WIFO ÖSTERREICHISCHES INSTITUT FÜR WIRTSCHAFTSFORSCHUNG

# Balancing Social and Ecological Goals: Redistributive Options for Carbon Pricing in an Ecological Tax Reform

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# Outline of the Presentation

1. Introduction
2. Background Information
3. Scenario Design and Modelling Framework
4. (Preliminary) Results and Conclusions

# Carbon Taxes in Eco-Social Tax Reform

- The use of taxes to correct for negative externalities such as greenhouse gas emissions dates back to Pigou (1920)
- Carbon pricing is increasingly recognised as key instrument for decarbonization
- Without compensation measures, carbon pricing
  - leads to negative macroeconomic impacts
  - Is likely to be regressive
- A revenue-neutral introduction of a $CO_2$ price (within an eco-social tax reform) can achieve several positive effects
  1. Emissions are reduced through the steering function of the $CO_2$ tax
  2. The refund of the tax can cushion negative effects on competitiveness and employment
  3. Positive distributional effects can be achieved through the refund

  → **Double / Triple Dividend**

# Motivation

- Policy design and particularly recycling of revenues crucial
  - to neutralise unintended distributional effects
  - to increase the public acceptability of carbon pricing
  - to generate a double/triple socio-economic dividend

- **Aim of this paper:**
  Analysis of the ecological, economic and distributional impact of a socio-ecological tax reform in Austria taking into account the specificities of the tax-benefit system as well as (regional) income distribution

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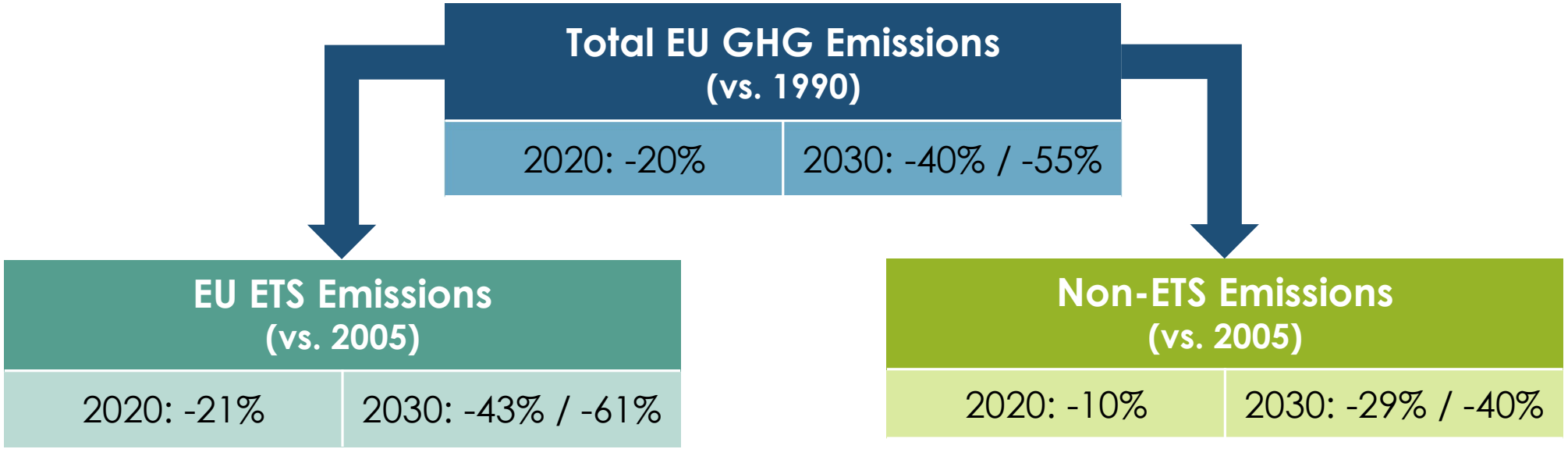
# Salient traits of the Austrian case

- Bismarckian, insurance-based social protection system
- High non-wage labour costs
- Modest redistributive effect of tax system
  - Regressive structure of indirect taxes and social insurance contributions
  - Comparatively low weight of taxes on income and capital
- Greenhouse gas / $CO_2$ emissions overall show only a moderate decline – the transport sector is characterised by a pronounced increase since 1990

