

## SUCCESS STORY



**BEST / BE2020\_2.0**  
**BEST – Bioenergy and Sustainable Technologies GmbH / BIOENERGY 2020**

Programme: COMET – Competence Centers for Excellent Technologies

Programme line: COMET-Zentrum (K1)

Type of project: RealLifeBiomass, 01/04/2019 to 31/03/2021, multi-firm



## CLEAN WOOD COMBUSTION

THE 'CLEAN AIR BY BIOMASS' PROJECT HAS SHOWN THAT USER TRAINING CAN REDUCE POLLUTANT EMISSIONS FROM BIOMASS HEATING SYSTEMS BY OVER 50%. LAUNCHED IN NOVEMBER 2019, THE CITIZEN SCIENCE PROJECT 'CLEAN AIR II' IS SET TO EXPLORE THIS TOPIC IN MORE DETAIL FOR THE PROVINCE OF STYRIA.

The Clean\_AIR-Air\_II project aims to significantly improve the operation of firewood stoves by users, thus achieving substantial emission reductions for this combustion-technologytype of appliances and contributing to improve air quality. A modern and efficient way to communicate this topic to a wider public is to involve users themselves in the research through what is termed citizen science.

Workshops are held to allow users of firewood stoves to operate a 'real life test stand'. The heating behaviour of several users on three identical log firewood stoves can be compared in parallel using a mobile infrastructure. An online measurement system visualizes the emissions so that the effects can

be monitored live. This illustrates the influence, which different modes of operation have on emission release. Participants and the interested public can also download the citizen science app 'FireMonitor', which allows them to document their behaviour when operating their own stove. These real-life data, including the type of stove, start of heating, amount of wood, burning time and flame photos, are used to draw conclusions on emissions and provide users with valuable feedback on how to improve their own heating behaviour.

## SUCCESS STORY

### Impact and effects

The workshops will be rolled out in different Climate and Energy Model Regions in the province of Styria – around 100 to 150 households in each region will be included. ~~In a first step, t~~The project will thus involve over 1000 Styrian households throughout the project duration ~~(until March 2021)~~. A total of eight workshops with 60 combustion runs were carried out in the 2019/20 heating season.

The project placed a special focus on measuring carbon monoxide (CO) emissions from three firewood stoves operated in parallel. The stove operated by under different modes of operation. It was shown that when operated by typical users produced, the stoves produced significantly higher emissions than when the stove operated by experts, and this despite the fact that the users themselves were usually convinced that their mode of operation was the best. The emissions are shown live so that the users were able to monitor the effects of their heating behaviour directly for the first time. ~~One of the three~~The third identical firewood heating systemsstove was additionally equipped with a flue gas catalyst, which

~~was shown to further~~ reduced emissions significantly ~~compared to the technologies without catalyst.~~

Another seven workshops are planned for the coming heating season. The FireMonitor app in particular is expected to provide additional insights into user operating behaviour and the emissions behaviour of their heating systems.

The project is funded by the regional government of Styria and FFG under the COMET Programme.



Copyright BEST

### Project coordination (Story)

DI Rita Sturmlechner  
Researcher  
BEST  
  
T +43 (0) 50 2378 - 9454  
rita.sturmlechner@best-research.eu

### BEST

**Organisation/Consortium leader**  
Inffeldgasse 21b  
8010 Graz  
T +43 (0) 50 2378 - 9201  
office@best-research.eu  
www.best-research.eu

### Project partners

- Energie Agentur Steiermark GmbH, Austria
- Palazzetti Lelio SPA, Italy
- TU Graz, Austria
- TU Wien, Austria
- University of Ostrava, Czech Republic
- FH Wiener Neustadt, Campus Wieselburg, Austria

This success story was provided by the consortium leader/centre management and by the mentioned project partners for the purpose of being published on the FFG website. BEST- Bioenergy and ~~sustainable~~-Sustainable Technologies GmbH is a COMET Centre within the COMET – Competence Centers for

**Formatiert:** Einzug: Links: 0,63 cm, Keine Aufzählungen oder Nummerierungen

 Federal Ministry  
Republic of Austria  
Climate Action, Environment,  
Energy, Mobility,  
Innovation and Technology

 Federal Ministry  
Republic of Austria  
Digital and  
Economic Affairs

Austrian Research Promotion Agency  
Sensengasse 1, A-1090 Vienna  
P +43 (0) 5 77 55 - 0  
office@ffg.at  
www.ffg.at

## SUCCESS STORY



Excellent Technologies Programme and funded by BMK, BMDW, the regional governments of Styria, Lower Austria and Vienna. The COMET Programme is managed by FFG. Further information on COMET: [www.ffg.at/comet](http://www.ffg.at/comet)

Feldfunktion geändert

 Federal Ministry  
Republic of Austria  
Climate Action, Environment,  
Energy, Mobility,  
Innovation and Technology

 Federal Ministry  
Republic of Austria  
Digital and  
Economic Affairs

Austrian Research Promotion Agency  
Sensengasse 1, A-1090 Vienna  
P +43 (0) 5 77 55 - 0  
office@ffg.at  
www.ffg.at