



Assessing the Distributive, Economic, and Environmental Impacts of CO₂ taxes in Austria

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AIM & MOTIVATION



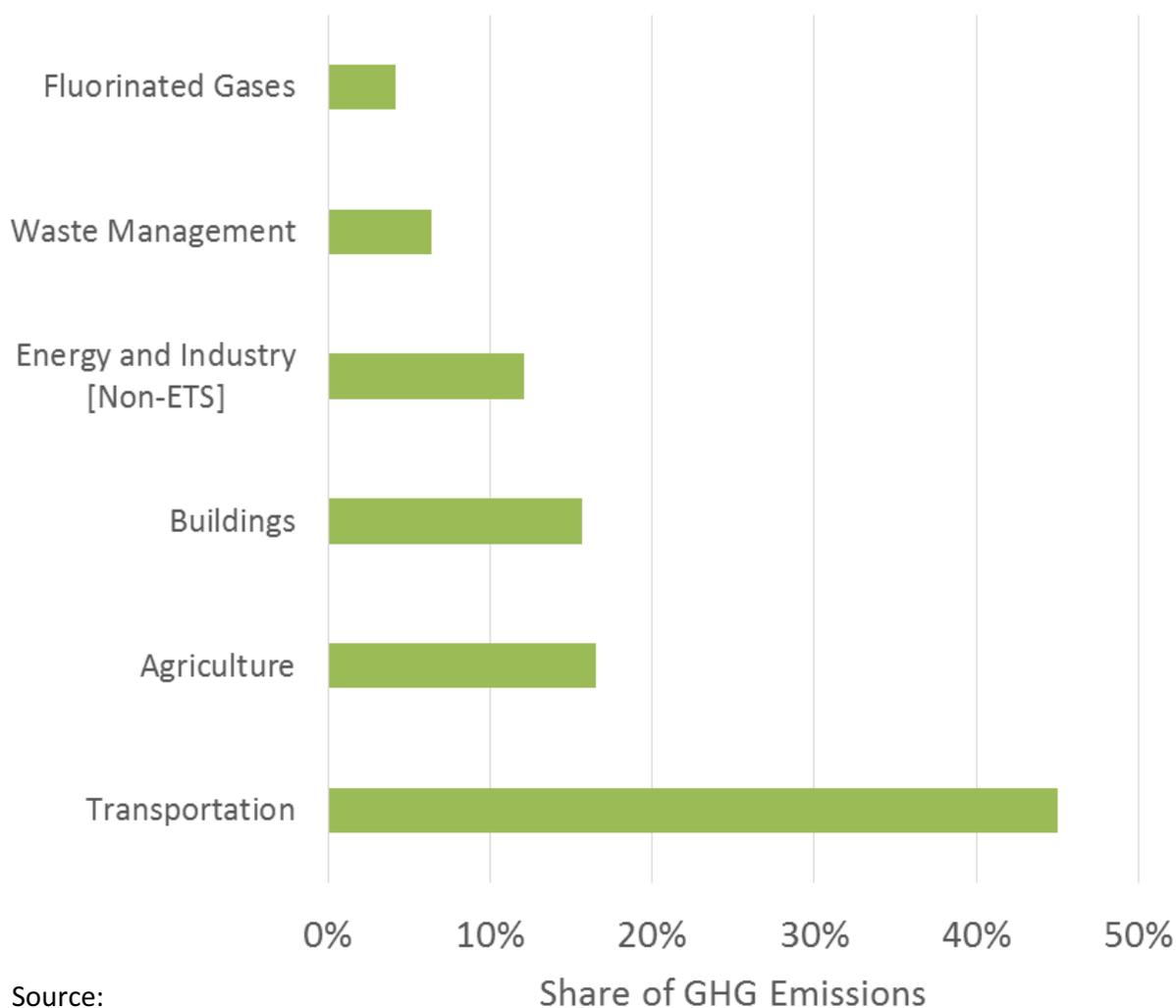
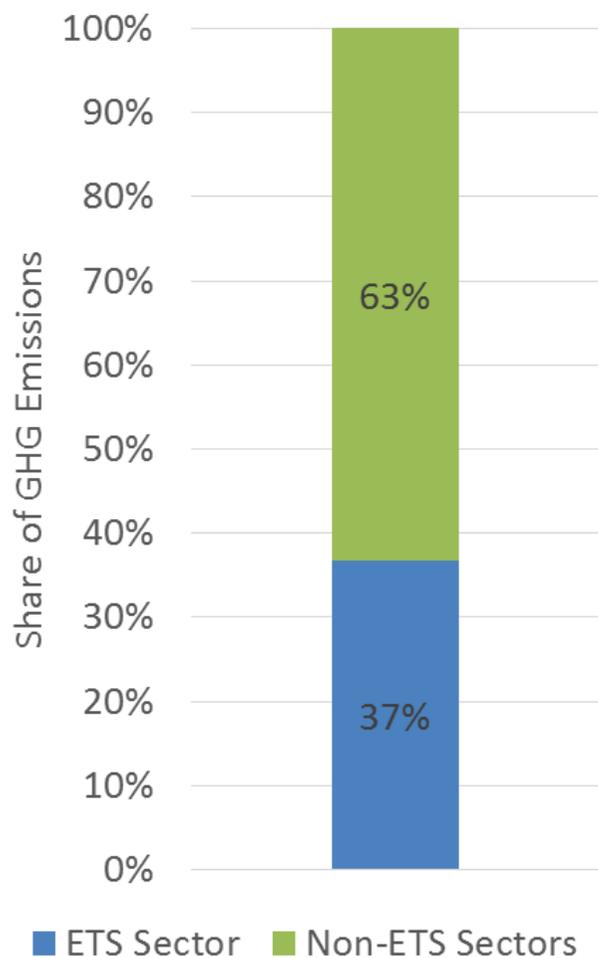
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- How do reduce emissions in non-ETS sectors (transport, service sector, private heating & mobility)?
- EU-Effort Sharing Decision in Austria :
 - -16% until 2020 (vs. 2005)
 - -36% until 2030 (vs. 2005)
- CO₂ taxes
 - How **effective** is the incentive?
 - What are the **macroeconomic** impacts?
 - What about **regressive** tax impacts on households?