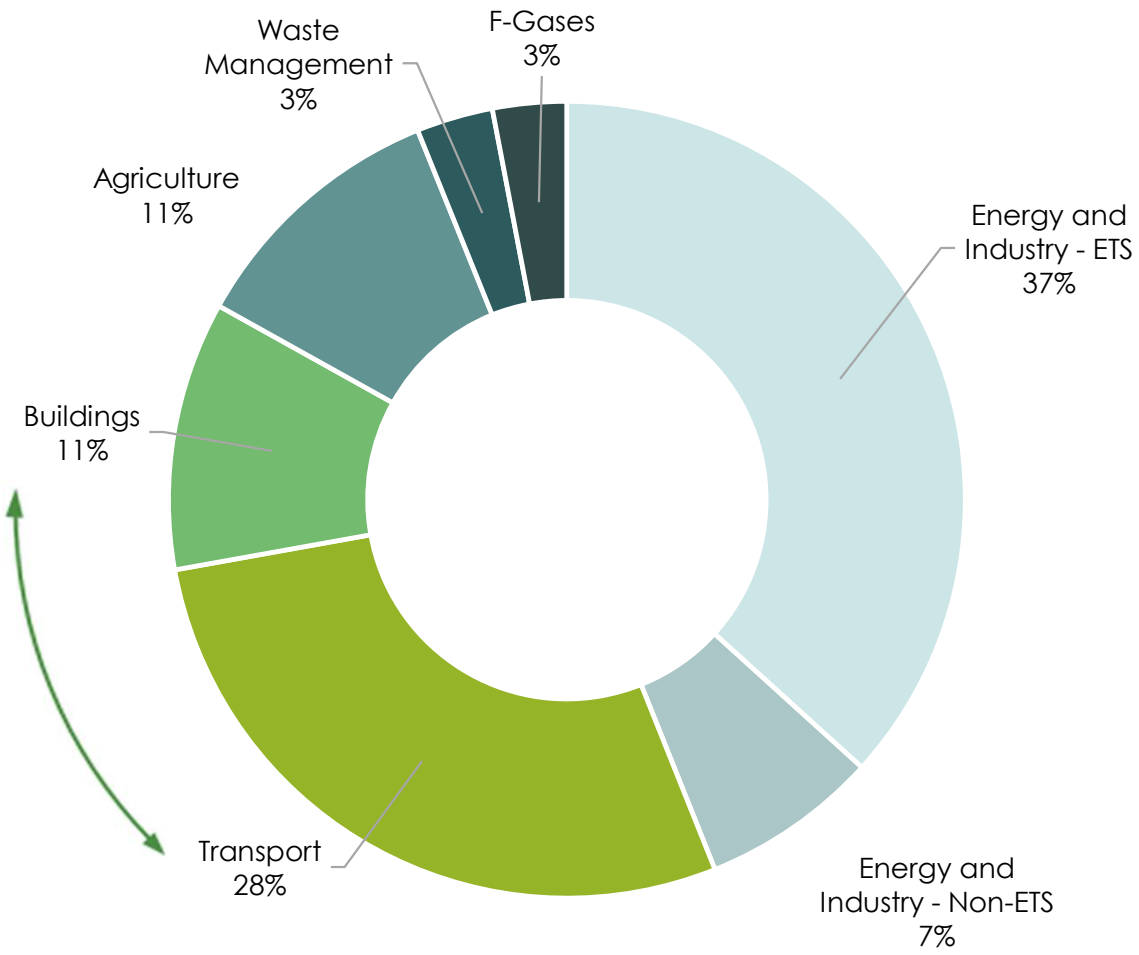
# Emission Reduction Targets in the EU and Austria




