Benchmarking for Energy Climate Technologies in Latvia

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Introduction

- Input of energy installations for GHG emissions is main source in Latvia.

- Activities to mitigate climate change in Latvia:

  - Emission trading scheme in Latvia;

  - Joint Implementation projects – green investments schemes;

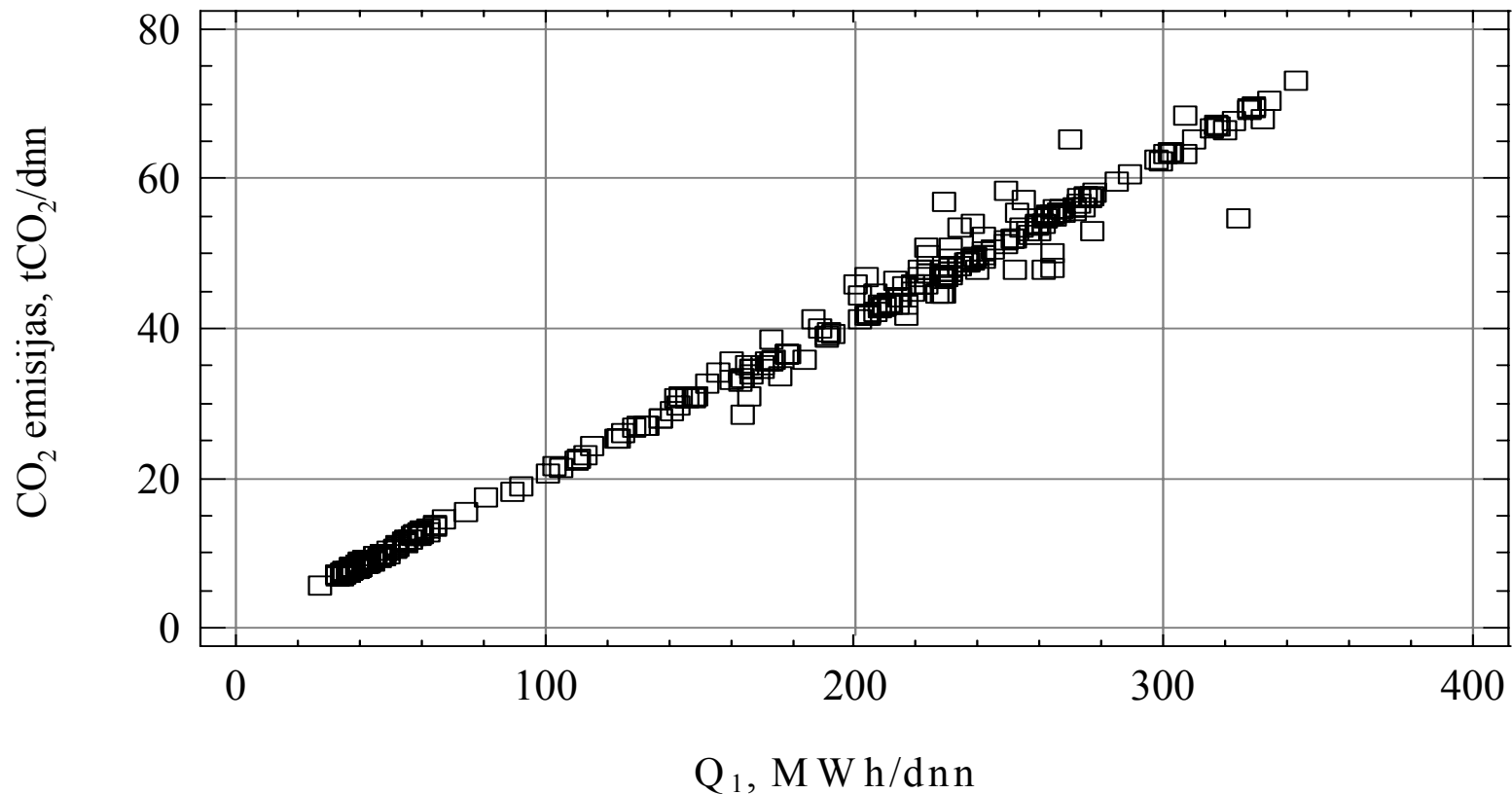 - etc

Methods and models

- Experimental part: Measurements in energy source

- Data processing: regression analysis

- Results:
  - empiric model with testing of adequacy
  - assesment of uncertainty