GHG Emissions Austria 2014

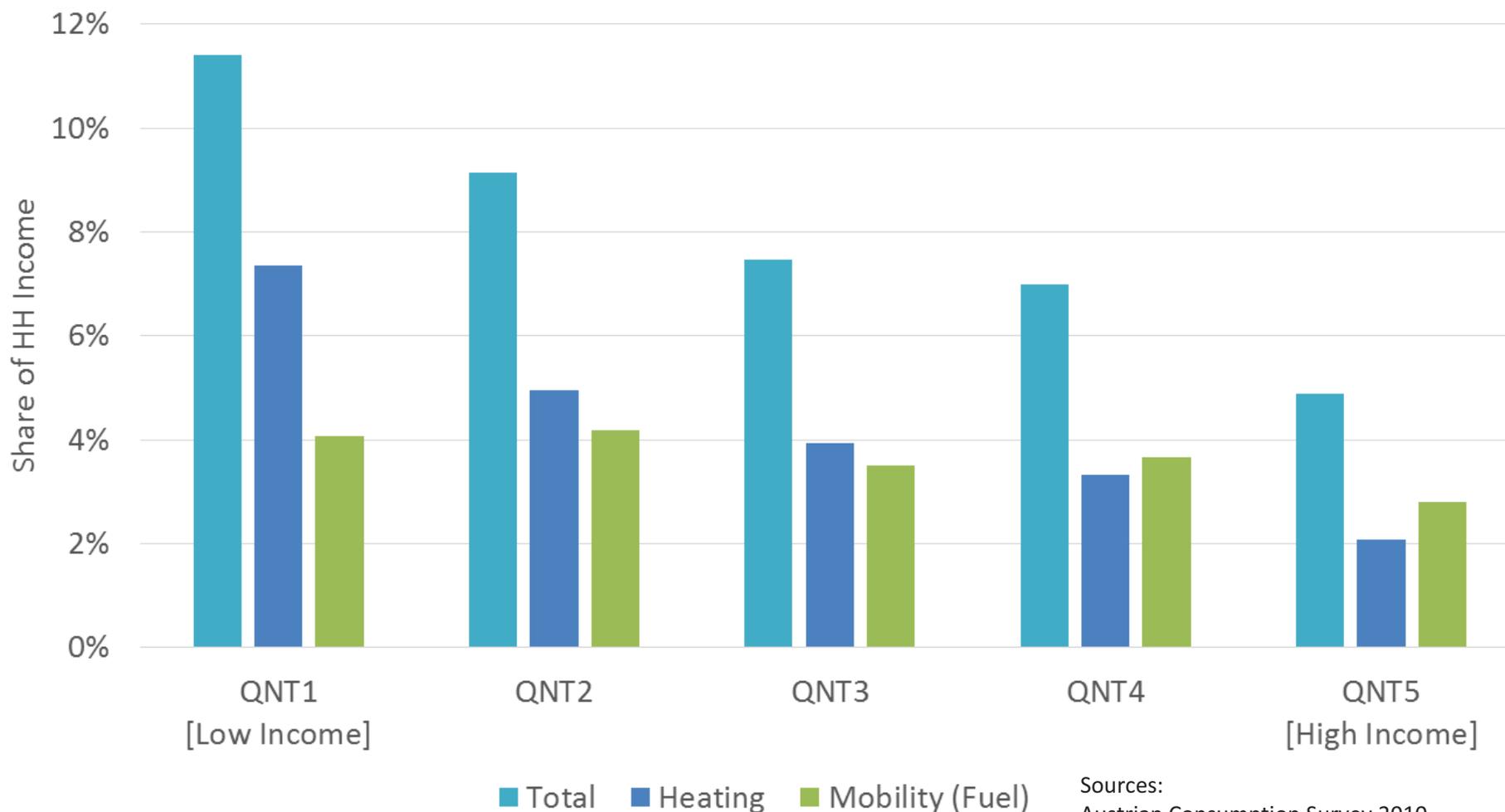
Sectoral Shares



Source:
Austrian Environmental Agency

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Household Income Quintiles Consumption Expenditure



Sources:
Austrian Consumption Survey 2010
Austrian Energy Balance



METHODOLOGY & SCENARIOS

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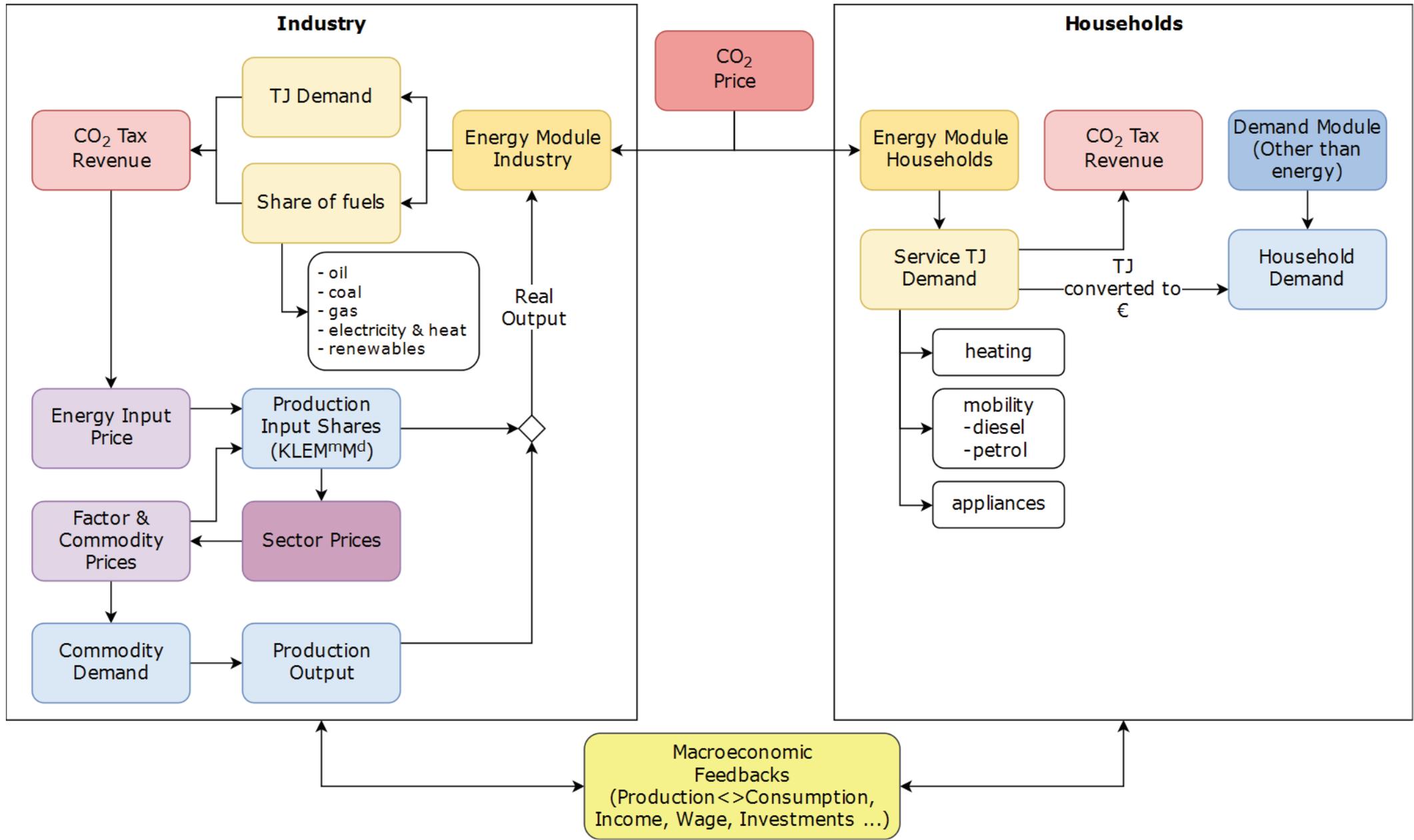


