

Webinar on compensation for increased fuel prices

2024-10-10



Agenda

Introduction by the Swedish EPA (15 min)

Presentation by Matthias Kalkuhl, Mercator Institute on Global Commons and Climate Change (20 min)

Presentation by Daniel Spiro, Uppsala University (20 min)

Presentation by Aaron Malteis, Stockholm Environmental Institute (20 min)

Discussion and questions from the audience (20 min)

Emissions trading system
for road transport,
buildings and other sectors
(ETS 2)

ETS 2 coverage

CO₂-emissions from fuels used for combustion in:

- Road transport
- Buildings
- Industries (not already covered by ETS 1)
- Swedish additional sectors – agriculture, forestry, aquaculture, fishing and leisure boats

EU target 2030 (vs 1990)

At least 55% net greenhouse gas emissions reduction

ETS 2 – A new system for cap and trade

- Pre defined cap – limit set on total amount of emitted CO₂, allocated to emission allowances
- Emission allowance – 1 ton of CO₂
- The participants report emissions every year and surrender corresponding amount of allowances
- Trade allowances on a market
- Carbon price => good conditions for cost-effective reductions
- Upstream system



The Social Climate Fund

- Targeting vulnerable groups such as households in energy or transport poverty
- Funded by revenues from ETS 2 auctioning and partly by member states
- EUR 65 billion over the 2026-2032 period + mandatory 25% contribution from member states
- Support measures and investments aiming to reduce ETS 2 emissions
- Temporary direct income support



Naturvårdsverket and ETS 2

- National competent authority
- Issue greenhouse gas emissions permit
- Review annual emissions reports
- Ensure legal compliance
- Guidance and information
- Support government office





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Mercator Research Institute on
Global Commons and Climate Change gGmbH



Carbon Pricing and Compensation

Prof. Dr. Matthias Kalkuhl

10 October 2024

Outline

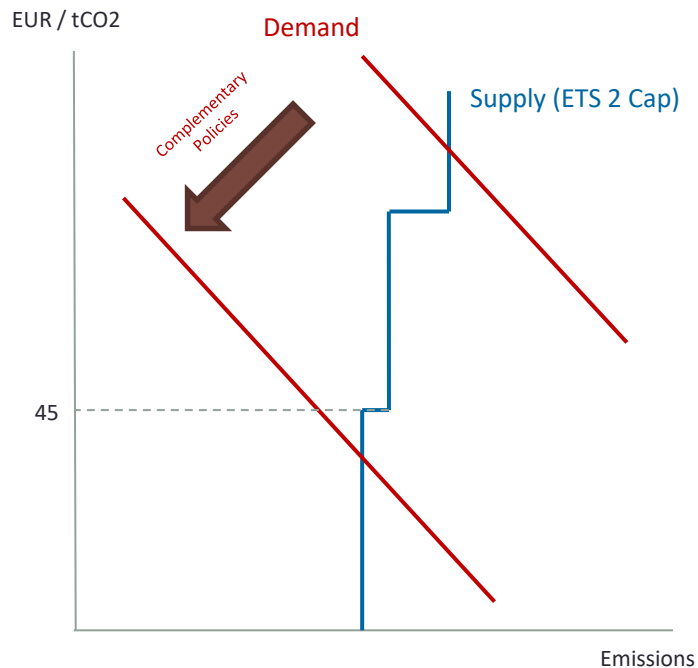
1. **Price Developments**
2. Vertical and horizontal dimension of unequal costs
3. Example of compensation schemes

EU ETS2 – Maximum Prices?

- Emission cap of ~1,000 Mt CO₂ in 2027, reduced by 5.1% every year
 - Currently, ~1,200 Mt CO₂ in ETS2 sectors
- Price cap 45 EUR in 2020 real prices → 58 EUR in nominal 2027 EUR
 - +20 mln allowances when 45 EUR trigger hit are rather small → no strong price dampening effect
 - +50 mln allowances from MSR when price $\geq 2 \times$ avg. price of the last 6 months
 - +150 mln allowances from MSR when price $\geq 3 \times$ avg. price of the last 6 months
- Maximum price mechanisms will likely not provide strong relief
 - This is also good to maintain effectiveness and compliance