- Proposals for monitoring

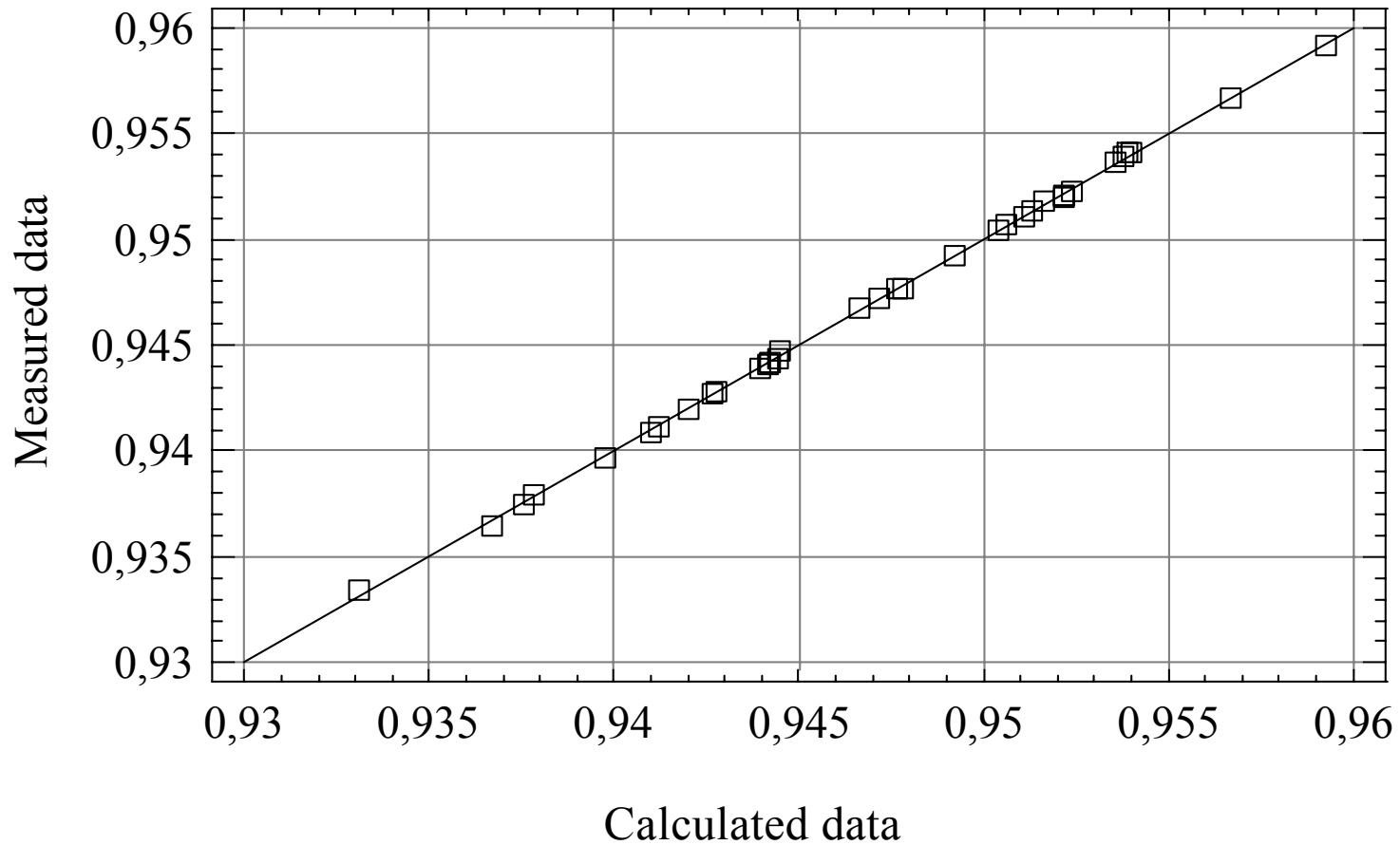# CO_2 emission monitoring