

# Heat from Miscanthus, corncob and hay

## Is it profitable to produce heat from agricultural biomass fuels?



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combustion systems

### Background

Various types of agricultural biomass are of growing interest in addition to wood for heat production. The main challenges concerning the utilisation of these fuels are:

- Combustion relevant properties of these fuels are usually unfavourable compared to wood.
- Production processes and logistic solutions for raw material supply and fuel production are not well developed yet.
- Insufficient legislative framework regarding certification and operation of combustion appliances with these fuels.

### Objectives & Approach

Within the IEE MixBioPells project in 7 European countries case studies, which represent the whole value chain of alternative (mixed) biopellets, were established in order to identify suitable concepts for particular fields of application.

Based on these case studies economic aspects of heat supply systems in terms of alternative fuel costs and investment costs for combustion technologies were analysed.

### Results

#### Relevance of investment- and fuel costs

The investment costs for alternative heating systems are higher than for fossil fuels. However, fuel costs as a major part of the annual running costs have a wide influence on the economy of heating systems.

#### Aspects of plant size

Heat supply costs decrease with increasing plant size in all of the analysed case studies of the different partner regions (Figure 1).

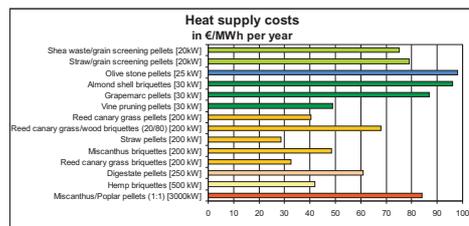


Figure 1: Comparison of heat supply costs of the alternative combustion systems of the case studies in €/MWh per year

### Fuel costs

As a major part of the annual running costs they have a wide influence on the economy of a heating system. The costs for pelletizing and briquetting amount to 11-32 % of the whole fuel costs (Figure 2).

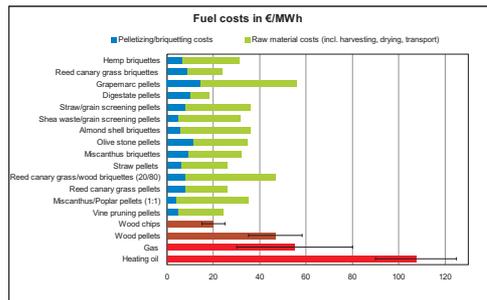


Figure 2: Fuel costs incl. costs of pelletizing and briquetting in €/MWh as well as fluctuations of wood and fossil fuel prices in the various partner countries

### Conclusion

- Regarding economic aspects, biomass pellets are more suitable for medium to large scale heating systems than for small boilers.
- Pre-treatments of the raw material have a major impact on the pellet price.
- Apart from the choice of technology, the selection of production parameters (particle size, water content, measures of the die, residence time/flow rate) is a crucial issue.
- An optimal operation of the pelletising/briquetting plant is a large cost advantage.
- For running a plant properly an optimisation process of adjustments is necessary.
- Moving grate systems and an active ash removal concept are the basis in order to ensure stable operation with high-ash fuels.
- One important factor for building-up a successful supply chain is the commitment of regional stakeholders.
- Policy makers are asked to set up a well-defined legal framework



**mixBioPells**



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