Regulated at EU level

Regulated partly at EU, partly at national level

# GHG Emissions in Austria 2020



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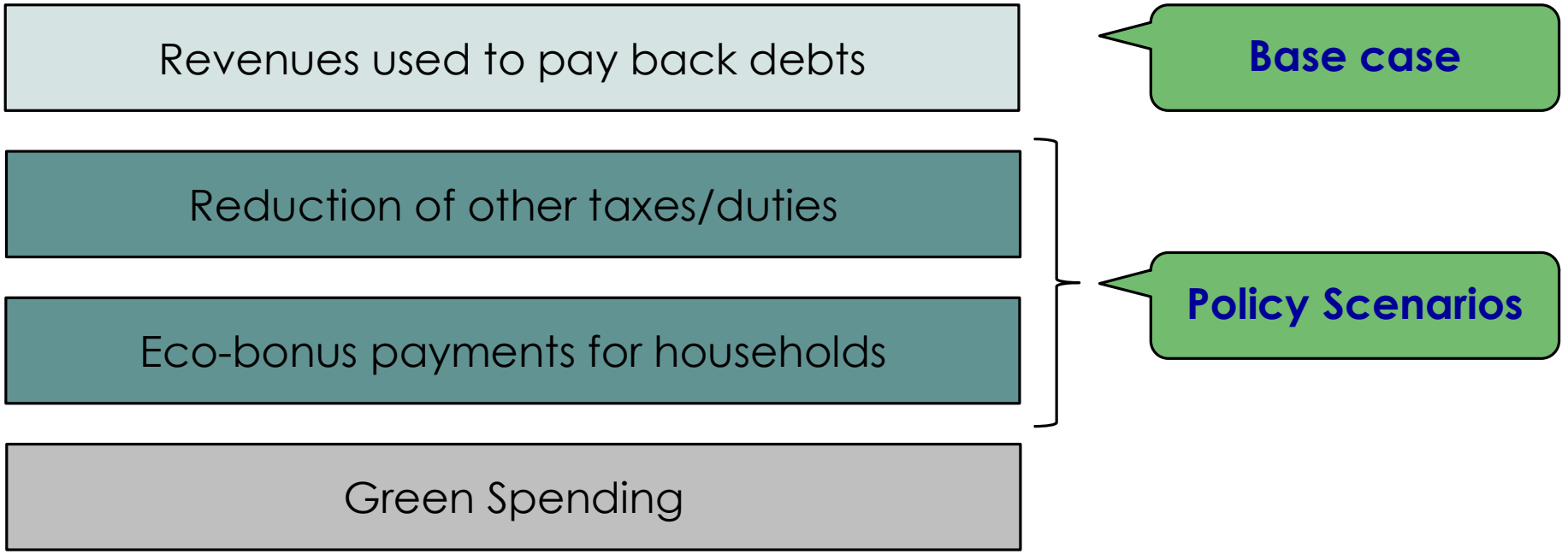
# General Options for Tax Revenue Recycling



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# Ex-ante assessment of different tax revenue recycling options (I)

| Reduction in… | + | – |
|---|---|---|
| **Wage and income tax** | Direct effect on HH incomes; administrative simplicity | Poor targeting/ regressive effects; high revenue loss |
| **Worker social security contributions** | Direct effect on HH incomes; macroeconomic effects | Administrative complexity (to achieve good targeting) |
| **Non-wage labour costs** | Employment effects; net revenue effects | Only indirect redistributive effect |
| **Value added tax** | Progressive effects | High revenue loss; limited flexibility (EU regulations) |

Source: Authors, based on findings from Mayrhuber et al. 2014; Rocha-Akis 2015; Rocha-Akis et al. 2016; Bach et al. 2017; Berger et al. 2019.

# Ex-ante assessment of different tax revenue recycling options (II)

| Eco-bonus payment to | + | – |
|---|---|---|
| **All households** | Can increase acceptance for ecological tax reform | Poor targeting<br>Limited positive macroeconomic effects |
| **Low income quintiles** | Can increase acceptance for ecological tax reform<br>Targeting | Practical/administrative feasibility<br>Limited positive macroeconomic effects |
| **Households in rural areas** | Targeting ? | Social accuracy and macroeconomic effects for Austria need to be examined |

Source: Authors, based on findings from Carattini et al. 2019; Klenert et al. 2018; Callan et al. 2009; Verde – Tol 2009; Farrell 2017; Berry 2019; Bureau 2011; Douenne 2020; Kirchner et al. 2019; Budgetdienst 2019; Rivers – Yonezawa 2016.

