Agenda

• Objective & background
• Methodology
• Results
Objective & background
Objective

*Spatial representation* of TIMES output data in *industrial clusters* to support future energy *infrastructure* development

To develop a tool which is:
- spatially explicit (clusters, NUTS3 regions, coordinates ...)
- comprehensive
- flexible (clustering, TIMES run, commodity ...)
- automated
- user friendly (excel based)
- transferable
Background

Why? Spatial detail without expensive TIMES modelling
How? Connecting TIMES-BE output data to a national industrial database
Where? Belgium
Who? Development withing the TRILATE project on energy infrastructure
  • Collaboration Vito/EnergyVille, UGent, ULiège, Fluxys and Elia
The AIDRES database

A database for the decarbonization of the heavy industry in Europe

• Published summer 2023
• Provides data on industrial sites in Europe
  • Location
  • Production capacities
• Sector coverage: ~80% of EU industrial emissions
  • Chemical sector (fertilizers,
  • Iron & steel
  • Refineries
  • Non-metallic minerals (glass, cement & lime ...)
Methodology
Methodology overview

Matching of databases:

1. TIMES output database
2. Industrial database
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Clustering by Fluxys

Source: Fluxys Transmission Programme - version approved by the CREG on 16 January 2020
Results

Hydrogen

CO$_2$

Electricity
Regionalization of hydrogen consumption

Before
TIMES output

After
Regionalization output
Regionalization of hydrogen consumption
Regionalization of hydrogen consumption

Source: Hydrogen: Preparing to build the network (fluxys.com)
Regionalization of CO₂ emissions

Before TIMES output

After Regionalization output

Product:
- Primary steel
- Secondary steel
- Finishing
- Ethylene
- Propylene
- Fertilizers
- Other chemical
- Cement
- Lime
- Fibreglass
- Flat glass
- Container glass
- Refineries
- Ethylene oxide
- Zinc
- Copper
- Regular bricks
- Bricks Other
- Façade bricks
- Other NFM
- Construction
- Machinery
- Mining & quarrying
- Textile & leather
- Transport equipment

Energy Ville
Regionalization of CO₂ emissions

[Image of a map showing regionalization of CO₂ emissions with different products and years (2030, 2040, 2050).]
Regionalization of CO₂ capture
Regionalization of CO$_2$ capture
Regionalization of CO₂ capture

Source: CO₂: Preparing to build the network (fluxys.com)
Regionalization of electricity consumption

Before TIMES output

After Regionalization output

Consumption PJ

2030 2040 2050

2030 2040 2050

Product
- Primary steel
- Secondary steel
- Finishing
- Ethylene
- Propylene
- Fertilizers
- Other chemical
- Copper
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- Textile & leather
- Construction
- Machinery
- Other

EnergyVille
Regionalization of electricity consumption
Outlook

• Improve industrial database
  • Include sites and products
• Refine classification
  • Other categories
• Extend demand sector coverage to transport, buildings
Questions?