

ENERGIE AGENTUR STEIERMARK

Competence in energy

3rd ENTRAIN „Train the Trainer“ Session
Projects CleanAir I and CleanAir II

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02. Dezember 2020

Agenda

- **CleanAir**  by biomass
 - Introduction, objectives, approach and generell concept, results
- **CleanAir II** 
 - Objectives, approach and general concept, results (so far)
- Questions



CleanAir^{by} biomass

Introduction

- Wood heating appliances are widespread in Austria
- Emissions in real life are important regarding emission factors for emission inventories and air quality modelling, but are only scarcely available
- In project Clean Air by biomass, a field measurement campaign was conducted in Styrian model region



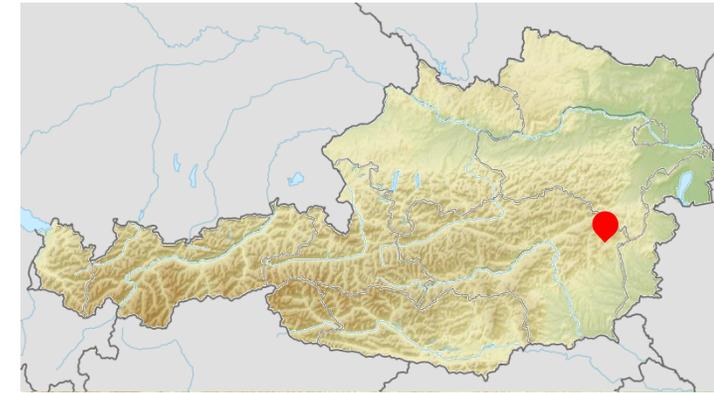
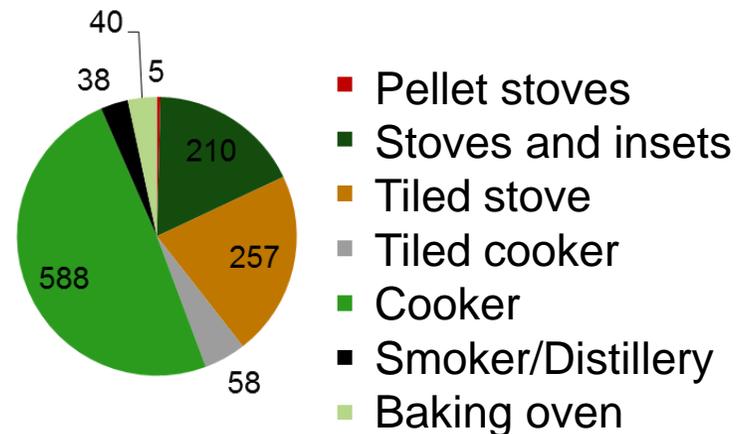
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CleanAir by biomass

Introduction

- This Styrian model region was the Municipality of Vorau
- 4783 inhabitants, ~1600 households
- Located in a topographic basin
- Acceptance of inhabitants
 - Goal to become a climatic spa (Co-benefit of project for municipality)
 - Intrinsic motivation of stakeholders
 - Subsidies for inhabitants



(www.vorau.at)

CleanAir by biomass

Objectives

- The CleanAir by biomass program aims at proving that
 - the use of state-of-the-art technology
 - combined with best-practice application
- leads to a significant improvement of air quality as well as to compliance with European air quality regulations.

