Electrification of heating and mobility: Socioeconomic impacts of non-ETS policies with sector coupling and sectoral linkages

In the project ELECTRO_COUP the Centre of Economic Scenario Analysis and Research (CESAR) and the University of Münster (WWU) develop decarbonization scenarios for mobility and space heating in Austria by electrification, considering sector coupling between electricity generation, heating, and mobility. The scenarios aim at achieving the Austrian decarbonization targets for 2030 and 2040 and reveal the consequences on energy and socio-economic indicators. The model-based analysis improves the knowledge on the decarbonization potential of sector coupling and linkages between ETS and non-ETS.

Project objectives

- Analysing decarbonization paths for Non-ETS with electrification and sector coupling
- Building an economy/energy model with feedbacks between Non-ETS and ETS from sector coupling (CO, permit prices)
- Developing decarbonization scenarios

Scenario development

"Renewable 2030":

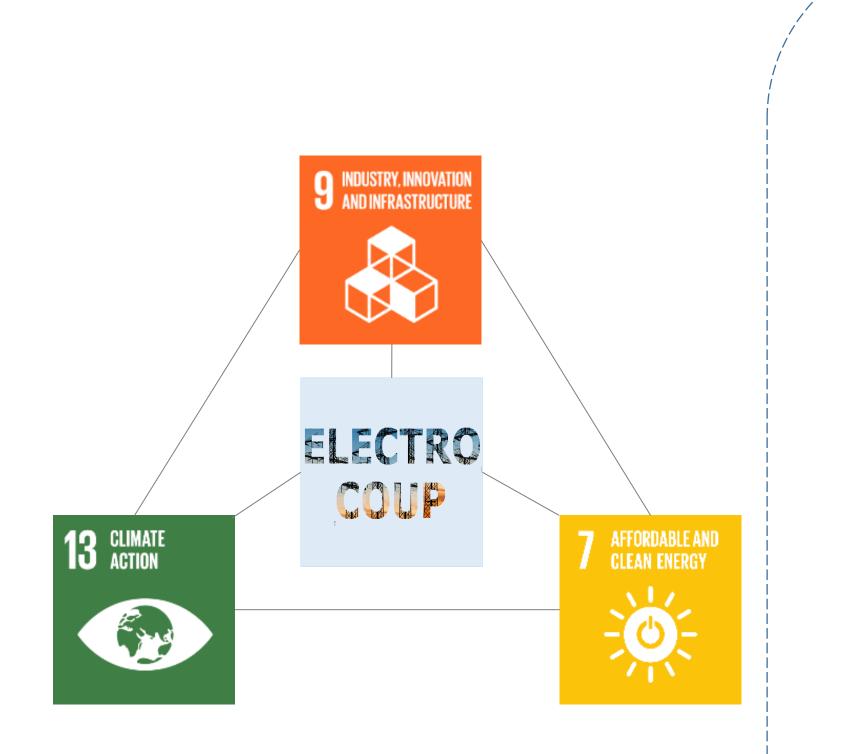
Support measures Feedback via permit prices Building refurbishment Heating system decarbonizing Electrification of transport

