



E2BEBIS

Environmental and Economic Benefits
from Biochar Clusters in the Central area



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General information

The E2BEBIS is a comprehensive project that is focused on environmental issues with the goal of creating a broader awareness of a new ecological approach to agriculture as well as sustainable forms of waste management and renewable energy production. It is a two-year project (May 2012 - October 2014) implemented in five countries - Italy, Poland, Slovakia, Slovenia and the Czech Republic. The project is funded by the European Regional Development Fund.

The overall issue the project tackles is the limited use of biochar, an environmentally friendly technology produced through pyrolysis. Biochar is a substance similar to charcoal. It can be used for several purposes ranging from soil amendment to potting soil. It also contributes to carbon sequestration. Furthermore, pyrolysis, the process through which biochar is created, represents an effective and economical way of disposing waste/manure/sewage: this process is presently expensive and is not environmentally sustainable, since the applied technologies usually produce some negative impacts on the environment (e.g. ammonia emissions, CO₂ and dioxin emissions, etc.). The pyrolysis can be easily fitted to different context conditions and the different biomass types they feature. It can therefore represent a valid approach for the management of a number of environmental issues that both rural and urban communities have to manage, provided that all products of pyrolysis are viable.

Therefore, pyrolysis can serve as a new sustainable form of waste management, renewable energy production, as well as contributing to the production of soil amendments with higher environmental compatibility.

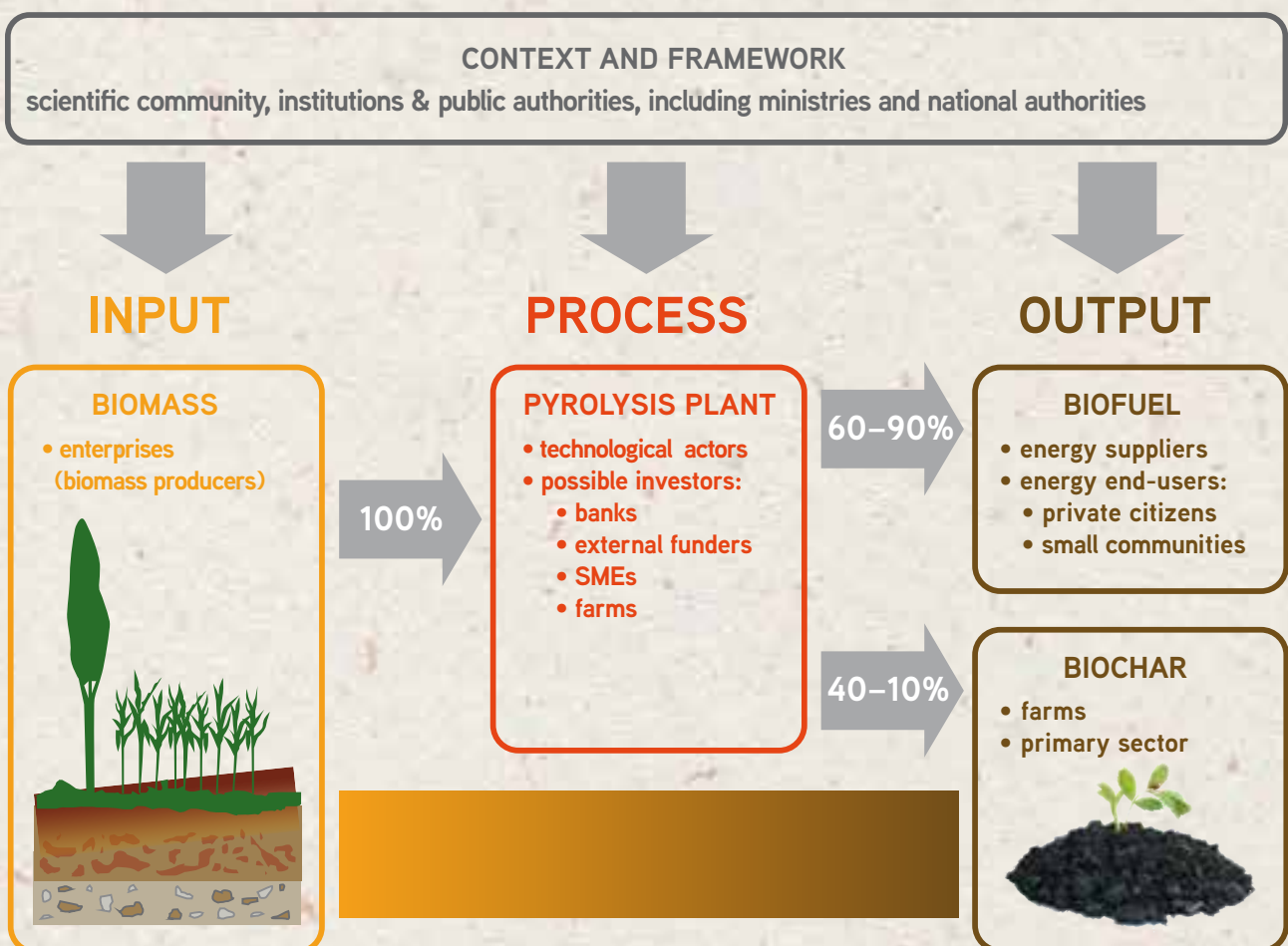
Yet due to the lack of a proper legal framework, biochar is not used as much as it should be and is usually considered to be a mere waste. The project tackles the aforementioned problems and seeks to raise awareness and increase confidence in the new technology.

