ADJUST

Adjusting policy measures to achieve a just transition preventing inequalities and fostering solidary participation

Duration: 03/25 – 02/28

Motivation & Goals

The energy transition must be socially just, inclusive, and sustainable to ensure public acceptance and long-term success. Climate policy is necessary, but if poorly designed, it can worsen social inequalities.

Starting Point:

- Climate change mitigation measures create unequal costs and benefits across different population groups.
- Previous compensation measures are often short-term and focus on symptoms rather than structural causes.
- New policy instruments (e.g. CO_2 tax, ETS2, energy communities) have not yet been sufficiently researched.

Methods

Multi-method approach

- Literature analysis: document analysis, comparison of international approaches
- Simulations and econometric analyses: tariff modeling, flexibility analyses, energy communities, consumption trends
- Integrated long-term and life cycle modeling: overlapping generations model (MIWAG), model calibration (Bayesian melding)
- Stakeholder engagement: Qualitative interviews, surveys, quantitative and qualitative evaluation, derivation of recommendations for action, stakeholder workshops

Results

MIWAG model

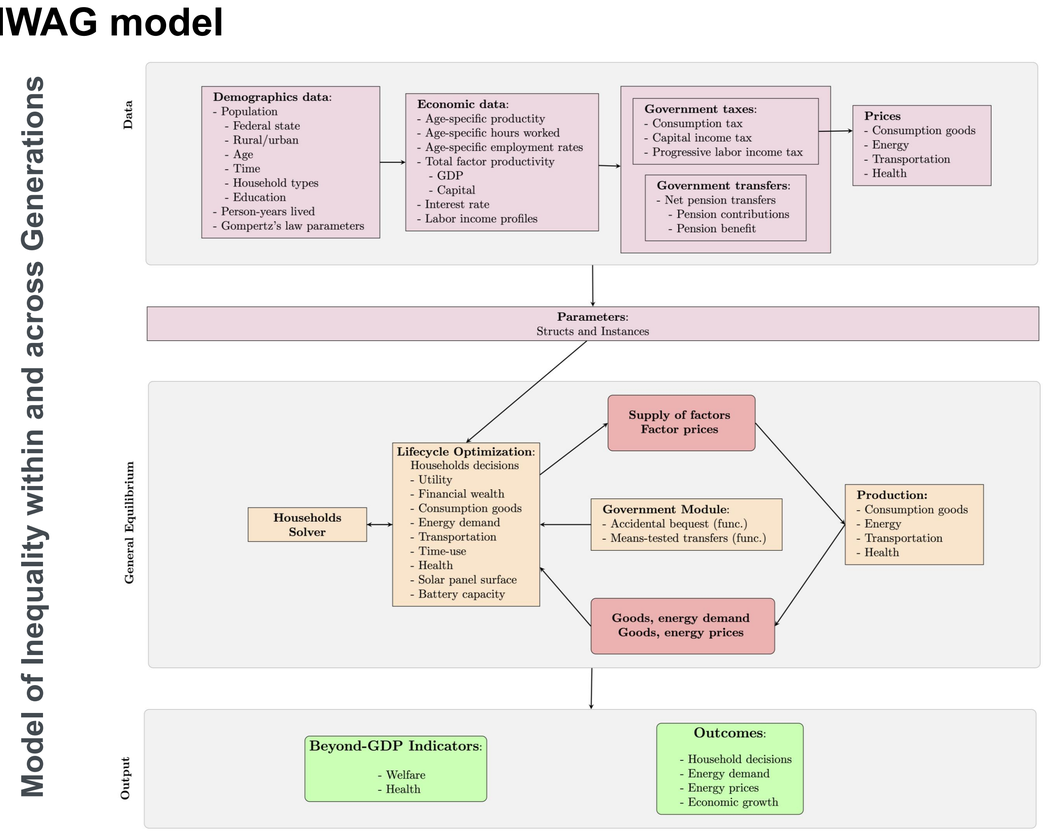

Fig. 1. Flowchart of the MIWAG model adapted to the ADJUST project

- Development of functional model frameworks for distribution and equity analyses: integration of demographics, economics, energy, and politics; mapping of household decision
- Historical simulation from 1980 onwards: basis for long-term analyses
- Database: population by age, gender, education, region; household structure, urban/rural, long-term projections
- Harmonization of education and income data
- Merging of macro and micro data: basis for consistent simulation

Effects of Austria's carbon tax and refund

- Rural federal states → higher CO_2 emissions
- Vienna → significantly lower

→ Emissions depend heavily on infrastructure not primarily on individual behavior.