experimental scheme
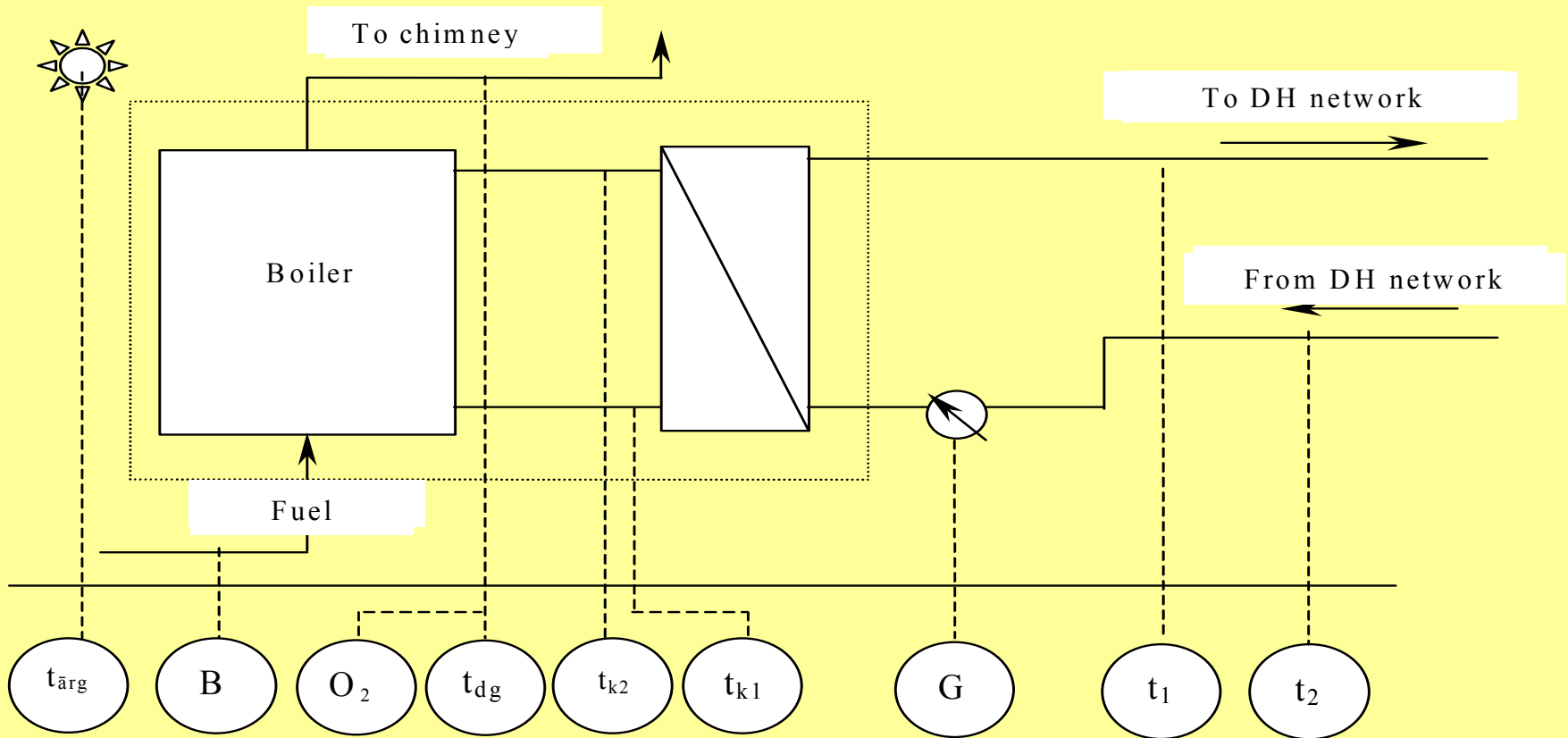
Results of mathematic modelling