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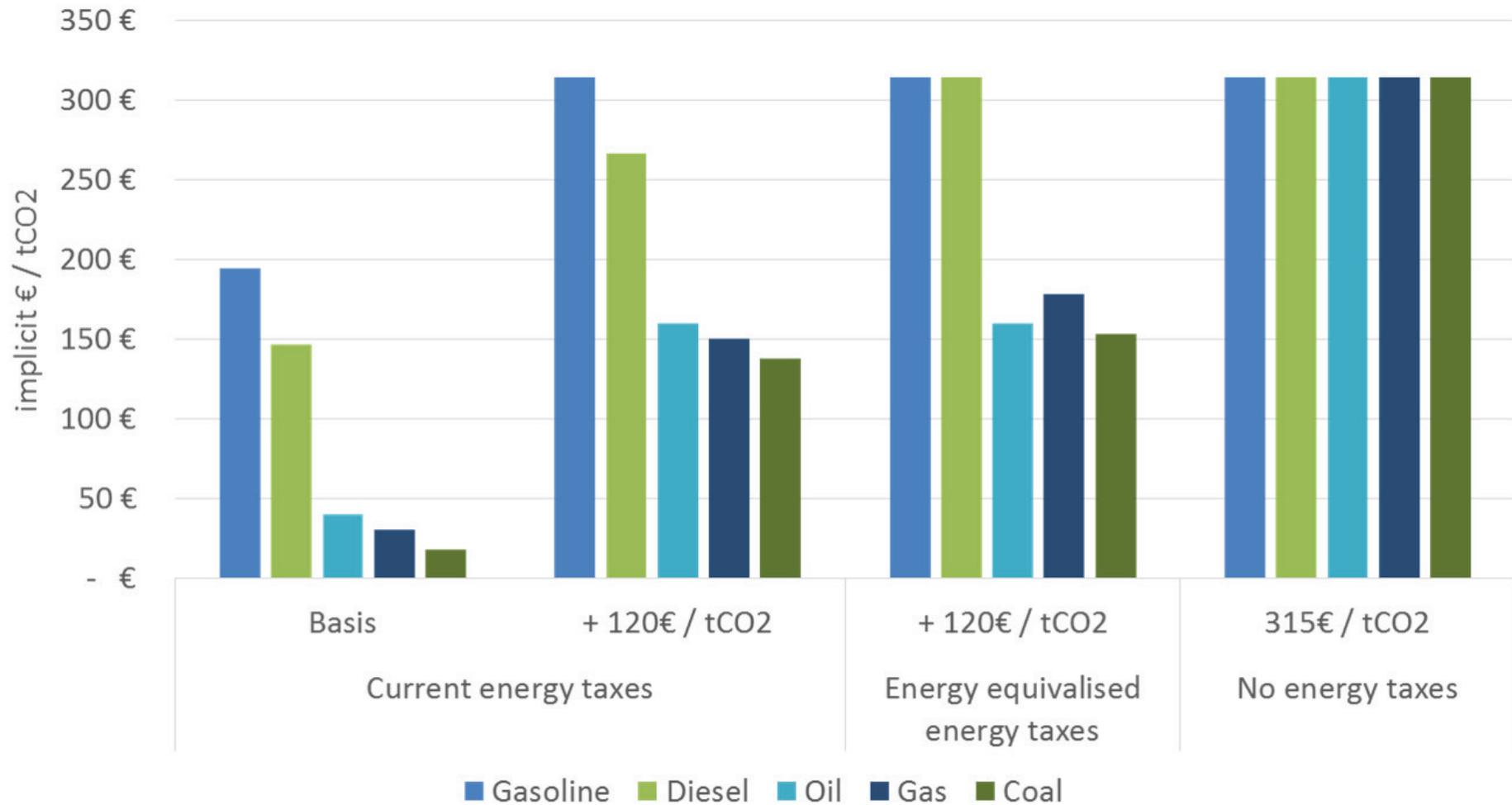


A dynamic econometric IO model

- Input-Output (IO) → macro-economic interlinkages
- Econometric → behavioral functions
 - Production (Input of capital, labor, non-energy & energy goods)
 - Private consumption (Durable-, non-durable and energy goods)
 - Wage curves
- Specific consideration of:
 - **Energy**
 - as input in the production process of commodities
 - during consumption (mobility, heating, household appliances)
 - **Household income quintiles**