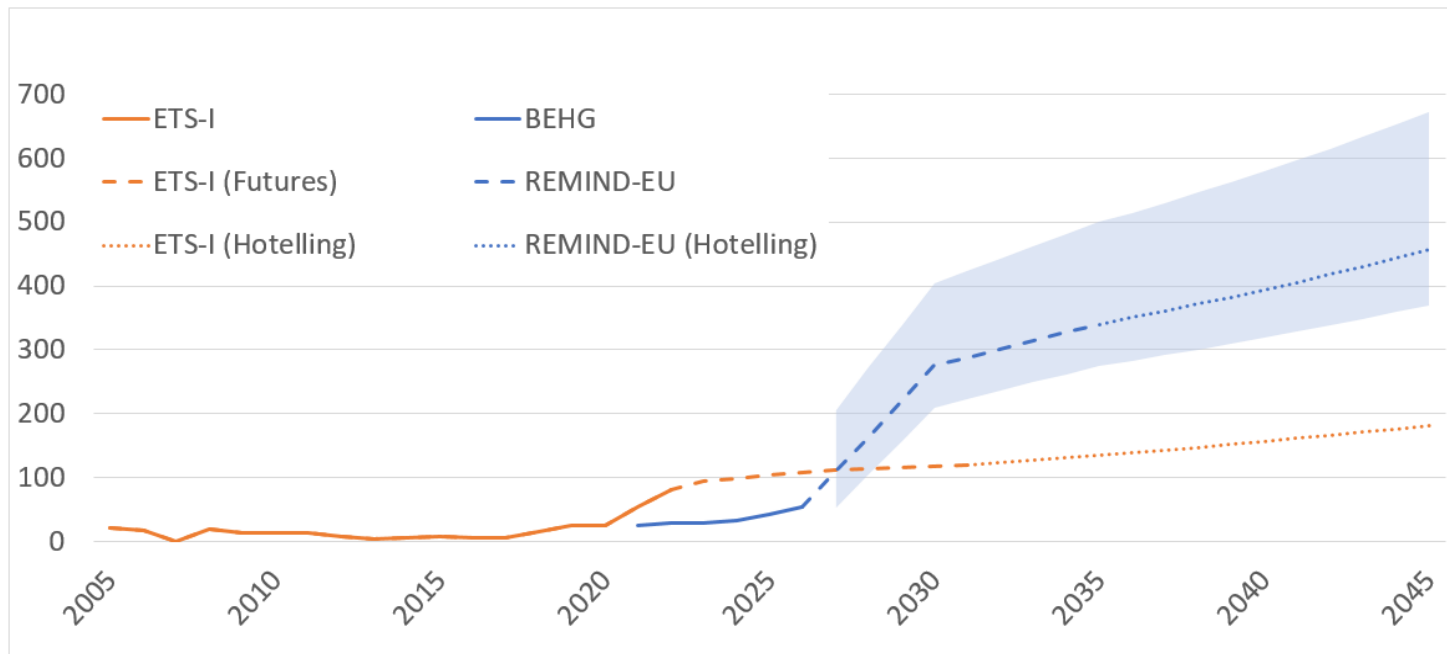
EU ETS2 Prices

- Sources of price uncertainty
 - Usual demand and supply factors (oil price, economic growth, ...)
- Will ESR hold?
 - Germany: plans to abandon national carbon price for transport and heating when ETS2 takes into effect
 - No strong compliance instrument to meet ESR targets (but possible to use regulation, subsidies and ad-hoc fuel tax increases)
- How much additional regulation?



Price Developments – According to Macro-Models

€ pro Tonne CO2 (real prices)



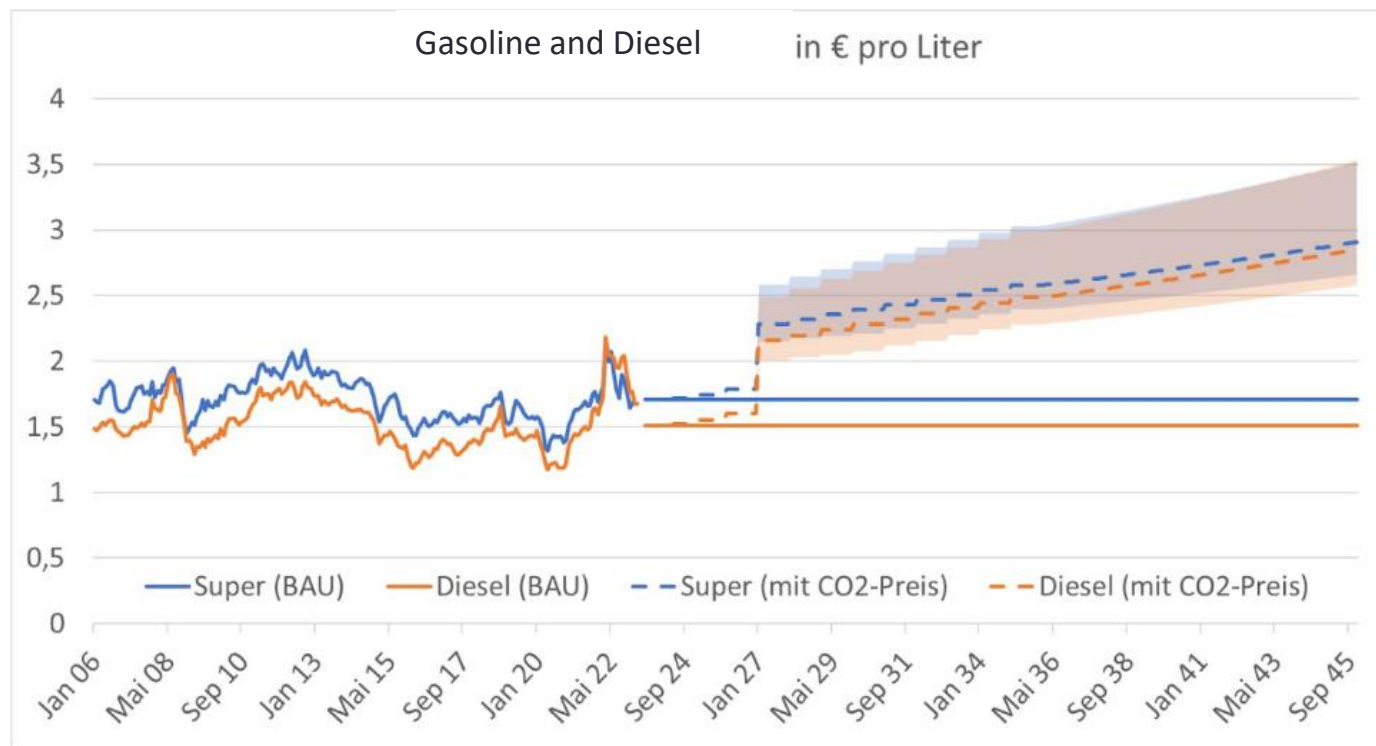
No prognoses, rather target-consistent shadow prices given current policy framework