$$CO_2 = -25{,}76 - 9{,}47 \cdot \eta^2 + 0{,}21 \cdot Q_1 + 1{,}03 \cdot Q_z^d$$
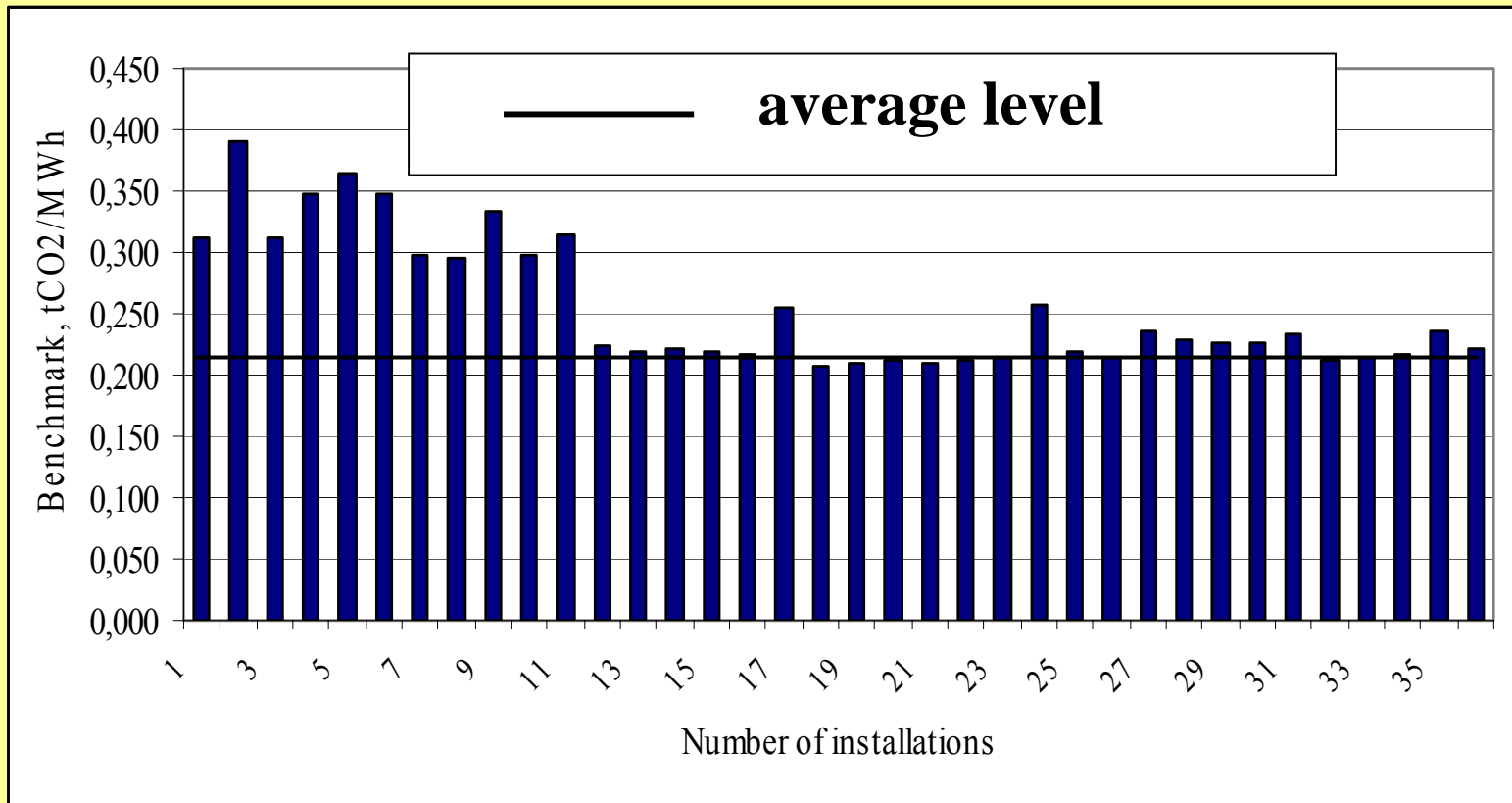
# Proving of adequate calculation