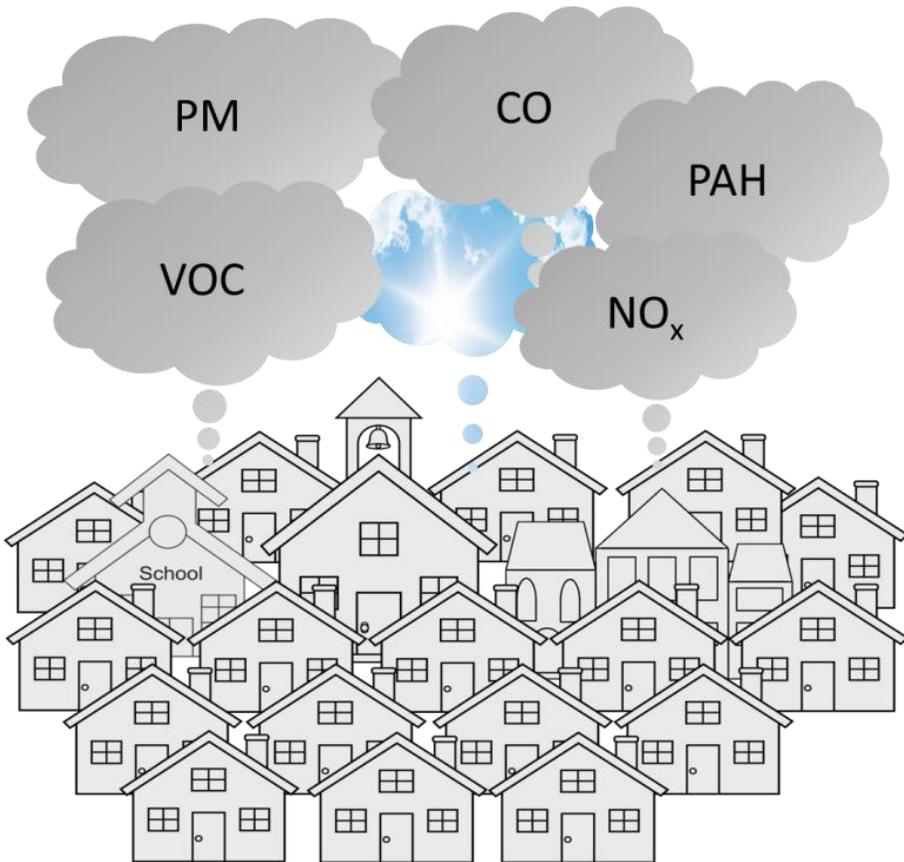


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CleanAir by biomass

Approach and general concept



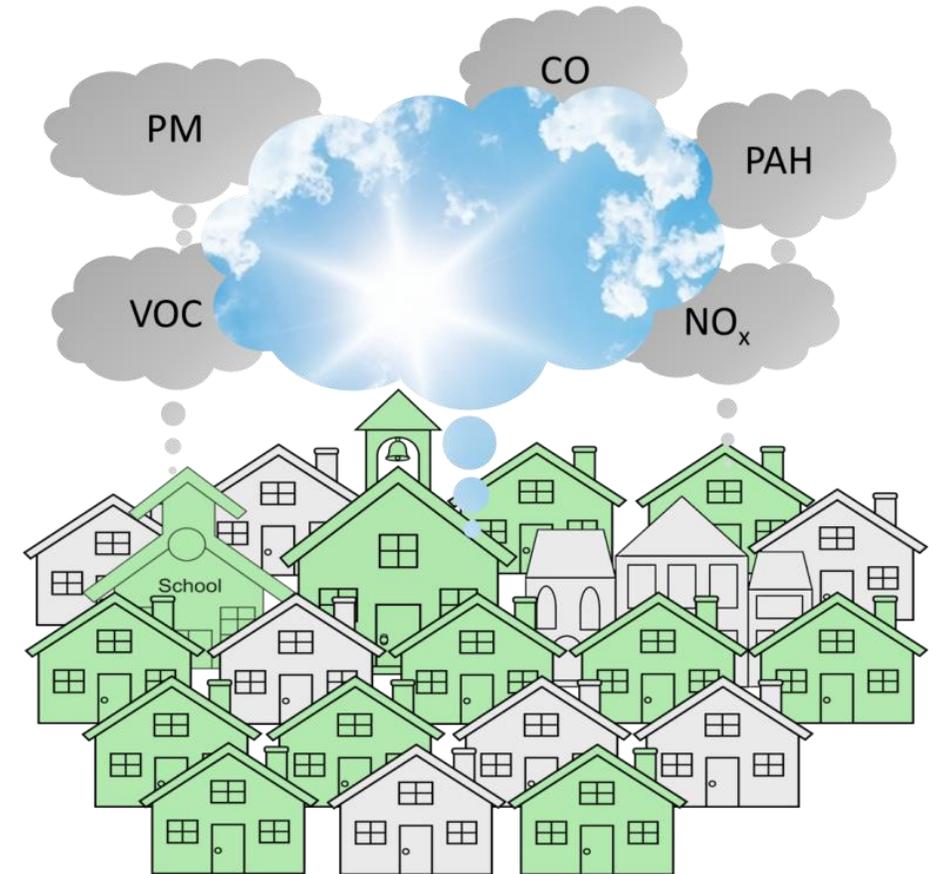
CleanAir by biomass
optimization measures in the
selected model region

