatial, time and economic assessment) in order to a sustainable development.
- **Promote new policies:** the information collected by the portal will provide decision makers with a very valuable resource of information for planning actions and other tools for an improved society.

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BeBOP enhances a supply chain that presents:
Low CO₂ emission , optimizing logistics and boosting RES (CO ₂ from biomass is 39 times lower than from fossil fuels).
Reduces soil consumption , there are no dedicated cultivations.
Reduces hydrogeological collapse , e.g. river flow is more regular because removing branches reduces obstruction.
Lowering the risk of fires avoiding to burn agricultural residues on field, reducing the presence of wood residues, etc.
Positive externalities , e.g. landscape care.

The Project is targeting all the subjects involved directly and indirectly in the production, distribution and use of residual biomass.

Key stakeholders to get involved are:

- farmers and forest owners and cooperatives
- forest entrepreneurs and companies
- Members of machinery rings
- Regional and National policy makers
- Local community
- Small and medium enterprises interested in mainstreaming eco-innovation based on residual biomass.
- Farmer Biomass Logistic management
- General public

Project borders:

- Time to boot: 30 months
- Estimated budget: 1,2 M €
- Stakeholders involvement and network management
- Ease of use and interactivity of BeBOP Portal

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PARTNER INVOLVED:

UNIVERSITY OF PADUA - T.E.S.A.F. Department (Department of Land, Environment, Agriculture and Forestry - <http://www.tesaf.unipd.it/en/>)) **and C.I.R.GEO** (Interdepartmental Research Center of GEOMATICS - <http://www.cirgeo.unipd.it/>).

The University will be responsible of technical and research issues.

T.E.S.A.F. will be involved in a model that transforms quality and quantity of residual biomass in energy or feedstock (pellets, chips, briquettes, etc.) potential. The team evaluates the feature and commercial viability of non energetic uses of residual biomass. This is important a environmental impact assessment of new value chains in view of circular economy.

C.I.R.GEO. will be involved on the spatial and temporal aspect of residual biomass mapping and planning.

C.I.R.GEO will also support on fostering access and interoperability to data from the project by providing public access to it via the GEOSS portal (<http://www.geoportal.org/>), as open data is a key EU investment.

We are also planning to exploit research from the University partners to optimize the Portal operability.

SISTENE ESCO is an Energy Service Company based in Padova (Northern Italy, www.sistene.it) which deals with Energy Audits, Energetic Labelling of buildings, industrial consultancy (developing of innovative products for energy saving in buildings), design of energy retrofit and consulting in construction (residential, commercial and industrial areas) and manufacturing processes.

Sistene E.S.CO. identified in residual biomass a long-term potential improvement for our business, which is related to resource efficiency and implemented through our energy service.

The role of Sistene in the project is performed energy audits and consulting about energy and design to actors involved in the supply chains. Furthermore Sistene will manage the BeBOP Portal and coordinate its users, optimizing logistics.

We have already contacted subjects (SMEs and Municipalities) interested in the potential launch a case study in Italy to test and validate the portal and set up the first short supply chains.