Benchmarking. Data sources

Activity data of 35 boiler houses

- **Fuel consumption, t/year or thous.m^3/year in case of natural gas;**
- **Amount of heat energy produced, MWh/year;**
- **Energy efficiency.**

Different benchmarks of installations

CO$_2$ emissions calculated based on existing methodology (2005) and proposed benchmark methodology (alternatives)
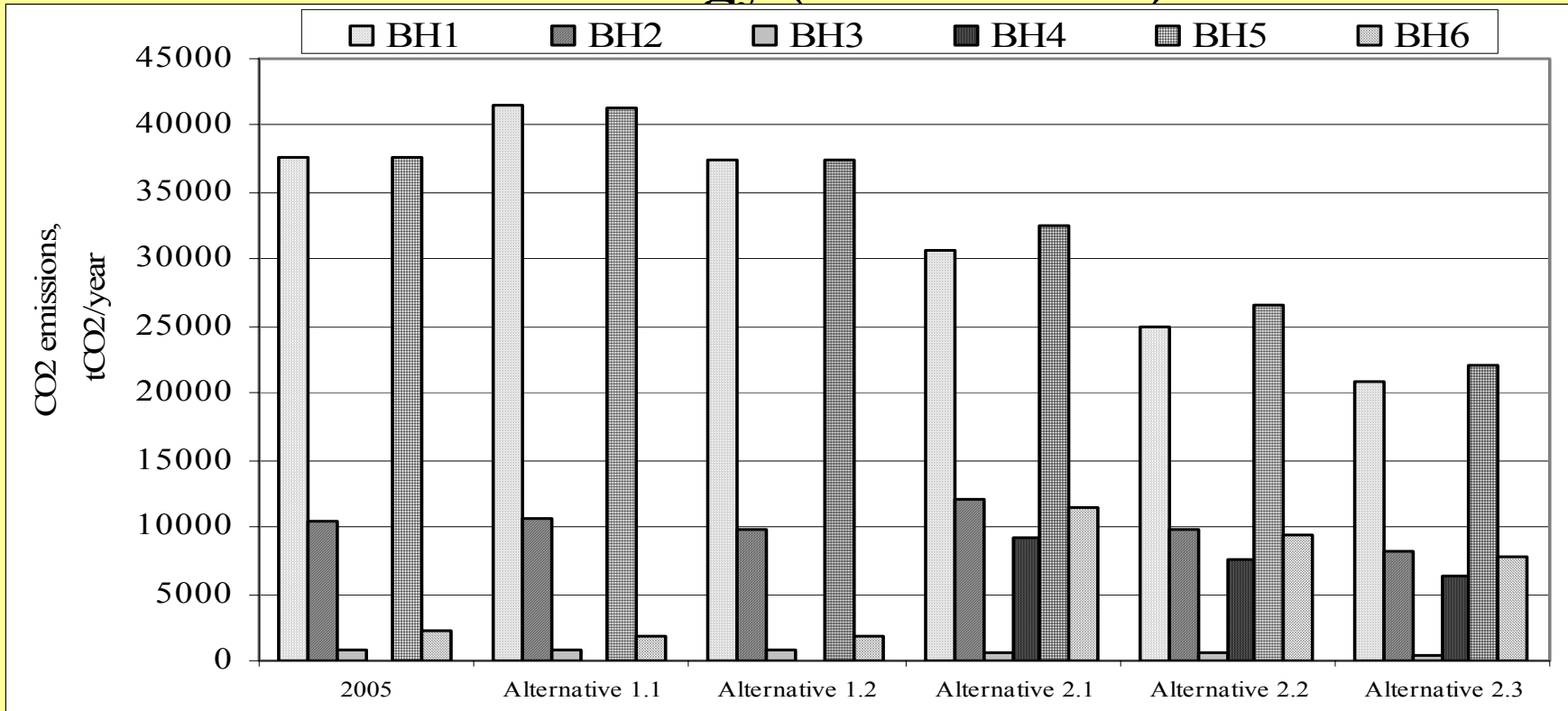
BH1 (HFO); BH2 (natural gas);BH3 (diesel oil); BH4 (wood); BH5 (HFO+diesel oil+natural gas); BH6 (natural gas+wood)

Conclusions (1)

``1. **Based on one year CO_2 emission monitoring data, presented by from ETS operator, it is possible to use the methodology for performing statistical analysis on empirical data of boiler operation to do forecast of GHG emissions in energy installation.**

Conclusions (2)

``2. Highest and lowest emission benchmarks for different fuels are defined:

☐•   Natural gas 0.258 tCO_2/MWh and 0.208 tCO_2/MWh;

☐•   Diesel oil 0.348 tCO_2/MWh and 0.295 tCO_2/MWh;

☐•   Heavy fuel oil 0.39 tCO_2/MWh and 0.311 tCO_2/MWh.

Conclusions (3)

3. To promote companies to reduce CO_2 emissions, fuel independent emission benchmark has to be applied for all types of fuels. That would support as well as wider use of renewable energy sources.