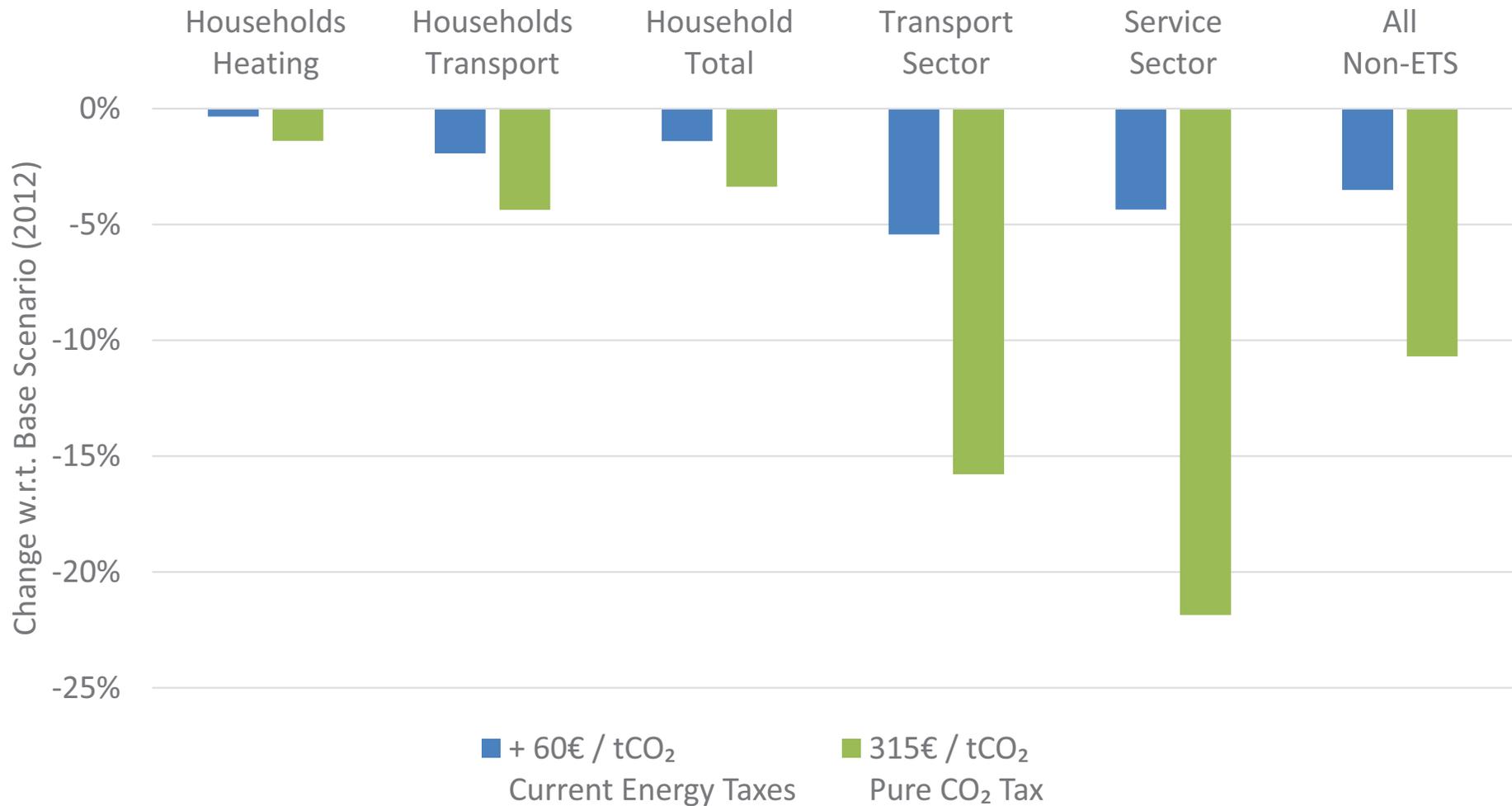


- CO₂-tax on energy carriers in **non-ETS sectors**
- Tax price variants
 - +60 or 120 €/t CO₂ on top of existing energy taxes
 - +60 or 120 €/t CO₂ on top of energy-equivalised energy taxes
 - 225 € or 315 €/t CO₂ and no energy taxes
- Recycling of taxes
 - Lump-Sum transfers to households
 - Reduction of employers' social contribution for non-ETS industry
- Comparative analysis for the year 2012



