Economic evaluation of different pellet qualities for individual heating

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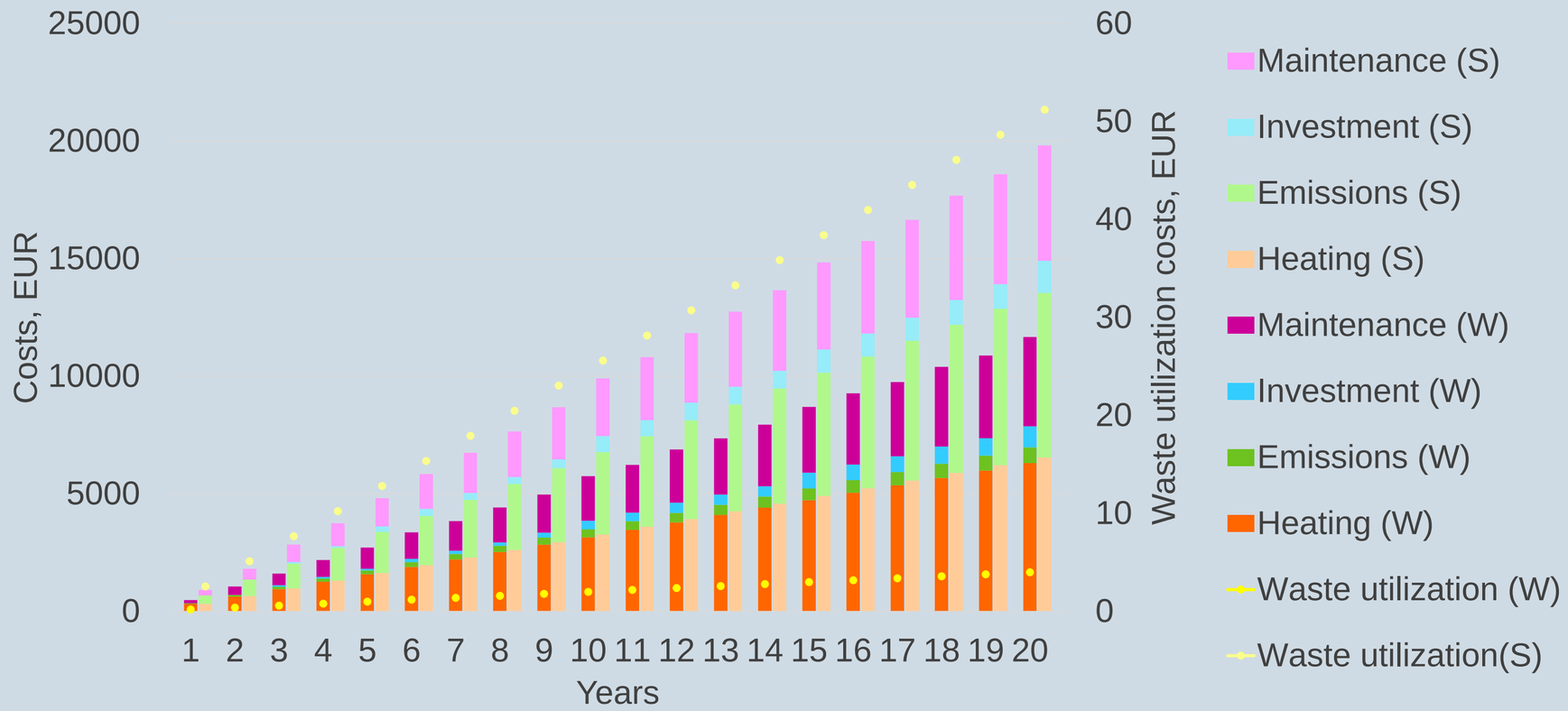
There is a wide range of biomass pellets available, and the price difference we see on the shelf gives a false impression of the true cost of pellets.

Biomass pellets often vary in **quality**, **composition**, **characteristics** and **price**.

The **total cost** of heating is made up of different positions that are not always clearly visible to consumers.

In addition, **indirect costs** account for the largest cost difference between high and low quality biomass pellets.