ETS2

EU ETS

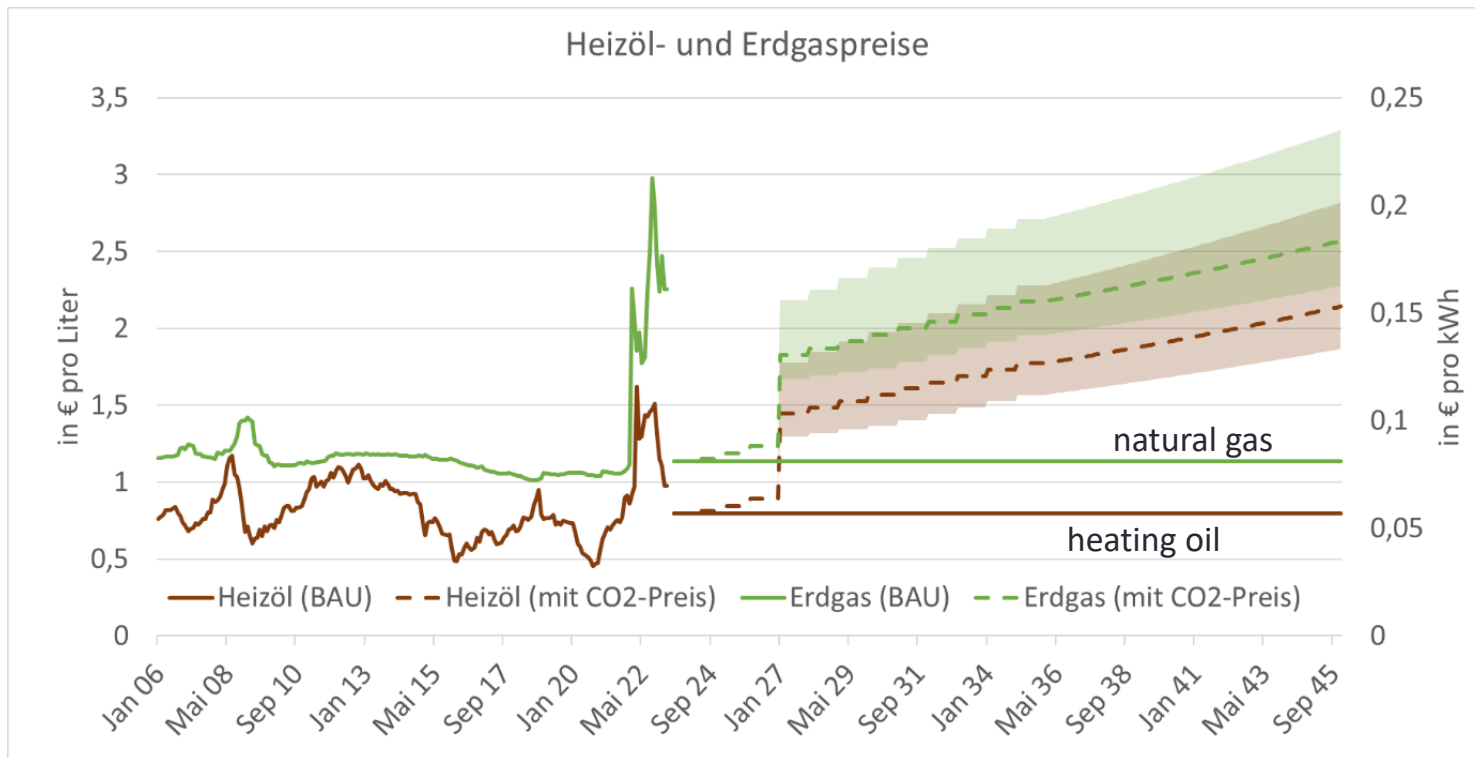
[Kalkuhl et al. 2023](#)

Implications for Fuel Prices



[Kalkuhl et al. 2023](#)