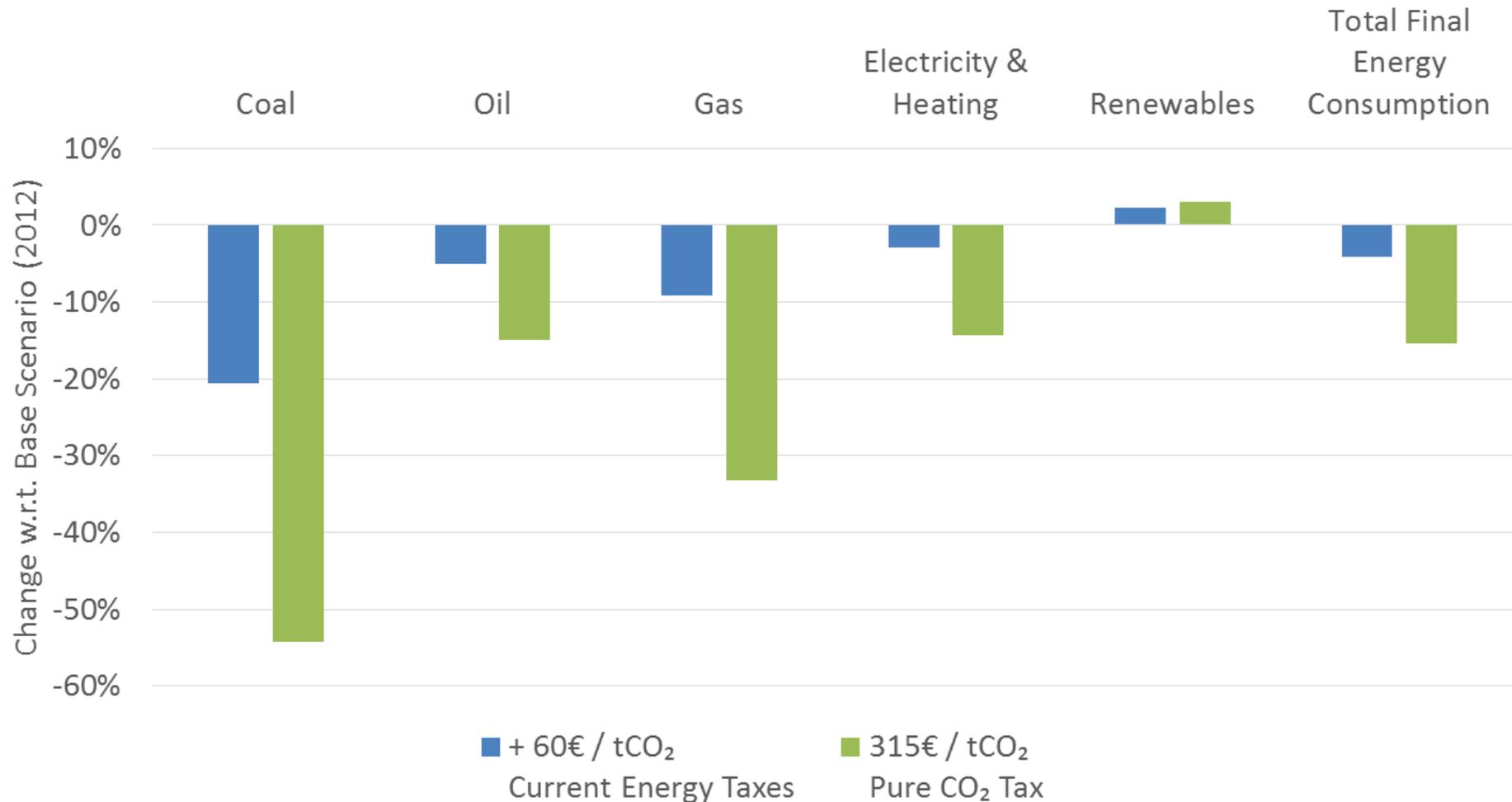


SIMULATION RESULTS



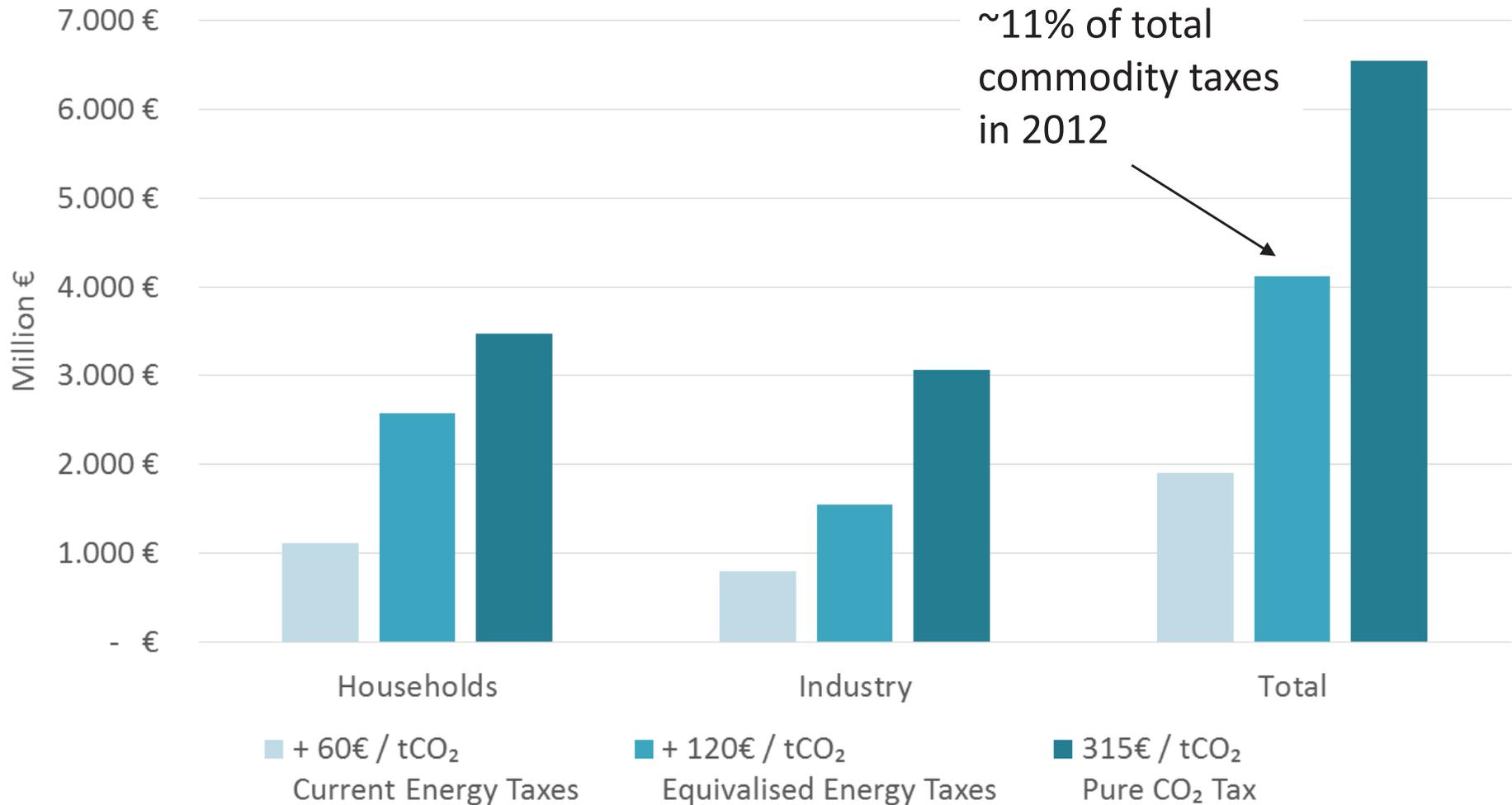
Final Energy Consumption – Non-ETS

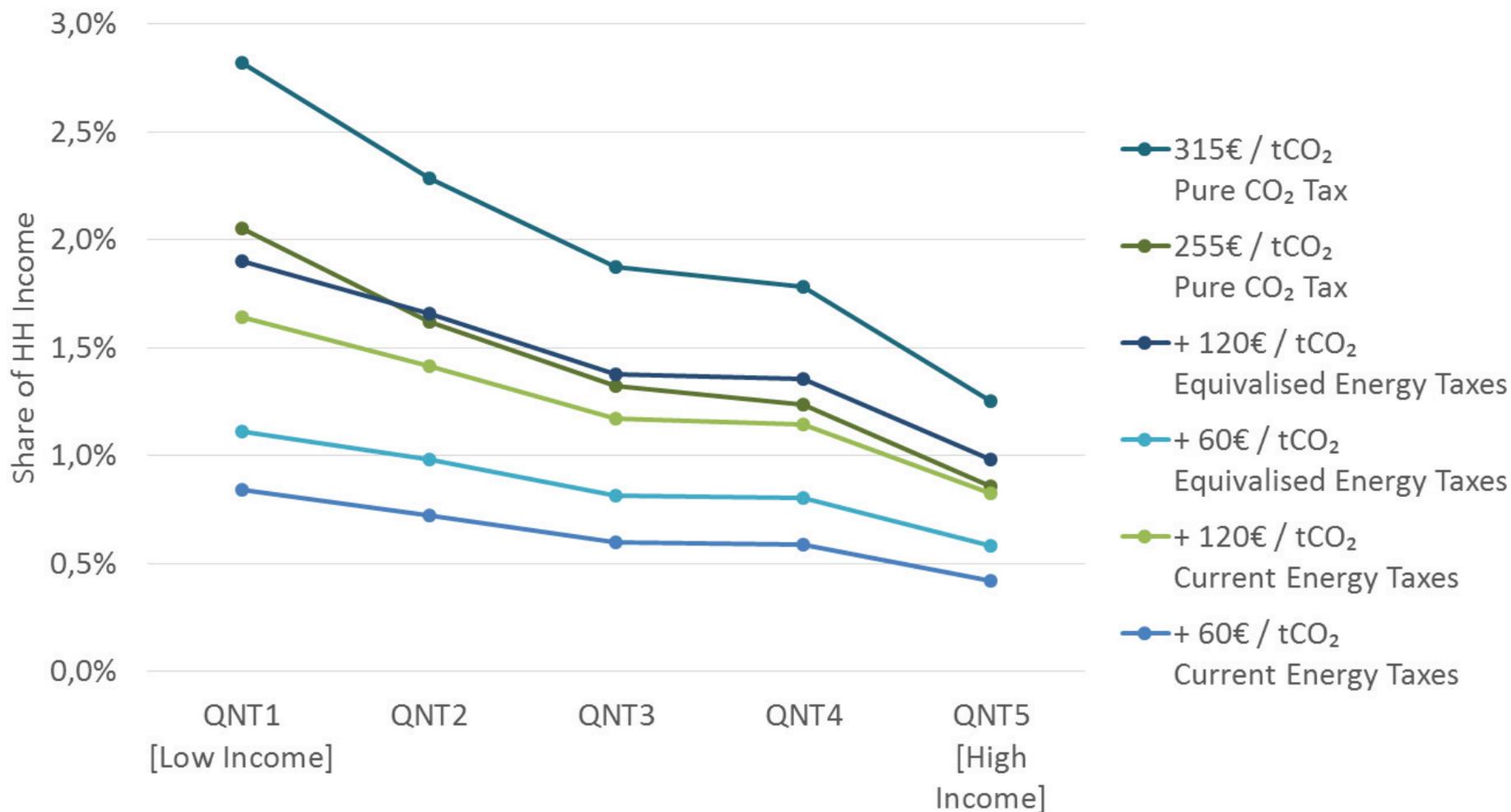