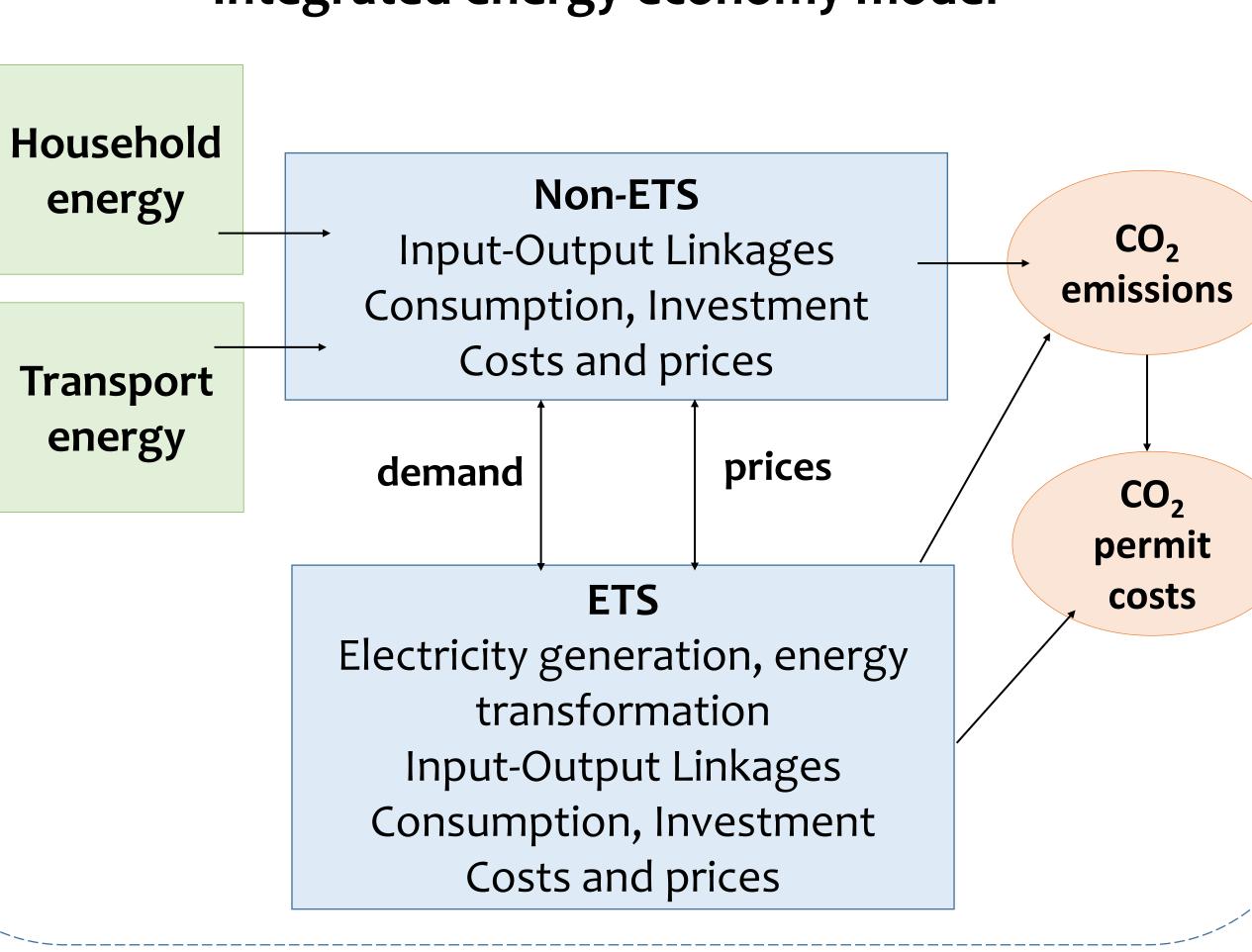
"Decarbonizing 2040":

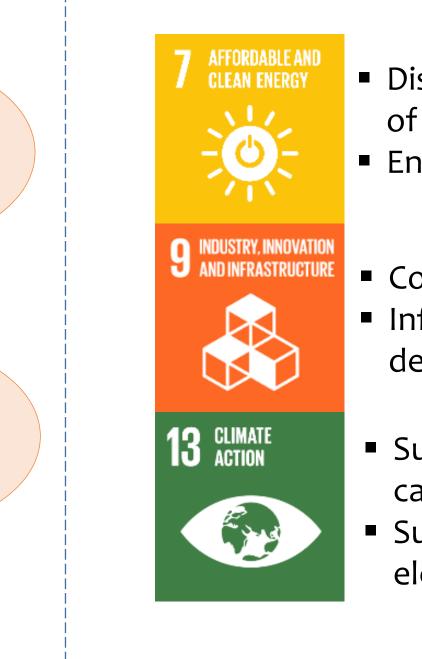
Bottom-up modelling of heating and mobility

Households (HH) Energy (physical):
 Buildings (age structure, efficiency)
 Heating appliances (structure)
 Cost optimization (incl. Infrastructure)
 → Physical energy demand by energy carrier

Private Transport (physical): vehicle flows and stocks by drive, fuel efficiency → physical energy demand
 Freight Transport (physical): vehicle flows and stocks by drive, fuel efficiency → physical energy demand







- Distributional impacts of scenarios
- Energy poverty
- Competitiveness in ETS
 Infractructure for
- Infrastructure for decarbonization
- Subsidizing decarbonization in Non-ETS
- Support for renewable electricity

Analysing the results – policy recommendations

ELECTRO COUP

- **Duration:** 1st October 2021 31st March 2023
- **Lead:** Centre of Economic Scenario Analysis and Research (CESAR)
- Partner: Westfälische Wilhelms-Universität Münster (WWU) Münster, Lehrstuhl für Mikroökonomik, insbes. Energie- und Ressourcenökonomik
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