# Policy Scenarios

## $CO_2$ Price Scenario

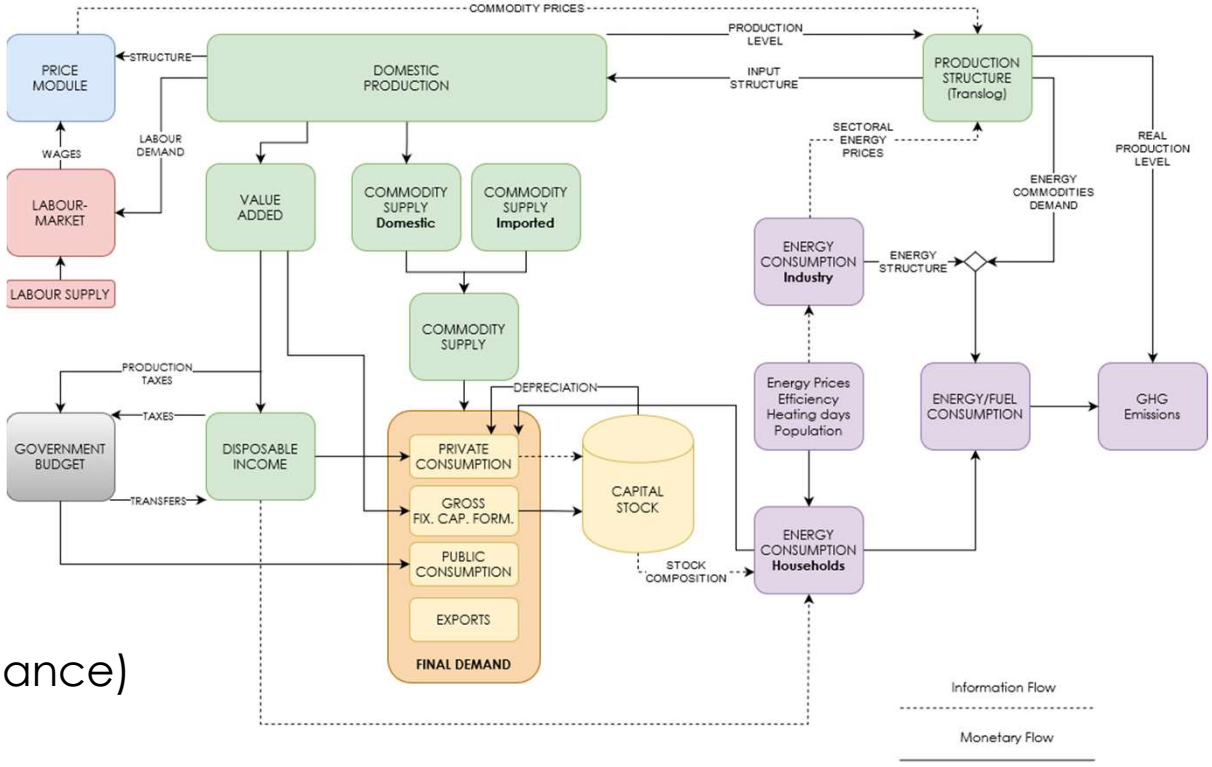
- (National) ETS for transport and buildings
- High Ambition Scenario
  - Linear increase between 50 € in 2022 and 156 € in 2030
  - Revenue volume: 4.3bn € (1% of GDP)

## Recycling Scenarios (revenue neutral)

- Public Debt Service (**PDS**)
- Reduction in Non-Wage Labour Costs (**NLC**)
- Reduction in Value Added Tax (**VTR**)
  (for goods taxed at reduced tax rate)
- Lump-sum Payments to ALL households (**CBR**)
- Lump-sum Payments to Q1-Q3 (**$CBR_{low}$**)

# Modelling Tool: The DYNK model

- Macroeconomic model (IO)
- 20 household groups
- Commodity market
- Final demand
- Price system
- Labour market
- Energy (monetary & physical)
  - Energy intensity
  - Final energy (Austrian energy balance)
- $CO_2$ emissions
  - acc. to energy demand & economic activities