Short-Term Effects of CO₂ taxes



Additional CO₂ Tax Revenue

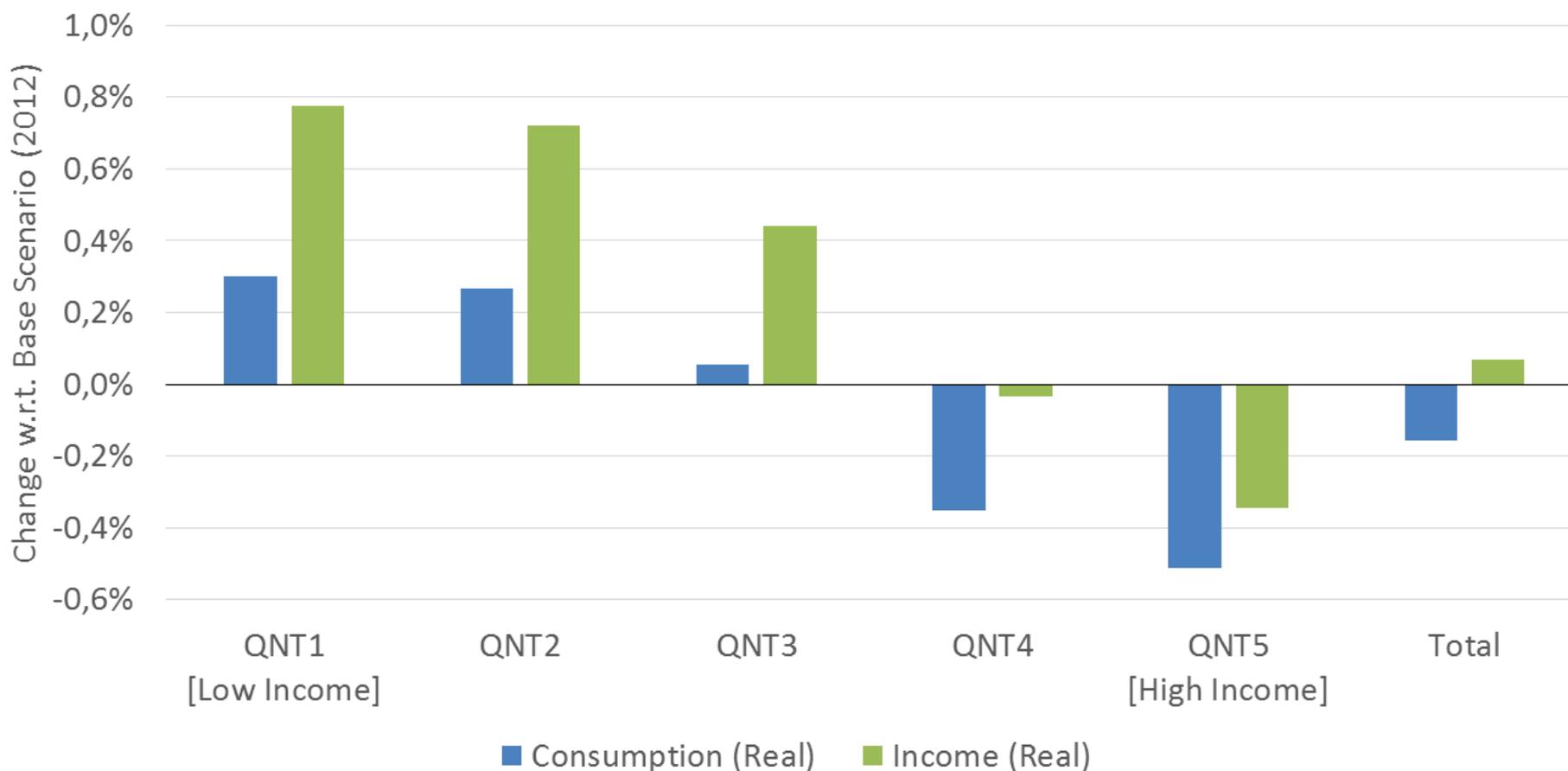
Short-Term Effects of CO₂ taxes





Total Burden with Lump Sum Transfers