Cluster actors and their identified needs

| | | |
|------------------------|--|--|
| input biomass | Enterprises–biomass procedures (wood agriculture residues, animal & urban wastes) | <ul style="list-style-type: none"> To adopt new clean ways to dispose their wastes / biomasses To cut waste disposal costs To improve their environmental performance |
| process | Possible investors: banks, other external funders | <ul style="list-style-type: none"> To support the construction of the biochar plants and the energy clusters start-up phase To develop specific financial products supporting clean & sustainable energy production |
| | Technological actors | <ul style="list-style-type: none"> To improve planning & products To widen the technological offer To meet the increasing demand for environmental friendly technologies |
| output biofuel | Energy suppliers | <ul style="list-style-type: none"> To buy energy at lowec cost To increase renewables in their energy portfolio and meet EU requirements |
| | Energy end users: private citizens | <ul style="list-style-type: none"> To buy energy at lowec cost To buy energy produced adopting environmental sustainable technologies for environmental responsibility |
| | Energy end users: small communities | <ul style="list-style-type: none"> To use energy directly produced in a sustainable & environmental friendly way To increase the use of renewables To adopt the short supply chain for energy and use the biomasses available locally |
| output biochar | Farms & primary sector | <ul style="list-style-type: none"> To improve soils through applying biochar To reduce the use of fertilizers and water To lessen environmental pressure of agriculture on environment |
| context & framework | Institutions and public authorities | <ul style="list-style-type: none"> To promote awareness on environmental protection and on the availability of sustainable forms of energy: To legally recognize biochar |
| | Scientific community | <ul style="list-style-type: none"> To advance knowledge on the biochar, on its quality and characteristics depending on the available fuel |
| | Ministries and National authorities working on relevantpolicy areas: energy, environment, agriculture, economic affairs, research and innovation | <ul style="list-style-type: none"> To advance policy framework to endorse biochar as soil amedant and to promote sustainable energy sources and meet EU requirements |

E2BEBIS creates regional energy clusters that run pyrolysis plants. The clusters involve all actors representing the whole biochar lifecycle: biomass and energy suppliers/plant management companies, energy end-users (energy suppliers and citizens), biochar end-users (farms, primary sector) and investors. Later on, the attention will be focused on adjusting the legal frameworks so that they will encourage the use of biochar.

Special emphasis is placed on international cooperation. E2BEBIS acts simultaneously in a wide and heterogeneous area in order to demonstrate that pyrolysis technology can be adopted in many different regions with diverse types of biomass, including those potentially polluting or whose disposal process is highly energy-consuming. This all assures high importance of the project at European level.



