

KONA doo  
Banja Luka  
Bosnia and Herzegovina

Project title:  
“Production of Organic Food in Greenhouses,  
BioChar and Flooring”

Banja Luka, March 2016.



## Site location:



- Location of the project production facilities is 30 km north of Banja Luka and 15 km south of the state border B&H – Croatia in a very flat and arable land called “Lijevo polje”. The newly built highway is just a few kilometers from the project site and from passengers’ and cargo airport “Mahovljani” only 10 km;

# Production of Organic Food in Greenhouses



## General information

- The food industry, especially organic food production from greenhouses has been seeing the enormous growth in the last years. The traditional food production is less present every year, due to low profitability, unfavorable and unstable weather conditions. The greenhouse organic food production is rapidly growing but in most of the installations there are no heating, ventilation, lighting, which dramatically decreases quality and quantity of products being made, not mentioning how badly this impacts the profitability of such production.
- Considering that 60-70% of the annual greenhouse costs are heating costs and that 85% of the total energy consumption is used to heat the greenhouses, the special focus should be given to create an energy efficient and cost effective system for production of the thermal energy.
- Project's Phase I implements 20,000 m<sup>2</sup> of greenhouse facility with zero cost in heating!

# BioChar as organic fertilizer



- Biochar is a organic fertilizer used in horticulture. It is charcoal used as a soil amendment. Like most charcoal, biochar is made from biomass via pyrolysis. In the project case, it is pyrolysis of wood coming in as residues of own flooring production. BioChar to be used in own greenhouse production but also to be exported.

# Flooring and clean electricity

**FLOORING:** Wood continues to be one of the most preferred choices for floor coverings. When it comes to real wood flooring, there are 2 main options: solid hardwood flooring and engineered hardwood flooring. Engineered wood flooring is composed of two or more layers of wood in the form of a plank. The top layer (lamella) is the wood that is visible when the flooring is installed and is adhered to the core. The increased stability of engineered wood is achieved by running each layer at a 90° angle to the layer above. This stability makes it a universal product that can be installed over all types of subfloors above, below or on grade. Engineered wood is the most common type of wood flooring used globally. The lamella is the face layer of the wood that is visible when installed, and other layers are usually made of composite wood such as plywood, MDF or similar. The lamella is typically a sawn piece of timber!



**CLEAN ELECTRICITY BY ORC UNIT:** As the plants grow, they absorb carbon dioxide (the main gas responsible for climate change) which is then released when the plants are burnt. So using biomass does not add any extra carbon dioxide into the atmosphere. In 2009 the [Renewables Directive](#) set binding targets for all EU Member States, such that the EU will reach a 20% share of energy from renewable sources by 2020. By 2014 the EU realized a 16% share of energy from renewable sources with nine member states already achieving its goals.

As a serious consumer of electricity, especially in the Phase II, the project should be supported with the investment in production of clean electricity from the biomass.



## Investments and payback

- Phase I:
- Investments EUR 12,81 MN
- Annual turnover EUR 12,87 MN
- Annual profit after tax EUR 4,78 MN
  
- Payback after full project implementation 32 months

### Phase II:

- Introduction new technology and products, all into organic food production
- Investments EUR 12 MN

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