Replacement of old stoves and
boilers by modern biomass
heating systems

Installation of secondary
emission abatement

Improvement of
end-users' behaviour

Optimization of the central
heating systems



CleanAir^{by} biomass

Approach and general concept

- **Emission monitoring** of representative furnaces (BEST, TU Wien)
- **Immission monitoring** in Vorau (federal state of Styria)
- **Awareness-raising measures** and motivation for participation (EASSt, IZ Vorau)
- **Field measurement** campaign (BEST)
- **Motivation for replacement** of old stoves (EASSt, IZ Vorau)

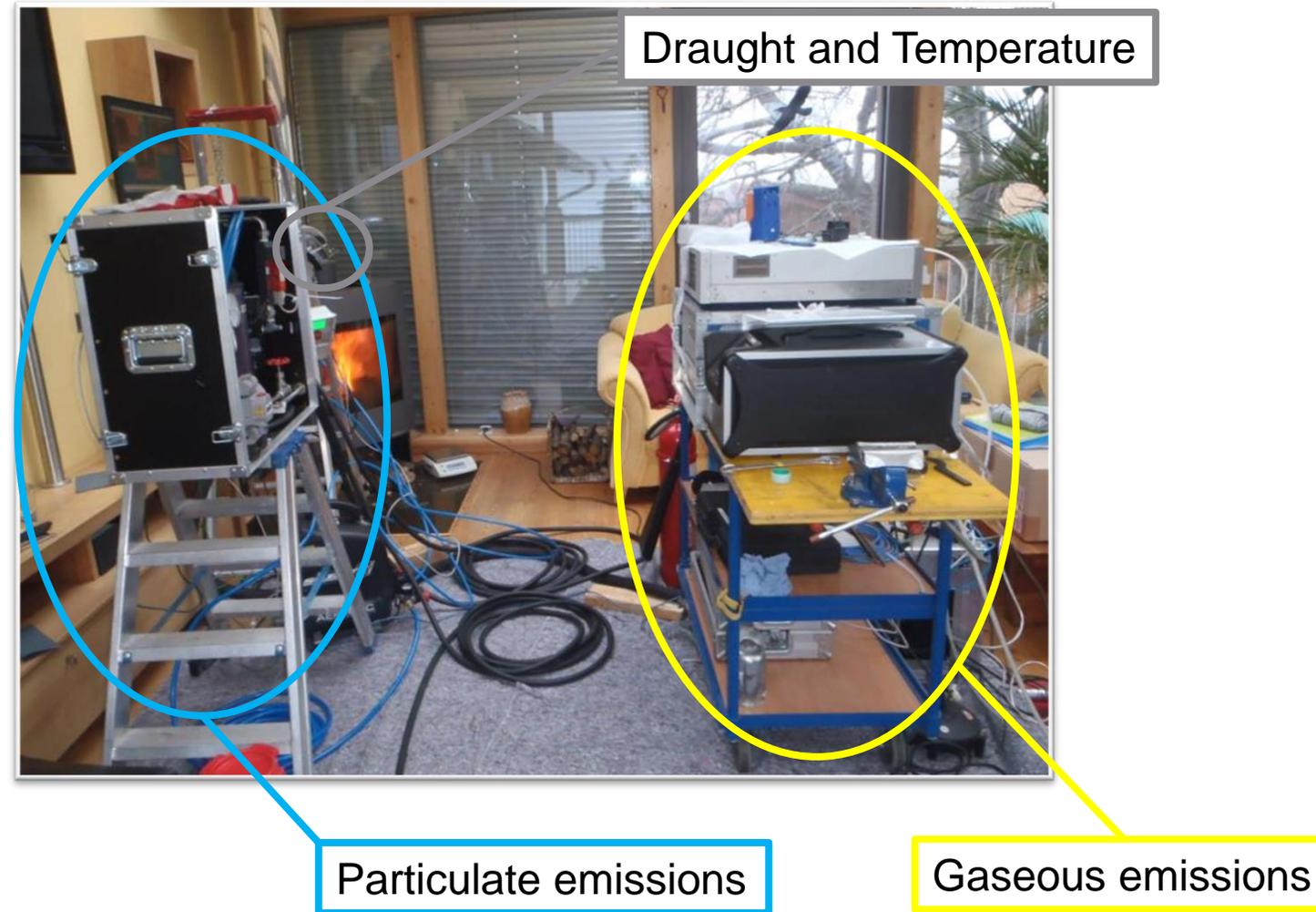


Source: federal state of Styria
(<http://www.umwelt.steiermark.at/cms/ziel/2063647/DE/>)