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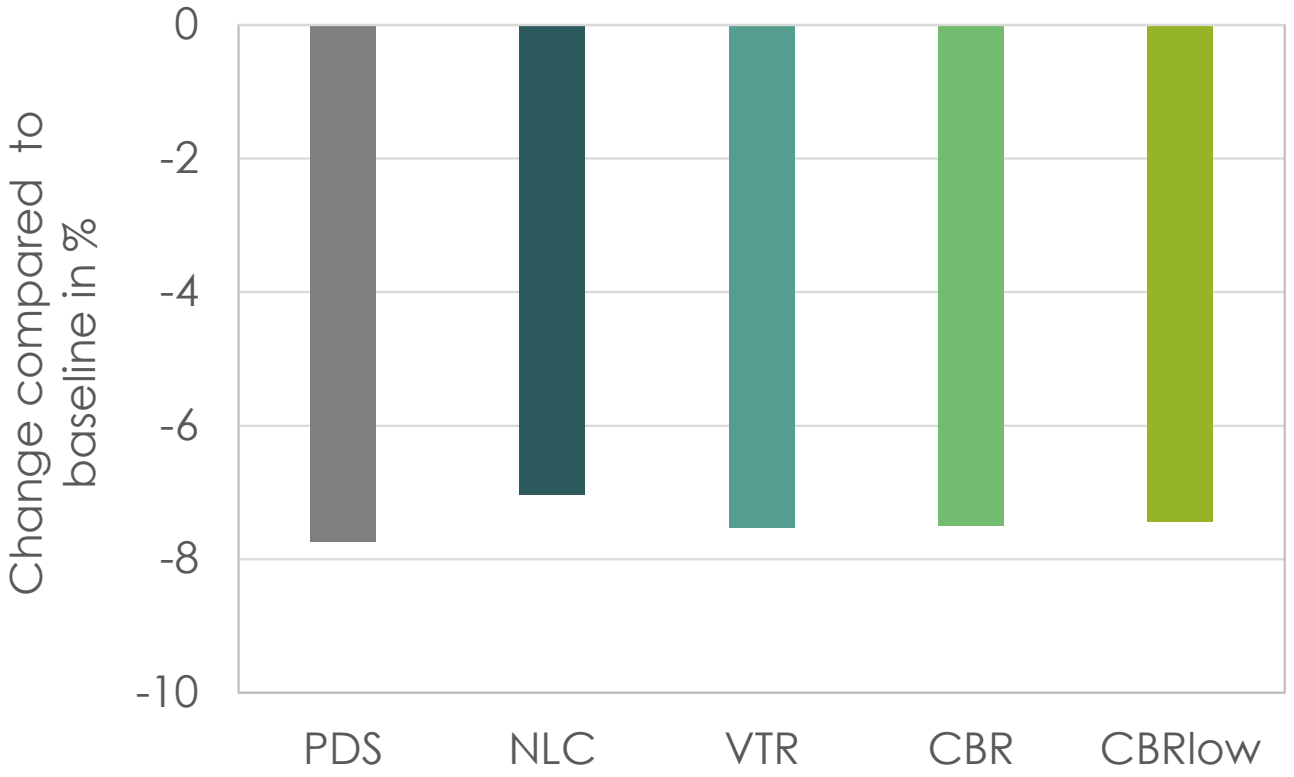
# Preliminary Simulation Results: $CO_2$ Emission Effect 2030



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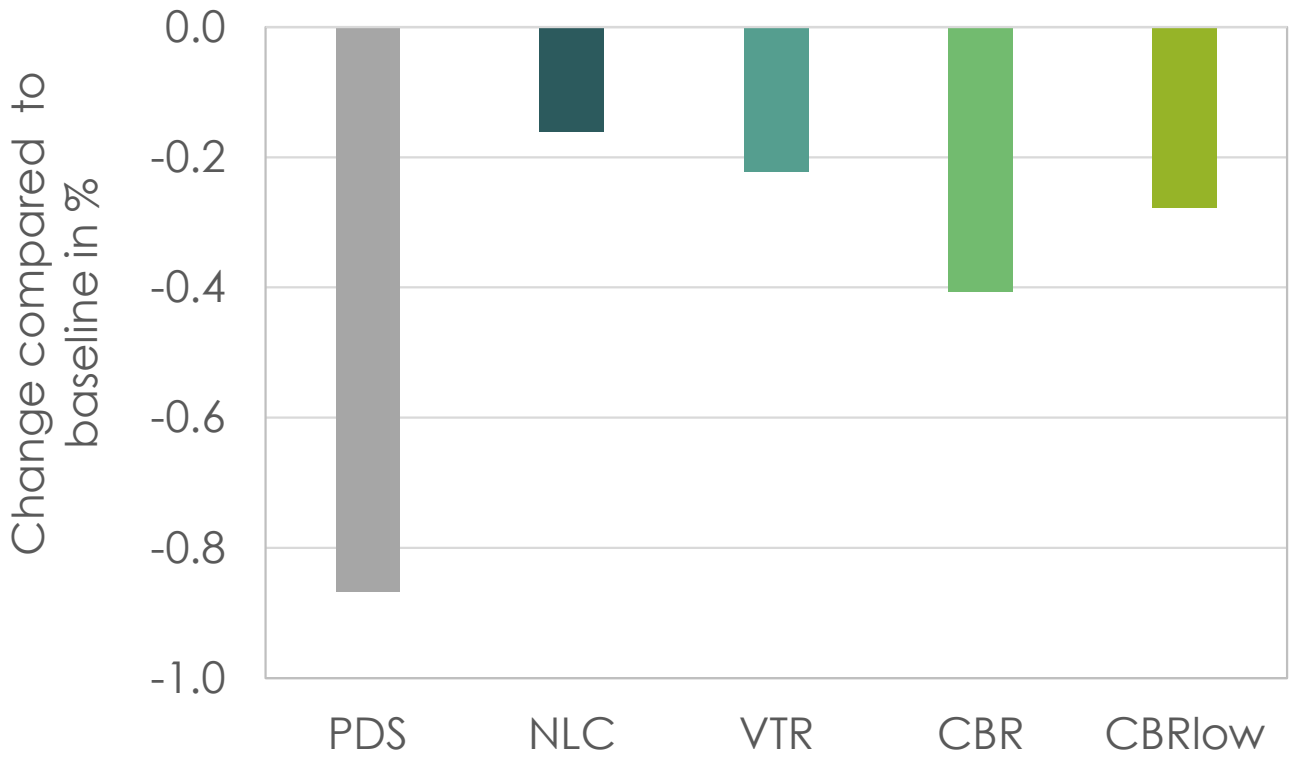
# Preliminary Simulation Results: Macroeconomic Impacts 2030 – GDP