Scenario: + 120€ / tCO₂ and Current Energy Taxes



Value Added – Non-ETS

Short-Term Effects of CO₂ taxes

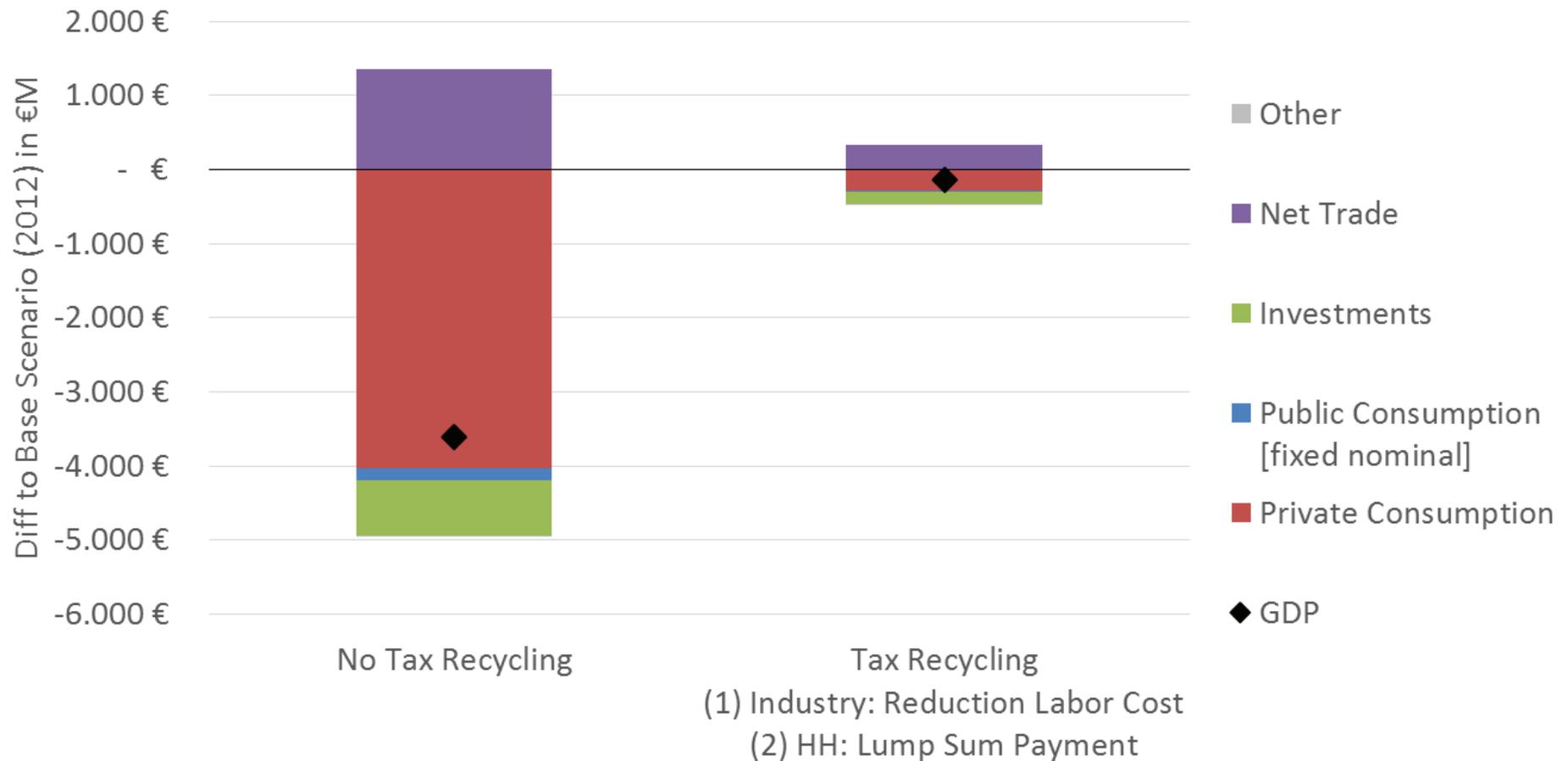
Scenario: + 120€ / tCO₂ and Current Energy Taxes



