INDICATOR SYSTEM AND BENCHMARKING FOR SELECTED CROSS-CUTTING TECHNOLOGIES

G20 Energy End-Use Data and Energy Efficiency Metrics initiative:
Uncovering the role of digitalization for energy efficiency indicators

21st and 22nd November 2019, Paris, France

Session 4 – From data collection to statistics and indicators

Using end use data for benchmarking work

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OUTLINE

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- Indicator system and benchmarking for **cross-cutting technologies** in industry
- Conclusions

Introduction

- Gap: Little information is available on industrial end-uses (no statistical data collection).
- No indicators in the field of industrial transformation processes/cross-cutting technologies have not yet been defined
- Benchmarking can provide insights on end-use consumption in industry
- **Aim:** Development of possible indicators and benchmarks for industrial **cross-cutting technologies**

What are cross-cutting technologies

Process technologies

- Energy intensive
- Plant and process specific
- Iron furnaces, electrolysis plants, paper machine, glass furnaces, chemical reactors,..

Cross-cutting technologies (CCT)

- To be found across all sectors
- Lighting, motors, pumps, fans, compressed air, etc

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Possible cross-cutting technologies

- Possible cross-cutting technologies
  - Steam generators
  - Refrigeration
  - Pumps
  - Ventilators
  - Industrial lighting
  - Industrial heating / air conditioning
  - *compressed air generation*

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What would such indicator and benchmark system look like?

- **Example: compressed air generation**
  - Data collection (web-based)
  - Indicators (external = benchmarking/internal to company)
  - Organisation

	Compressed Air System 1	Compressed Air System 2	....	
Pressure (bar)	Druckluftsystem 1	Druckluftsystem 2	Druckluftsystem 3	Druckluftsystem 4
Netzdruck [bar]				
durchschnittlicher Druckluftbedarf [m³/h]				
Average demand for Compressed air (m³/h)				

Source: https://www.umfrageonline.com/s/Druckluft-Effizient

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What would such indicator and benchmark system look like?

- **Example: compressed air generation**
  - Data collection (web-based)
  - Indicators (external = benchmarking/internal to company)

  Internal to company: Shows how the characteristics of the process have evolved over time. To do this, the development over time of different indicators is monitored. Undesirable developments can thus be identified and eliminated quickly within the company.

  - Organisation

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What would such indicator and benchmark system look like?

- **Example: compressed air generation**
  - Data collection
  - Indicators (external = benchmarking/internal to company)

    External (benchmark): Provides comparison with the processes of other companies. For comparisons, the values for different technical input data are normalized.

    Comparisons with mean or best values of different key figures (technical: e.g. energy consumed per m^3 compressed air) or economic (cost per m^3)

    For the individual indicators, recommendations are given for improving indicators in comparison with the best ones.

    By introducing the comparison with the best, an information transfer in the direction of best practice solutions takes place.

    To ensure a high statistical representation of the reported data a certain number of companies has to be covered.
  - Organisation

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What would such indicator and benchmark system look like?

- **Example: compressed air generation**
  - Data collection
  - Indicators (external/internal)
  - Organisation:

    Central institution for data collection and analysis (e.g. research organisation or sector association).

    Willingness to register this data can be achieved by a voluntary commitment by a participating business association.

    Organisation in the form of Learning Networks for Energy Efficiency (in Germany now > 300 such networks (10 companies per network)

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Conclusions

- Feedback to companies on cross-cutting technologies in industry and cost of energy consumption
- Link to policy level

  Link to policy initiatives (CO2 tax reductions in case of voluntary measures and reporting)

  Easies report on the impact of measures for policy level, e.g. EU Energy Efficiency Directive

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