Cumulative cost breakdown for wood and sunflower pellets (20 years)

Main focus

The authors' main goal was to assess the economic and environmental aspects of using different qualities of pellets for individual heating.

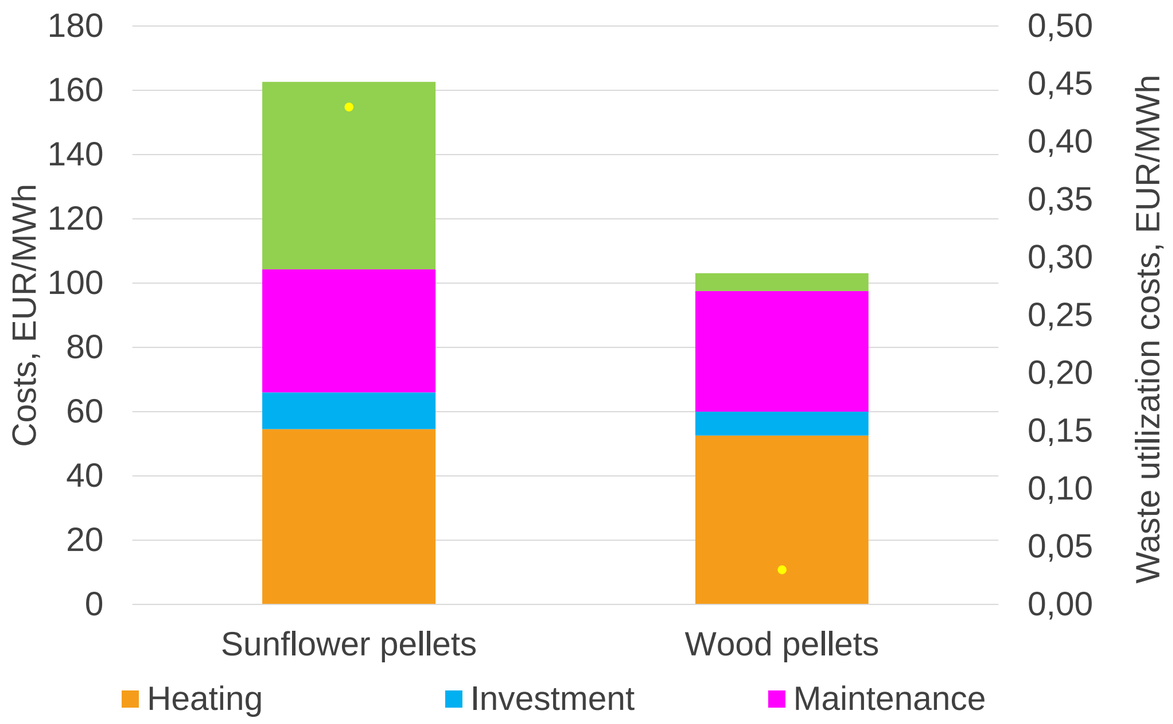
The methodology of the work compared two types of biomass pellet fuels with different quality levels, based on the influence of different parameters.

Laboratory test. For more realistic results, the test was carried out for 3 consecutive days without cleaning the ash from the boiler. To compare the biomass pellet properties, the test determined the flue gas temperature, O2 content, CO content, NOx content and the pellet boiler output.

Economical calculations. Calculations show the cost of pellets, depending on their quality. The influencing parameters selected were heat production, emissions, boiler maintenance, investments and ash content.

	Heating	Waste utilization	Emissions	Investment	Maintenance
Sunflower pellets	54,56	0,43	58,32	11,40	38,33
Wood pellets	52,56	0,03	5,57	7,45	37,50

Cost comparison of biomass pellets, EUR/MWh



Conclusion

Lower quality biomass pellets are cheaper, but in the long run they incur a lot of extra costs, which makes choosing high quality pellets worthwhile.

When comparing the efficiency of biomass pellets, sunflower pellets have a lower efficiency than wood pellets. This is due to the fact that the combustion efficiency is influenced by the composition and properties of the pellets, which differ significantly between high and low quality biomass pellets.

An innovative and universal methodology was developed to estimate the cost of different pellets, taking into account direct and indirect costs, which can be applied in the future for the assessment of different biomass fuels.