GDP impact (real) - Composition

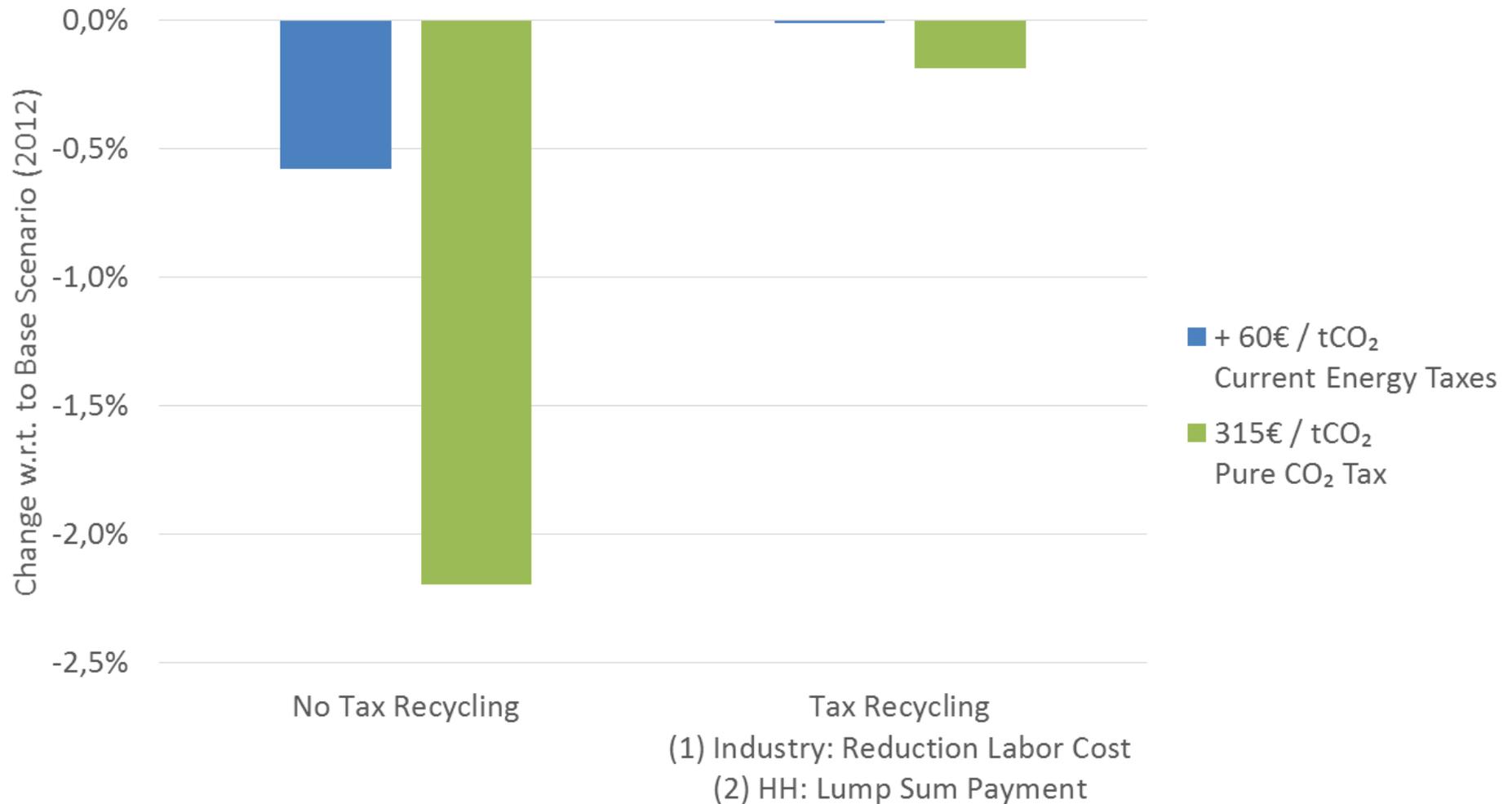
Short-Term Effects of CO₂ taxes

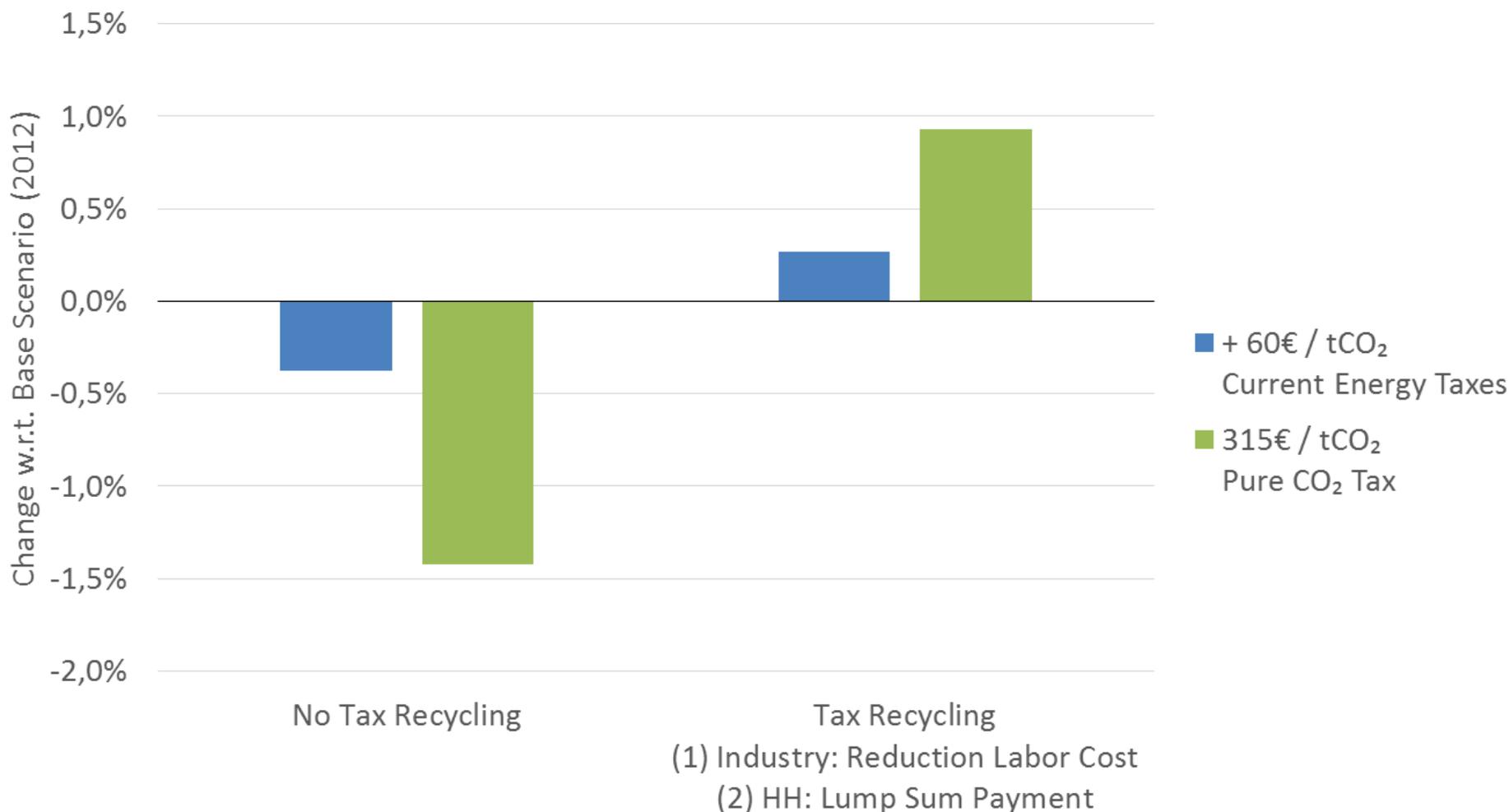
Scenario: + 120€ / tCO₂ and Current Energy Taxes



GDP impact (real) - Range

Short-Term Effects of CO₂ taxes







CONCLUSIONS & OUTLOOK

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- A CO₂ tax can contribute to a reduction in CO₂ emissions in non-ETS sectors already in the short term
- Macroeconomic effects are small and crucially depend on what happens with the CO₂ tax revenue
- Tax recycling can mitigate regressive impacts on households and competitive issues for industries

- Long-Term Simulations (2020/2030)
- Higher CO₂ taxes on automobile purchases
- Floor tax for all industries (also ETS)