Implications for Heating Prices



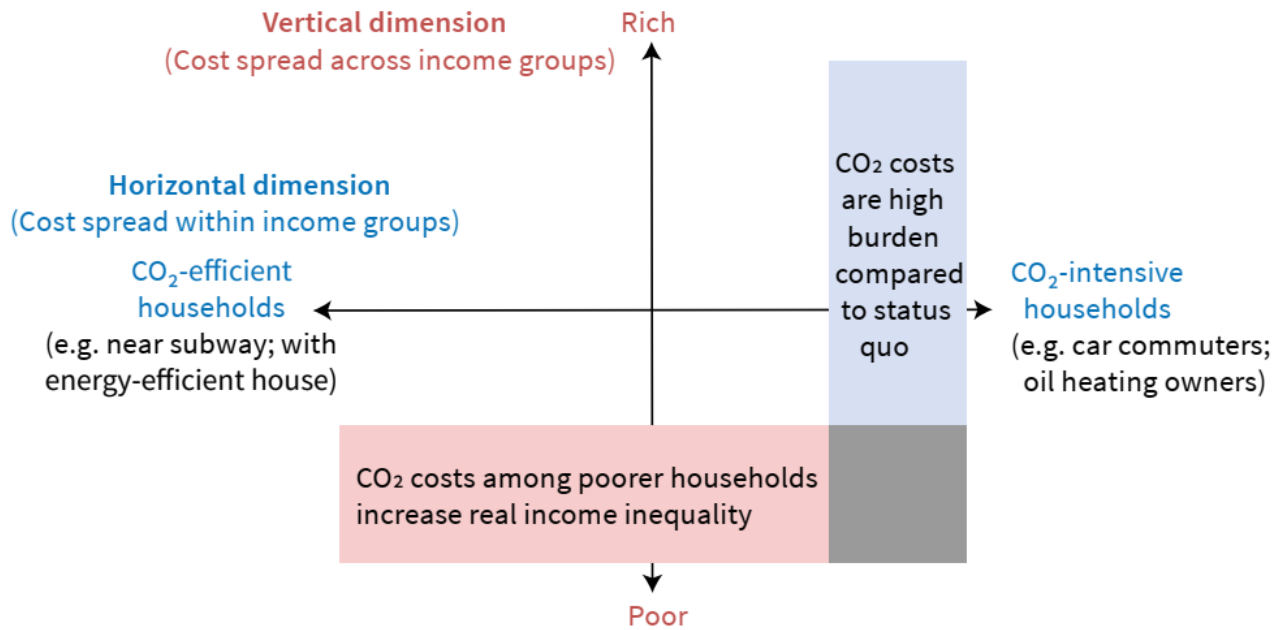
[Kalkuhl et al. 2023](#)

Outline

1. Price Developments
2. **Vertical and horizontal dimension of unequal costs**
3. Example of compensation schemes

Vertical and Horizontal Inequality

The Vertical and Horizontal Inequality Dimensions of the Carbon-Price Burden



Source: Authors' compilation.

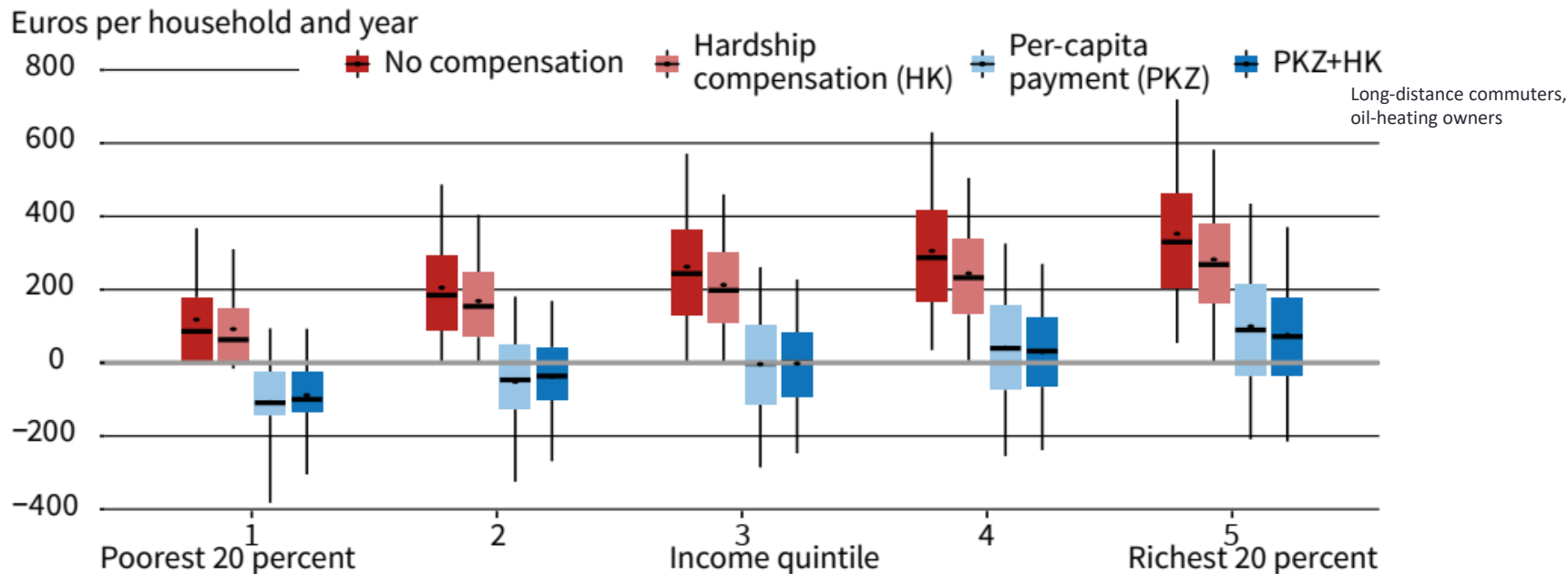
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Source: Edenhofer, Kalkuhl, Roefs (2021)

<https://www.cesifo.org/DocDL/CESifo-Forum-2021-5-edenhofer-kalkuhl-roefs-carbon-pricing-september.pdf>

Relief Potential along the Horizontal (CO₂ Intensity/Social Hardship) and Vertical (Income) Inequality Dimension