Project objectives

- Development of a number of regional actions in order to set up regional clusters based on the use of available biomass to run pyrolysis plants
- Create a broader awareness of the opportunities and limits of biochar and pyrolysis.
- Adjustment of the legislation in order to encourage the use of biochar and pyrolysis on larger scale

Strategy

- **Project sets up 7 regional energy clusters based on pyrolysis plants that use locally available biomass.** Such facilities produce both, energy (or heat) and biochar, and allow the interested actors and stakeholders to develop the complete cluster after the end of the project
- **Feasibility studies are conducted.** These are together with the new energy clusters the examples of a possible use of the technology in different local/regional contexts. Thus, they are providing an opportunity to spread biochar technology
- **E2BEBIS checks the current state of the legislation.** This helps to create and implement appropriate measures that would enable and encourage the adoption of the pyrolysis technology.
- **The opportunities and limits of the technology are explained to decision makers and stakeholders.** This helps to improve their awareness of territorial benefits associated with the use of pyrolysis.
- No competition with resources necessary for food/goods production or higher value use
- No impact on biodiversity
- Supply of any biomass should be sustainably managed
- Avoid toxicity: previously treated living material

In short: figures and facts

- 1.537.065,00 € project budget
- 1.244.341,75,00 € ERDF through the European Territorial Cooperation Programme 2007–2013 Central Europe (<http://www.central2013.eu/>)
- 248.558,75 € public co-financing
- 44.164,50 € private co-financing
- 2,5 years of project duration (6/2012–11/2014)
- 8 partners from 5 Central Europe countries (Italy, Poland, Slovakia, Czech Republic and Slovenia)
- 7 biochar clusters in the Central area (see the map below)
- 80 enterprises, 16 energy suppliers, 120 small communities, 160 institutions and public authorities, 40 scientific organizations, 24 technological actors, 80 farms and primary sector representatives, 10 ministries and national authorities working on relevant policy areas (energy, environment, agriculture, economic affairs, research and innovation), 10 possible investors are being involved.

Project Partners

Project Leader:



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UNIVERSITA DI BOLOGNA

Universita di Bologna – Dipartimento di Scienze Mediche Veterinarie (DSMVet)

Department of Bologna University engaged in veterinary research.

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Unione
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Comuni Comunità
Enti
Montani
Delegazione Piemonte

National Union of Mountain Municipalities, Communities and Authorities – Piedmont Delegation

UNCEM, the National Union of Mountain Municipalities, Communities and Authorities, has been representing the Italian mountainous territory for 50 years. In Piedmont, it gathers 22 mountain communities, 553 mountain Municipalities and other authorities operating in the Regional mountain areas.

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poltegor - Instytut
INSTYTUT GÓRNICZWAODKRYWKOWEGO

Poltegor – Institute

Polish research institute which deals with the protection of the environment, environmental engineering and recycling of industrial waste.

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BJ Energy

Comprehensive management of energy facilities from administrative actions to professional examinations and tests.

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European Development Agency, Ltd.

Expert network operating throughout the EU and dealing with regional development, innovation, evaluation and education.

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The ERC RTD activities are mainly oriented to find solutions for problems of efficient energy generation and rational utilisations of power, inclusive problems of environmental protection.

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Scientific Research Centre Bistra Ptuj

Scientific Research Centre Bistra Ptuj represents a supporting structure of the developmental environment of the region, intended for communities and enterprises. It forms a creative research space between the economy and the academic sphere.

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Instytut Ceramiki
i Materiałów
Budowlanych

ODZIAŁ WNIEMNIEJ REKONSTRUKCJI I MATERIAŁÓW BUDOWLANYCH

Institute of Ceramics and Building Materials – Building Materials Engineering Division in Opole

The Institute of Ceramics and Building Materials has 60 years of experience in research and scientific work on processing non-metallic materials. It specializes in research and development as well as in implementation of technologies for producing glass, ceramics, refractory and building materials.

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