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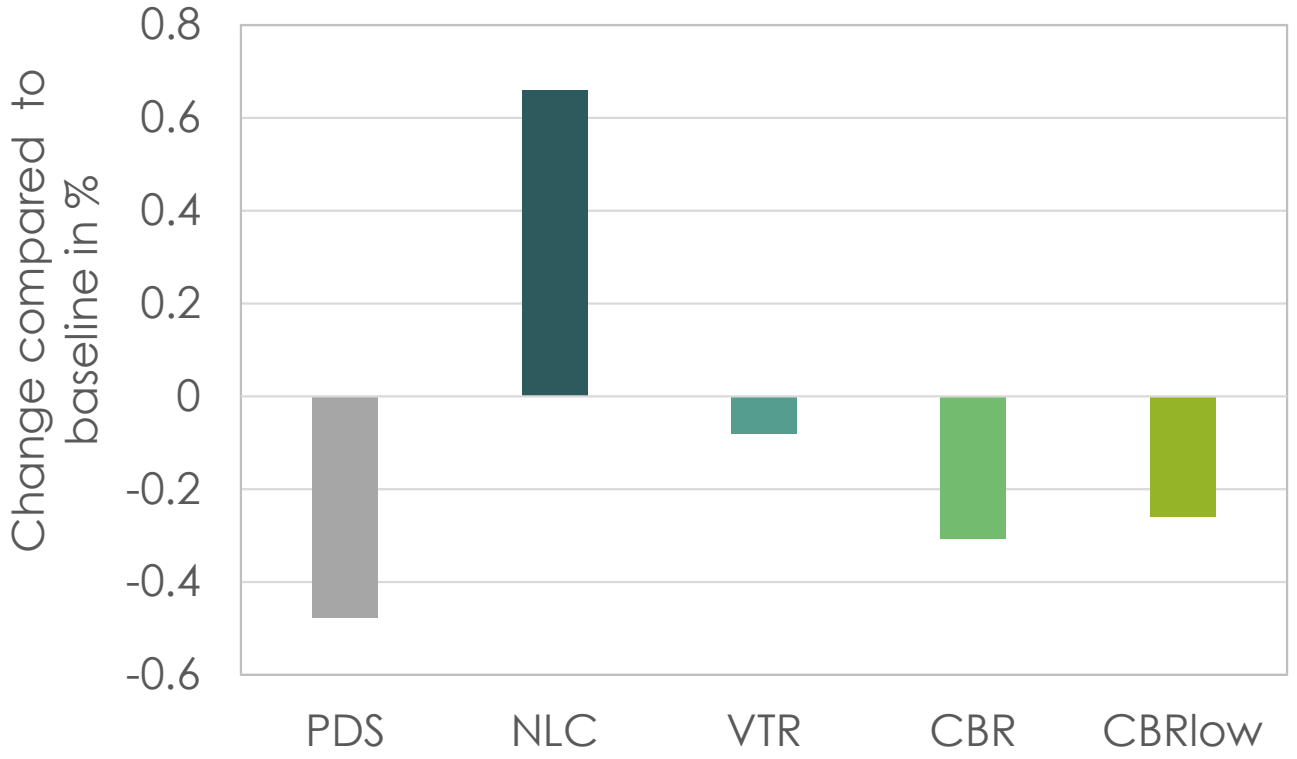
# Preliminary Simulation Results: Macroeconomic Impacts 2030 – Employment



