



REFAWOOD Project

Copernicus Institute of Sustainable
Development, Utrecht University



REFAWOOD



Resource-efficient fuel additives for reducing ash related operational problems in waste wood combustion

- To perform **full-scale combustion tests** to demonstrate effective fuel additive design concepts.
- To show how wood waste fuels and new additive concepts can be integrated to the CHP plants in ways that are **economical, benefit the environment, conserve natural resources** and provide the CHP plant a fuel mixture with right quality.
- To propose **recycling processes for ashes** from waste wood combustion and additives to reduce the cost paid for landfilling.



Project partners

- **5 Countries:** The Netherlands, Sweden, Germany, Poland, Austria
- **4 Universities:** **Utrecht University**, Umeå University, Luleå University, **Avans University**.
- **3 Research organizations:** SP Technical Research Institute of Sweden, Instytut Technologii Drewna, DBFZ, Bioenergy 2020+
- **8 Industrial partners:** **6 Bioenergy producers** (**BEC Cuijk**, Ena Energi AB, EcoPowerPlant Sp., Endress Heizanlagen, Fritz Egger & Co., LASCO Heutechnik) **1 gypsum recycler** (Gips recycling AB), **1 material testing** (**Dekra**).



UU Main tasks

Analysis of the environmental impacts of the value chain using Life Cycle Assessment methodology.

- *Determining the status quo for all case studies*

Environmental impacts of the entire existing chains (from fuel procurement to ash disposal).

- *Assessment of the environmental & economic chain performance with additives*

Considering the changes in fuels used and the resulting changes in supply chains and avoided waste treatments.

- *Synthesis*

Outcome of all the case studies will be compared and discussed. Effects on a EU wide scale





Dutch partners tasks

- *Avans University of Applied Sciences*: Socio-economic analysis of the value chain, using Life Cycle Costing methodology.
- *BEC Cuijk*: Providing data and facilities for REFAwood trials in their bio-power plant (80 MWe).
- *DEKRA*: Monitoring of corrosion rates and analysis



BEC Cuijk biomass power plant





REFAwood budget and time plan

Duration: 36 months (January 2016 – December 2018)

Project costs: 1,817,000 €

Public funding: 1,490,000 €

Year	2016				2017				2018			
Months (quarter)	1	2	3	4	1	2	3	4	1	2	3	4
WP 1: Fuel additive design concepts for reduction of ash related problems in wood waste combustion	█	█	█	█								
WP 2: Supply system-The fuel and additive value chain		█	█	█	█	█	█	█	█			
WP 3: Full-scale trials in CHP-plants				█	█	█	█	█	█			
WP 4: Analysis of sustainability (economic, environmental and social) of the value chain			█	█	█	█	█	█	█	█	█	█
WP 5: Dissemination and exploitation of results + all partners				█	█	█	█	█	█	█	█	█
WP 6: Project Management	█	█	█	█	█	█	█	█	█	█	█	█