CleanAir by biomass

Approach and general concept

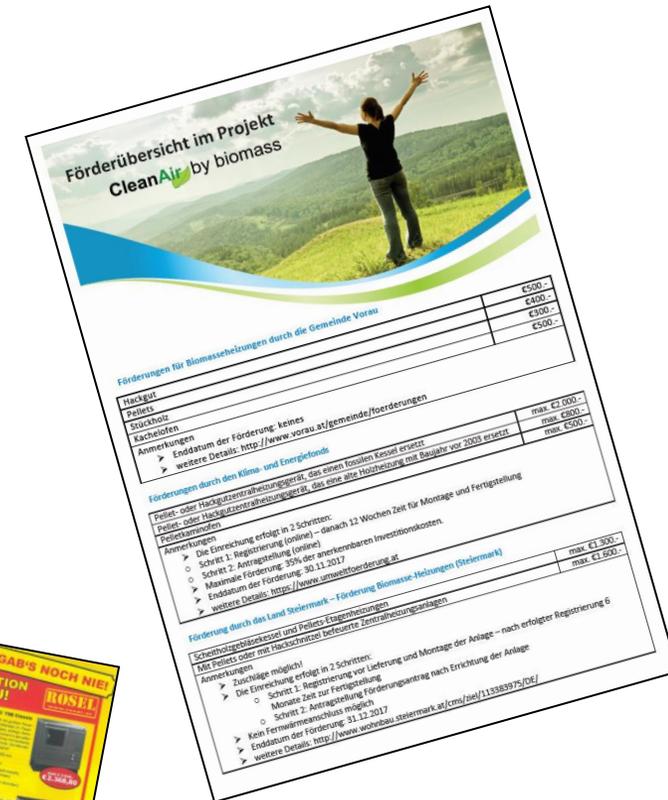
- Field measurement campaign (BEST)
 - 6 Small scale firewood room heaters
 - 4 room heater
 - 1 inlet
 - 1 cooker
 - 4 Boilers
 - 2 wood chips
 - 1 firewood
 - 1 saw dust
 - 3 slow heat release appliances
- [Video](#)



CleanAir by biomass

Approach and general concept

- Motivation for replacement of old stoves
 - €2.000.- CleanAir Bonus given by boiler manufacturers
 - Special subsidy (up to €7.500.-) for households in Vorau (IG-L Förderung)
 - Up to 40% savings by purchasing of small scale firewood room heaters
 - Free maintenance and service of heating systems
 - Free energy consulting