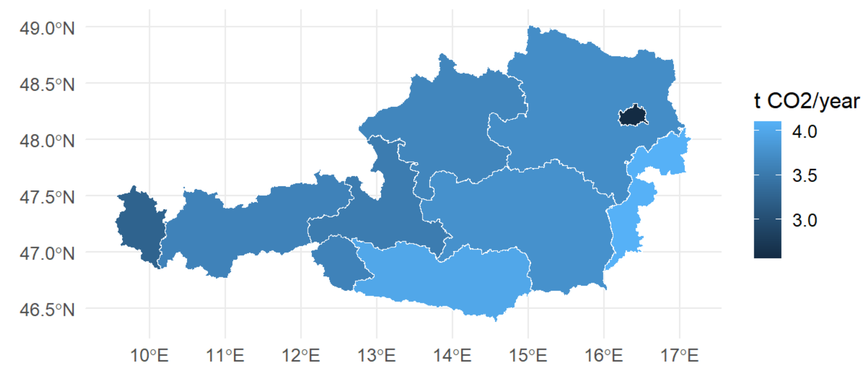

Fig. 2. Average annual direct CO_2 emissions by federal state. Weighted household averages (tons CO_2 per year)

- Emissions rise with income

→ Higher incomes cause more CO_2

→ CO_2 consumption is "normal" or a luxury good

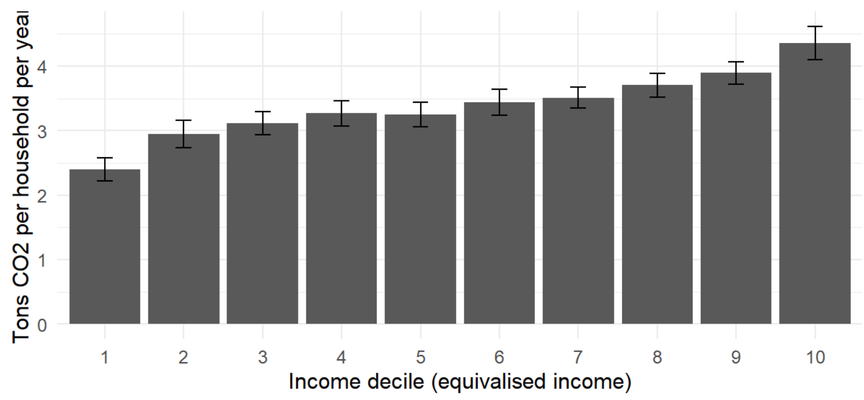

Fig. 3. Average annual direct CO_2 emissions by income decile. Weighted mean with 95% confidence intervals.

- Emissions increase from city → countryside
- Income does not increase accordingly

→ Rural households are structurally disadvantaged

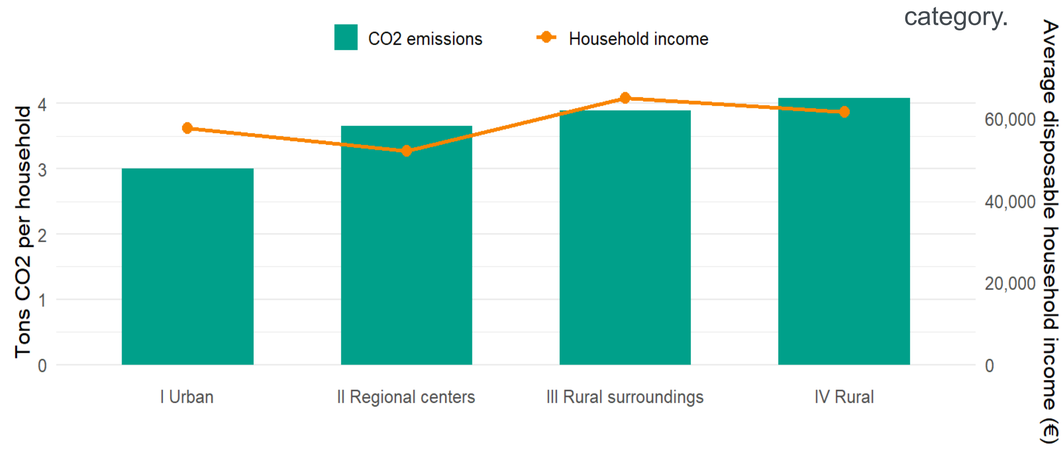

Fig. 4. Emissions and income by Klimabonus category.

Key Findings

- Carbon pricing has strong distributional effects across income and regions.
- Rural households emit more due to structural factors.
- Emissions rise with income, with persistent regional gaps.
- Compensation can offset regressive impacts.
- Integrated models support long-term equity analysis.
- Strong stakeholder involvement is essential.
- Comparative analysis of energy poverty and inequality is needed (Europe & OECD).

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