Absolute Burden on Private Households, Revenue Cycling Options (50 EUR CO₂-price)

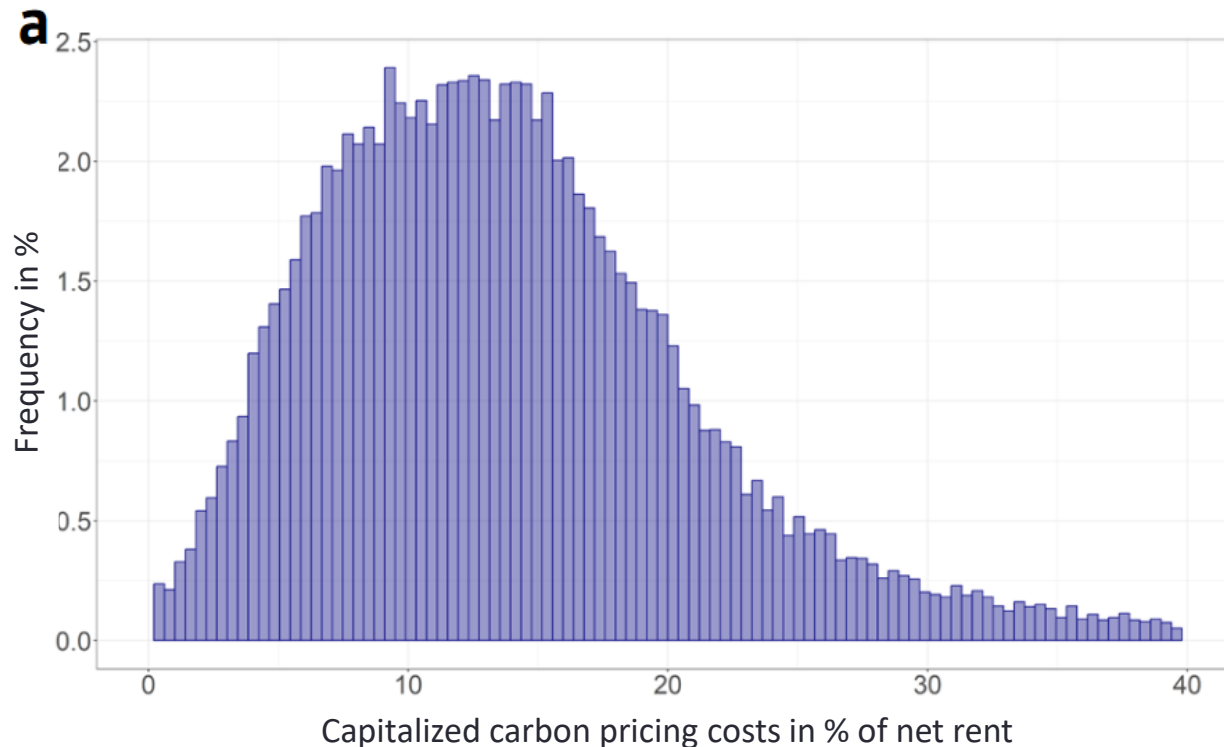


Source: Data from Einkommens- und Verbrauchsstichprobe (EVS), Umweltökonomische Gesamtrechnungen, and Mikrozensus; own calculation. © ifo Institute

Source: Edenhofer, Kalkuhl, Roelfs (2021)

<https://www.cesifo.org/DocDL/CESifo-Forum-2021-5-edenhofer-kalkuhl-roelfs-carbon-pricing-september.pdf>

Asset Devaluation: Climate as a De-facto Housing Wealth Tax






Direct cost of carbon pricing on natural gas & heating oil for German households (EVS 2018 data), NPV until 2045.

(275 EUR/tCO₂ in 2030 and increasing at discount rate)

~25% of housing units with heat pump & district heating excluded

Paradigms of Compensation Transfers

- Uniform per capita  Some redistribution (if carbon footprint of the rich is higher)
- Income-dependent (pro-poor)  More redistribution from rich to poor possible
- Dependent on „exposure“ (i.e. costs of carbon pricing)  No redistribution; minimize losses compared to the status quo

In principle, also possible to have exposure-based transfers conditional on income...

- But detailed information needed
- In general, more efficient to re-distribute via income-tax scheme

Outline

1. Price Developments
2. Vertical and horizontal dimension of unequal costs
3. **Example of compensation schemes**

Past Compensations

Rather progressive compensation

Rather exposure-based compensation

Introduction of national carbon pricing 2021

- Reduction in power prices (levies on electricity)
- Increases in far-distant commuting allowances
 - Germany: every km commuting distance can be deducted by 30 cts from the taxable income (independent of travel mode)
 - Far-distant commuters: From 21st kilometer, 38 cts/km deductible

Gas and energy crises

- Energy allowance of 300 Eur/cap in 2022
- Adjustments in social security payments
- Discussion on gasoline vouchers – but dismissed and replaced by gasoline tax reduction
- (many energy price subsidies, e.g. temporary VAT and energy tax cuts, implicit subsidies)
- ‚Gas price break‘: lump-sum transfer depending on past gas consumption

Way Forward

- Austria: per-capita redistribution with regional differentiation (i.e. people in rural areas receive higher payments due to worse public transport network)
- Germany: Klimageld (uniform per-capita transfer) will not be implemented due to budgetary reasons
- No clear ideas how to avoid hardship cases and high costs from higher carbon prices (SPD tends to fight high carbon prices)
- Germany: New proposal by MCC on homeowners' compensation, based on (past) carbon intensity

Conclusions

- Exposure-based compensation crucial to avoid hard-ship cases along the entire income distribution
 - Difficult to limit also to low-income households due to information problems
 - Broad compensation from carbon price revenues not possible under ETS2 & SCF (but with national funds)
- For building sector: German ‚gas price break‘ as blueprint, MCC proposal on homeowners‘ compensation would improve targeting substantially
- For transport sector: No proposals yet...
 - Car commuters with existing ICE car seem to be most exposed → lump-sum compensation based on commuting distance and car’s vintage ?