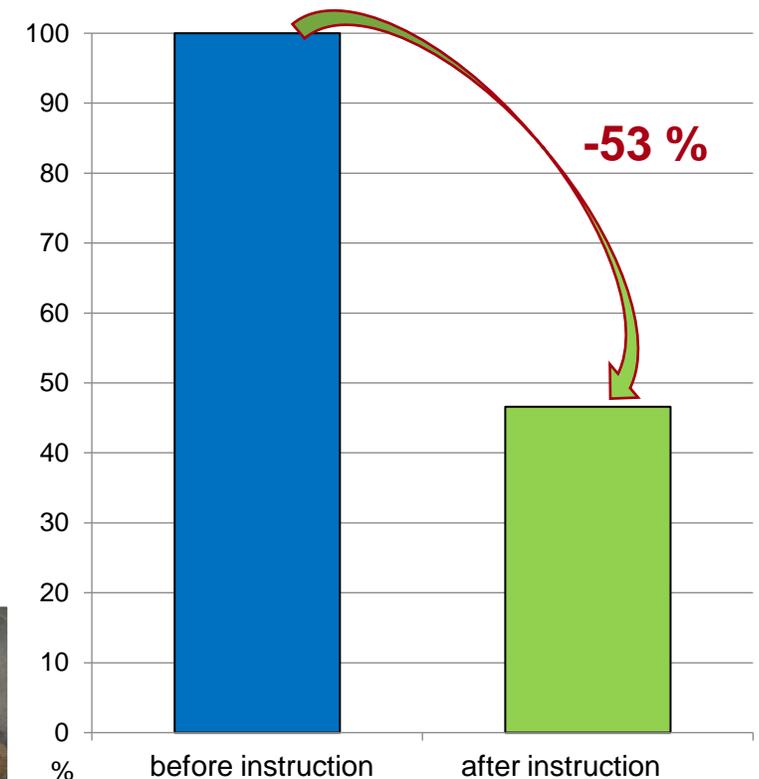
CleanAir by biomass

Results

- Replacement of old stoves has a high potential for pollutant reduction
- Service and maintenance leads to a reduction pollutants
- Modern automatic biomass heating systems have a high standard and less potential for reduction of pollutants

- **KEY RESULTS**

- **users have a significant influence by reducing emissions!**
- **Reducing emissions by non automatic biomass heating systems can be done without a relevant financial or technical effort.**



CleanAir II

Objectives

- The results and findings of the CleanAir by biomass project clearly indicate that the end user behaviour has a significant impact on the combustion quality and consequently on the emissions as well as chemical composition of the particle fraction.
- This project is based on these findings and aims to optimize end-user behaviour, to heighten awareness for air quality and biomass combustion as well as to gain data on real life operation of combustion systems.

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Approach and general concept

- **Mobile infrastructure** for live heating demonstrations
- **15 Workshops** with information about critical operating phases (e.g. start & stop phases/ cooling down) towards lower emissions and higher efficiency in real life operation. 7 Workshops done so far – due to COVID the next 8 Workshops have been cancelled (alternative option in consultation)
- **Citizen Science** with standardized survey during the Workshops and elaboration of an App for Citizen Science so that users can document their own heating process and becoming advise
- **Dissemination**

CleanAir II

Results (so far) – Trailer



CleanAir II

Results (so far) – Workshops



CleanAir II

Results (so far) – Citizen Science

- Standardized survey
- Fire Monitor APP

- Android



Android

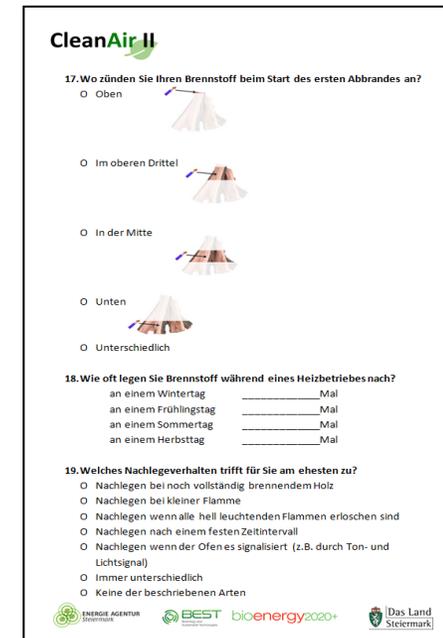
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- iOS



iOS

https://install.appcenter.ms/orgs/fhwn/apps/at.fhwn.firemonitor.beta-ios/distribution_groups/public



Results (so far) – Dissemination

- Using local and regional print-media and online media (e.g. Facebook, Instagram, GEM2GO...)
- Radio interviews with Antenne Steiermark
- Television program with ORF Steiermark
- Next steps due to COVID
 - Recording a CleanAir II video
 - Planning an online meeting with experts from politics, science, research, practitioners and population
- Further information (in English) <https://www.ea-stmk.at/cleanair2>





THANKS FOR YOUR ATTENTION!

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