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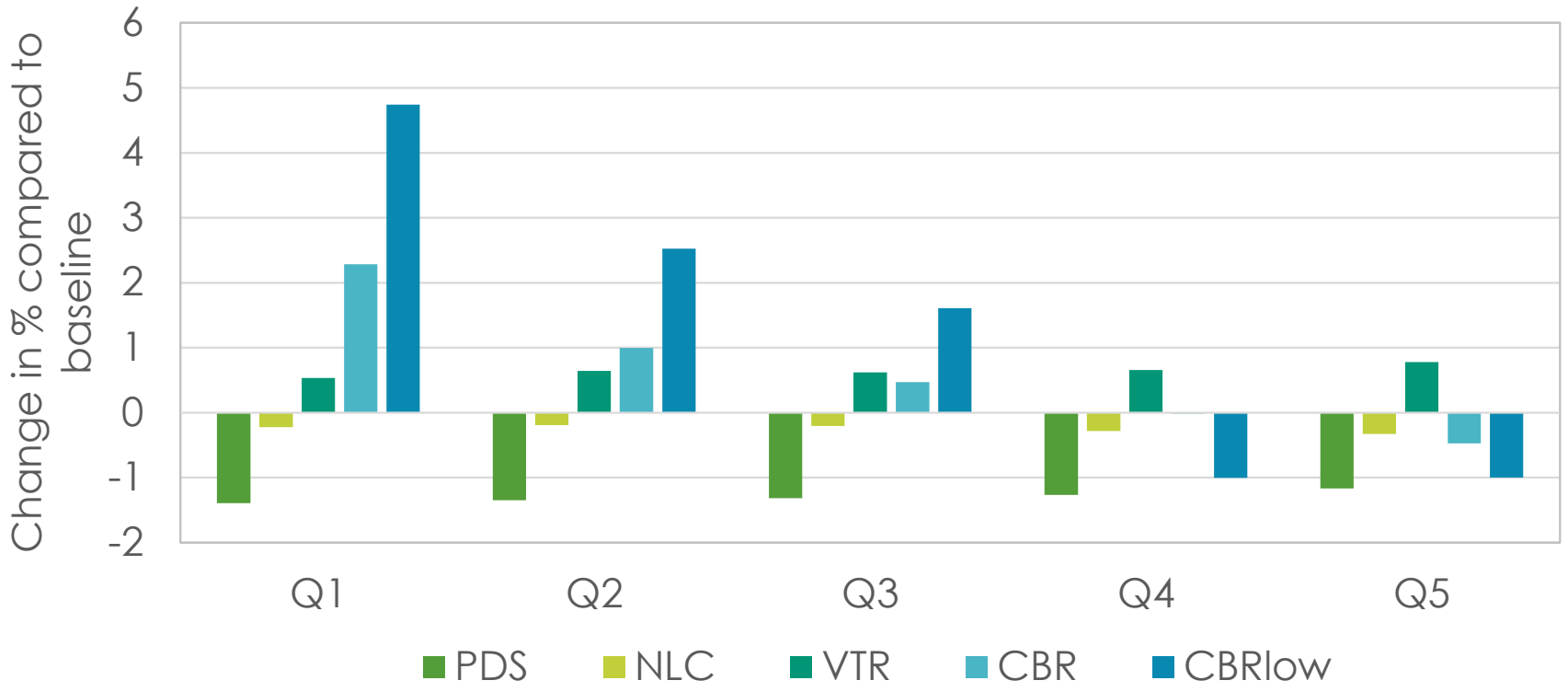
# Preliminary Simulation Results: Distributive Impacts
# Change in household consumption 2030 (I)



