ENERGY FROM SHORT ROTATION COPPICE
Small scale plantations, non-competitive to food production

Goal of the pilot installations
- Production of wood for the heating purposes
- Multifunctional use of agricultural and industrial soils (buffer zones, integration with chickens breeding, enhancing natural biodiversity)
- Creating additional profit from unused land

About analysed sites
- Fast growing willows (short rotation coppice system)
- 7 x 3-year rotation cycle (in total 21 years)
- Small parcels < 2ha
- Operational weed management, no irrigation
- Natural fertilizer application after each harvest

Technical and financial challenges
- Starting capital of 2400€ per ha necessary, followed by the heating installation cost in the 3rd year of plantation
- The costs of heating installation higher than for natural gas and heating oil
- If investment in wood storage building necessary the total costs increase by nearly 40%
- Agricultural know-how and equipment necessary
- Possible difficulties with the availability of affordable harvest machines
- High financial risk linked to possible plantation damage by fortuitous events e.g. (severe pest or drought)

Environmental gains
- Nearly 4 tonnes of C per ha permanently sequestered in the belowground biomass and soil pools after 21 years
- By 46% reduced overall environmental impacts if using SRC chips instead of forest wood chips for heat*
- 27 kg CO2 emissions avoided per 1MWh heat produced* as compared to wood chips use
- Better landscape integration of the industrial premises
- If special measures introduced, increase in local biodiversity

How to support SRC?
- Use of local synergy potentials e.g. by sharing local wood storage spaces with the forest authorities
- Creating access to the low interest rate loans for the investors, also those with low personal credit rating
- Reduction of the detaining risks by creating insurance fund compensating loses due to fortuitous events
- Establishing know-how exchange between local farmers and experts from the regions, where SRC plantation development is much more advanced

Optimizing environmental performance
- Use of locally produced cuttings reduces impacts linked to the transport and storage
- Minimizing use of herbicides pesticides and fertilizers (incl. the cuttings production stage)
- Choice of species adapted to the local climate to reach the highest yields and therefore reduce the overall impact

Annual heating costs for different heating systems

Literature for more details:
ARBOR case study report “Development of Low-Impact Energy Crops”
Rugani et al. (2015): Simulation of environmental impact scores within the life cycle of mixed wood chips from alternative short rotation coppice systems in Flanders (Belgium), submitted.

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