Thank you for your attention

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THE DISTRIBUTIONAL EFFECTS OF CLIMATE POLICY AND HOW TO MITIGATE THEM

REPORT FOR THE SWEDISH FISCAL POLICY COUNCIL

[HTTPS://WWW.FPR.SE/DOWNLOAD/18.2D63770418F379D56435BD1/1714722656300/KLIMATOMST%C3%A4LLNINGENS%20F%C3%B6rDELNINGSEFFEKTER.PDF](https://www.fpr.se/download/18.2D63770418F379D56435BD1/1714722656300/KLIMATOMST%C3%A4LLNINGENS%20F%C3%B6rDELNINGSEFFEKTER.PDF)

OCTOBER 2024

Daniel Spiro (Uppsala University)

5 questions

1. **Why are the distributional effects of climate policy important?**
2. **Why do they arise?**
3. What compensatory tools exist?
4. Which groups are the least compensated in Sweden?
5. Which compensatory tools should be used?

1) Why are the distributional effects of climate policy important?

- A. Distribution/inequality is important.
 - B. Important for the climate transition itself
 - ▣ Long run investments
 - ▣ ←Expectations of future climate policy + transition will take decades
 - ▣ ←Requires broad acceptability and legitimacy
 - C. Swedish/European climate transition as a model for others
 - ▣ Protests make it look politically dangerous
-
- ▣ NB: Opposition may be transitory (e.g., smoking bans), policy can then be forced through
 - ▣ But climate transition lasts for decades, so probably not relevant here

2) Why do distributional effects arise?

Carbon pricing and emission intensities

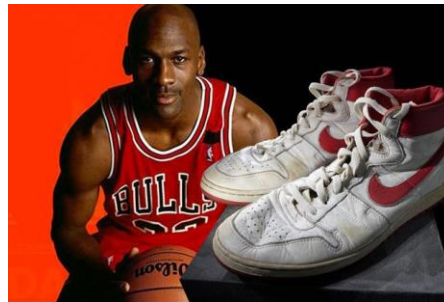
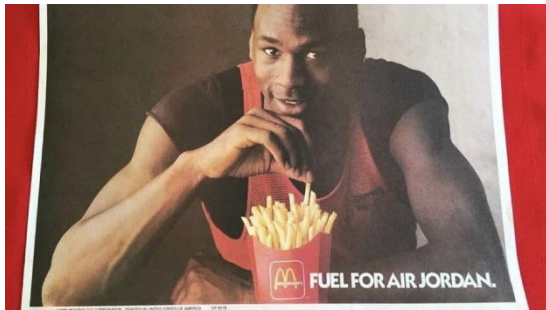
Agriculture



Manufacturing



Services



High environmental intensity*

Medium environmental intensity

Low environmental intensity

Kongsamut, Rebelo, Xie, 2001
Engström et al., 2020

*Intensity=emission/euro

2) Why do distributional effects arise?

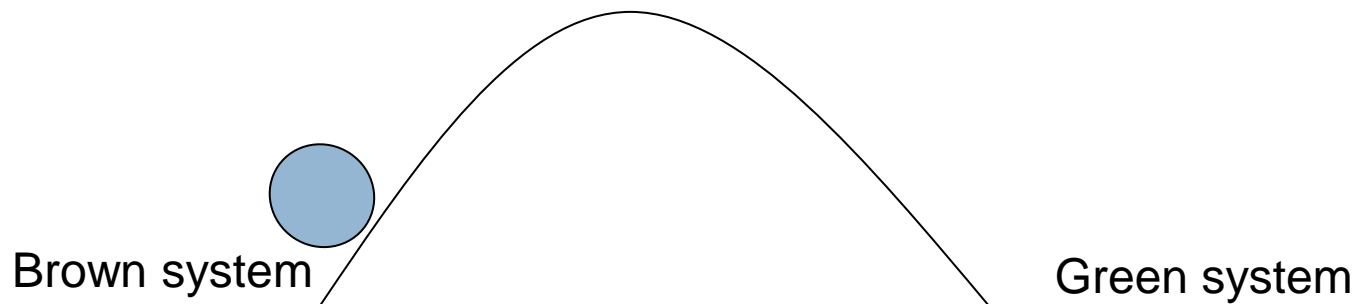
Carbon pricing and emission intensities

- Income distribution: carbon pricing is regressive – while rich emit (thus pay) more, poor emit/pay more relative to their income
- Industries with high energy and resource intensity
 - Owners
 - Workers
 - Geographic locations
- Geographical distribution for households: rural > suburban/small towns > inner city

2) Why do distributional effects arise?