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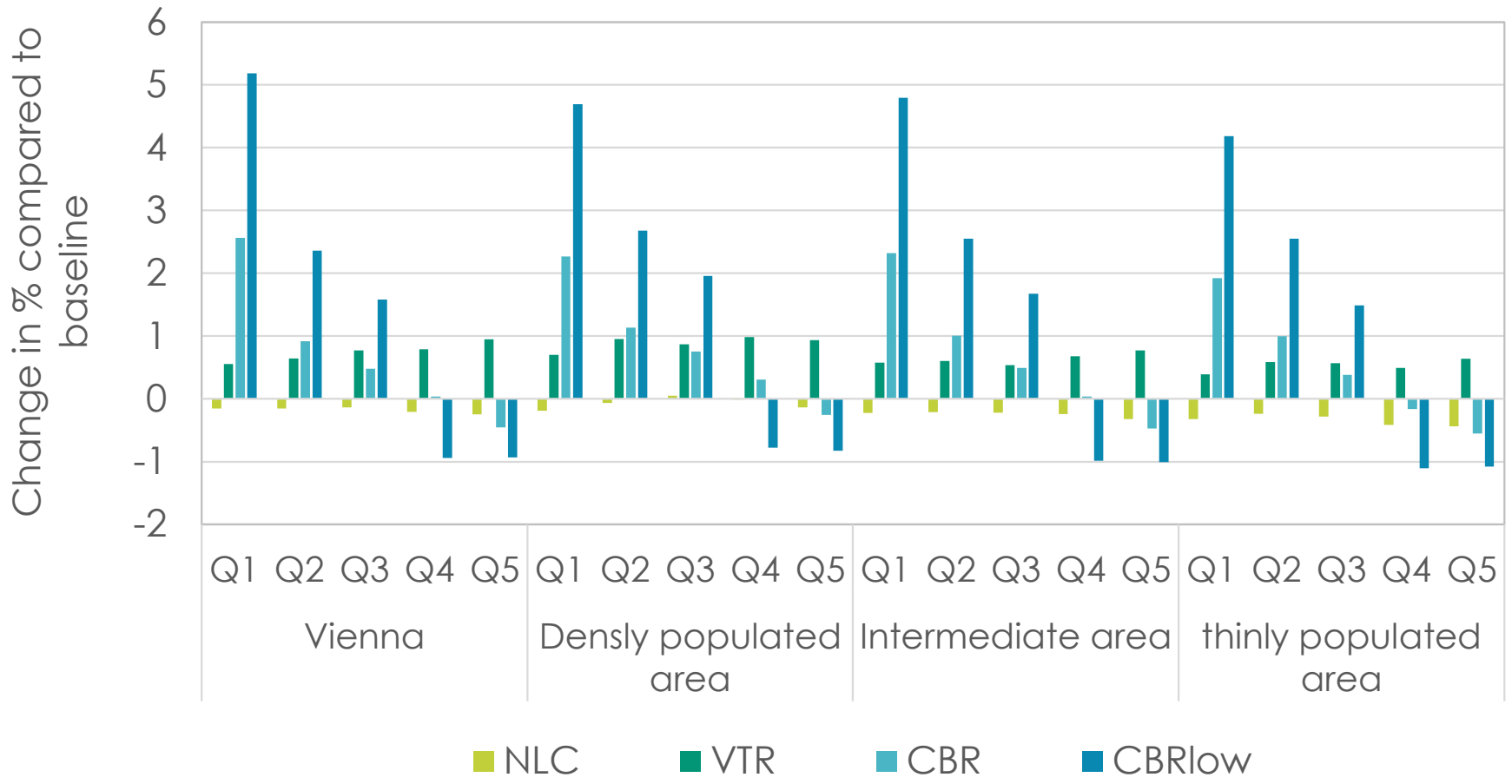
# Preliminary Simulation Results: Distributive Impacts
# Change in household consumption 2030 (II)



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# Summary and Conclusions

- Very similar environmental effects across recycling options (partial exception: NLC)
- Tension between macroeconomic and socially desirable effects
  - NLC best option from a macroeconomic perspective
  - CBR and CBRlow have the strongest redistributive effects
- Learnings for other countries
  - No support for ‘triple dividend’ (but potential for ‘double dividend’)
  - Carbon pricing should be part of more comprehensive eco-social tax reform
  - Regional differentiation not required to compensate low-income households

# Thank you!

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