



## School heating triggers public private biomass co-operation IZES GmbH, Germany

### Summary

After a comparatory study the municipality of Losheim am See (Saarland) was ready to substitute its old oil boiler through a new wood-chip fired one. Three questions remain open: funding, durable and affordable wood chip supply and finding an operator. All questions could be solved as the municipality was ready to go new paths of co-operation. First they gained funding support from the region for their pilot project. The demand of durable wood-chip supply triggered the foundation of an own biomass selling platform together with private forest owners. And the normal operation of the plant was transferred to a local chimney sweeper. So one medium-sized boiler of 200 kW biomass power was the nucleus to stipulate local initiative to stronger use renewable energies. Under today's oil prices regional support is no more necessary. But it is clever to develop common solutions for wood chip supply as the actual wood market is under an enormous demand and price pressure. Readiness to test new co-operation constructs is decisive and possible in every municipality at least in Germany, Austria, Benelux, France, Great Britain and the Scandinavian and Eastern European countries.

#### End-user area

- New buildings
- Refurbishment of buildings
- Transport and mobility
- Financial instruments
- Industry
- Legal initiatives (regulations, directives, etc)
- Planning issues
- Sustainable communities
- User behaviour
- Education
- Other

#### Target Audience

- Citizens
- Households
- Property owners
- Schools and universities
- Decision makers
- Local and regional authorities
- Transport companies
- Utilities
- ESCOs
- Architects and engineers
- Financial institutions
- Other

#### Technical

- Energy efficiency
- Heating
- Cooling
- Appliances
- Lighting
- CHP
- District Heating
- Solar energy
- Biomass
- Wind
- Geothermal
- Hydro power
- Other

### Context

- Refurbishment of an old oil boiler in a primary school in Losheim- Britten was the decisive moment to change the municipal strategy from oil to biomass. A study showed technical and economical viability if a certain funding support would reduce financial risks. As the technology of wood burner was proven, organisational questions had to be solved.
- Who could be the operator? The municipality search for new private public partnership solutions.
- Wood chip supply must be durable and affordable as there doesn't exist any regional delivery at that time (1999). So the municipality had to develop their own solutions. To reach higher security they were ready to pay more if the supply could be at least partly be secured from their own forest.

### Objectives

Aim of the project was to build and operate in a sustainable way a new wood-chip fired burner in the primary school of Losheim- Britten. In the case of biomass projects it's not only sufficient to have a technical solution but to organize also the operation and a durable and affordable wood chip supply.



The school's new heating system was the triggering element to start a public private partnership for a new founded biomass selling centre and a chimney sweeper to have a further income column. The way forward was to regular speak with different actors and to create win-win- situations for may parties.

## Process

In 1999 the necessary refurbishment of the heating supply for the primary school of Britten with 300 kW thermal power and 45.000 liter of oil consumption was the starting point for the municipality of Losheim am See (Saarland) to look for a renewable alternative instead of oil.

A study to investigate the technical and economical viability through the regional energy agency showed the advantages of a biomass solution. Then the municipality parliament was in principle ready to realise a pilot project with a wood-chip fired biomass boiler. Three risks had to be minimised: funding, affordable wood chip supply and a responsible operator.

Financial risks of doubled investment could be partly reduced through a support by the regional ministry. The last one had to be convinced that without their financial support the biomass future would not start in Losheim am See. This hurdle was taken as they received a 30.000 Euro grant from the ministry.

The biomass boiler plant itself needed also a solution for typical operation work as the municipality had – on the long-term run - not the necessary own personal for this tasks. At the beginning they worked with two own employees to gain their own experience. But they strongly looked for a private solution. Finally an unusual agreement with a chimney sweeper could be found.

Growing importance was given to a solution for wood supply security. The first solution with wood residues from an unemployment initiative in a joinery didn't work. Therefore a new answer was looked for. Discussions were lead with their own municipal forest department. But they had not the necessary machinery to produce wood chips. And the investment was too high for only 3-400 m<sup>3</sup> of wood chips for one plant. As a regional biomass market was far away to be developed the risk of stranded investment for them was too high.

But the municipality mad further attempts to go on. And they were ready to pay more for forest wood than the prices for industrial wood residues which were at that time much cheaper. Finally a co-operation between the municipal forest and an association of bigger private forest owners was found. They started with the wood-chip production for the new biomass heating plant. In the first year the wood was too muddy and the burner had severe problems. But they didn't give up. In the 2<sup>nd</sup> year they could dry the wood in the forest during the summer and then the water percentage was low enough for the boiler.

Then with slowly increasing oil prices, the new co-operation went on. They decided not only to deliver wood chips to the first wood-chip fired boiler in the district. Moreover together they founded a new company to build a wood supply centre with a platform for wood chips, wood logs and later also selling pellets. With the support of IZES a profitable concept and a two step procedure was developed. In 2005 the "Holzhof (=wood farm) Losheim" was founded.

So the simple heat supply with biomass has triggered the co-operation of a municipality with their own forest with private forest owners and a chimney sweeper to find an optimal solution with minimal risks.

## Financial resources and partners

The whole biomass heating system comprised an investment of nearly 120.000 Euro in comparison to 60 k€ for a conventional oil boiler. Around 30.000 Euro were spent as subsidy for this pilot project by the regional ministry. In the beginning the energy costs were only 0.5 cts per kWh cheaper than the oil prices. Meanwhile this difference was around 2.0 cts/ kWh and therefore the risky investment has proven its economical viability.

The partnership for running this wood-chip fired plant consists of the municipality of Losheim am See, the forest of Losheim, the private forest association of Merzig and a chimney sweeper. IZES gGmbH gave support in all decisive stadiums of the project also when preparing the start of the biomass centre Losheim.



## Results

A wood-chip fired boiler was built in autumn 2000 and is running to heat the primary school of Britten since 6 years with one bigger renovation investment. Every year around 30.000 liter of oil are substituted by local forest wood. The biomass centre was built by a common treaty and inaugurated in 2005. Regional employment in the forest, for the chimney sweeper and in installing the biomass centre with 2 half-day employees could be secured and stabilised through the whole partnership. The regional security of wood supply was the reason for a serious of private investment in wood log fired boilers and more and more also in wood-chip fired heating systems. In autumn 2006 a private investment decision was taken to install a further 320 kW biomass boiler in the same location Britten as a follow-up of the positive results of this boiler.

## Lessons learned and repeatability

The best result is that according to the rising oil prices, the local parliament is very convinced of their decision from 2000 to invest in biomass technologies. Therefore the long decision process is confirmed and this municipality is much in favour of biomass and proud of their plant during site-visits of other decision-makers. Nevertheless the process to guarantee affordable wood chip supply with the forest lasted too long. Perhaps a better accompanying advisory would have accelerate the procedure. If the biomass centre started earlier e.g. in 2003, more new biomass projects especially in the last two years would had been realised meanwhile. But due to the lack of local wood security lots of decision-makers were anxious to risk not sufficient and affordable biomass supply. But only with support of this project and under strongly increasing oil price conditions, the final decision for establishing a biomass centre to reduce the supply risk was taken. This delay is a pity.

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