Long run investments, coordination and expectations

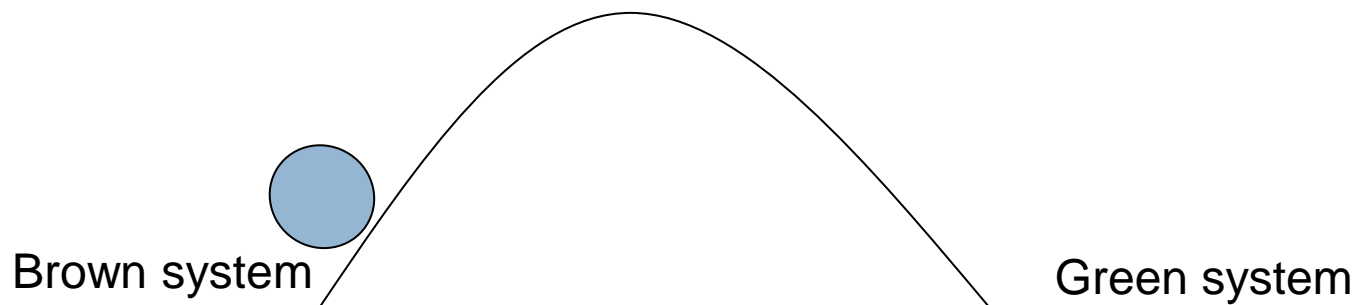
- For single household/firm most emission reductions happen due to non-marginal investments (change car, insulation, machinery, technology)
- Expectations of what others will do matters for my actions
- Two equilibria: gasoline car+gas stations vs EV+charging stations



2) Why do distributional effects arise?

Long run investments, coordination and expectations

- Credit constraints can trap poor/rural households into high emissions
- Wrong expectations or lack of knowledge (financial literacy)
- Exagarbated by political ambiguity and if transition is delayed so forced to happen in short time



2) Why do distributional effects arise?

Which groups bear largest burden?

- Low-income households (esp car owners)
- Rural households
- Energy/CO₂-intensive industries
- Workers therein
- Rural regions

3) What compensatory tools exist?

KONCEPTUAL CATEGORIES

- Market forces
- National policy tools
- EU tools
- Community tools (non-political)

15 types in report

3) What compensatory tools exist?

The Nordic model and the welfare state

- Adopt technology fast ("creative")
- Causes unemployment and income shocks to certain groups ("destruction")
- So provide insurance by progressive taxation, social security, free school/health/etc
- The welfare state deals with the distributional effects from climate policy that go through **income**
- *Much of the adverse/distributional effects from climate policy is in the form of **cost shocks**: more expensive gasoline, energy, having to invest in new cars etc.*
- *The welfare state **does not compensate for cost shocks***

Cost shocks at industry level dealt with by R&D and investment subsidies (in Sweden)

- Hence also workers and regions with high such industry concentration are helped.

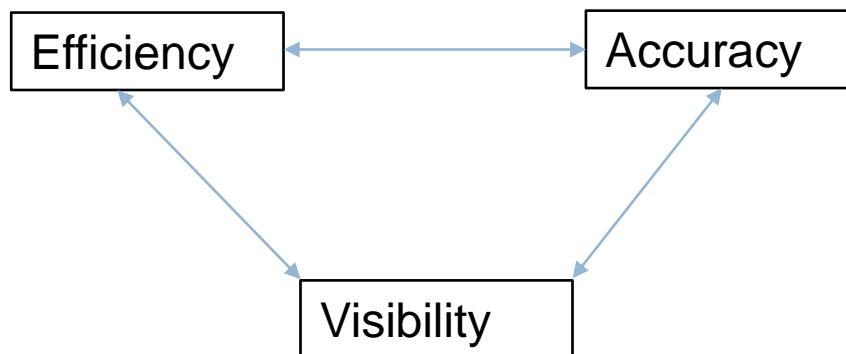
4) Which groups are the least compensated?

- **Low-income households, esp car owners**
- **Rural households**
- Energy/CO₂-intensive industries
- Workers therein
- Rural regions/municipalities

5) How compensate low income and rural households?

Recall why distributional effects important

- Distributional/fairness important
- To make climate transition politically feasible and stable
- Show rest of world how it can be done



5) How compensate?

GRUPP	BEFINTLIGA ÅTGÄRDER							MÖJLIGA ÅTGÄRDER						
	Bef. Välfärds-system (3.3)	Omställnings-stöd industri samt subvention av FoU (3.5)	Omställnings-stöd hushåll (3.6)	Investering i elproduktion (3.10)	Subvention av kollektivtrafik (3.11)	Utbyggd kollektivtrafik (3.11)	CO ₂ -tullar (3.13)	Återbäring av CO ₂ -skatt (3.4)	Återbäring av CO ₂ -skatt genom sänkt inkomstskatt (3.4)	Omställnings-stöd hushåll, baserat på historisk konsumtion (3.7)	Differentierad klimatpolitik (3.8)	Lokal beskattning (3.9)	Information och politisk tydlighet (3.11, 3.12)	Lokala el-kooperativ (3.14)
Bilburna hushåll med låga inkomster			?	X	X	X		0?	0?	0	0		0	
Hushållsglesbygd			X	X		X		0?		0	0	0	0	0
Energiintensiva branscher		X		X			X							
Arbetsstugor inom spec. yrken eller branscher	X	X		X			X							
Kommunglesbygd	X	X		X			X				0	0		0

5) How compensate low income and rural households?

Many strong tools exist for targeting low-income households


- Use carbon tax + lump-sum transfer
- Or lower income tax
- Increase social insurance
- Or lower income taxes

For rural households most tools are weak or imperfect, need several

- Differentiate policy geographically
- Collect carbon taxes locally
- Subsidize households' green investments e.g., EV:s
- Subsidize electricity or public transport even at a loss

General

- Make visible, e.g., in tax returns
- Political messaging should be precise and clear
- Slow but steady



Governing a fair transition to a fossil-fuel free society

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Research questions and methods

Who is most at risk of losing out during the transition?

Footprint, sociodemographic and geographic analysis & assessment of the distributional impacts of low-carbon transition policies

Wealth, access, & health

Food and Transport

What are the potential losses beyond economic ones?

Online survey

QoL: Leisure activities, social interactions, active citizenship and natural and living environment.

What fairness concerns do people at higher risk of losing in the transition raise?

Semi-structured interviews

Transport

What principles & policies can guide a fair transition?

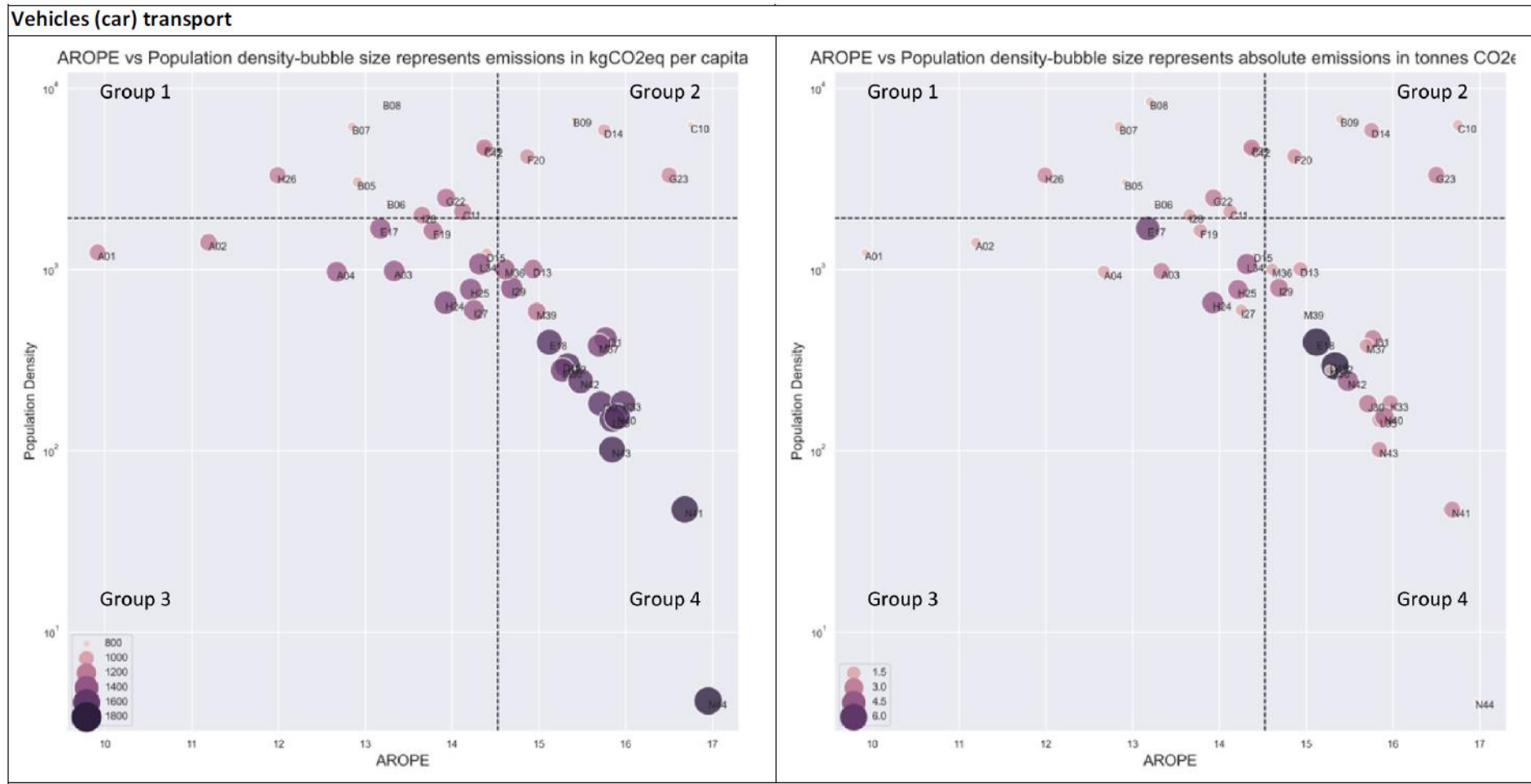
Literature review

How can policy help to make the transport transition fair and boost political acceptance?

Identifying **Transition Assistance Policies (TAPs)** for the transport sector:

- Mapping of vulnerability to negative transition impacts.
- Identifying principles of fairness.
- Surveying empirical research what can help to boost public acceptance of transport climate policies.

Variations in emissions footprints

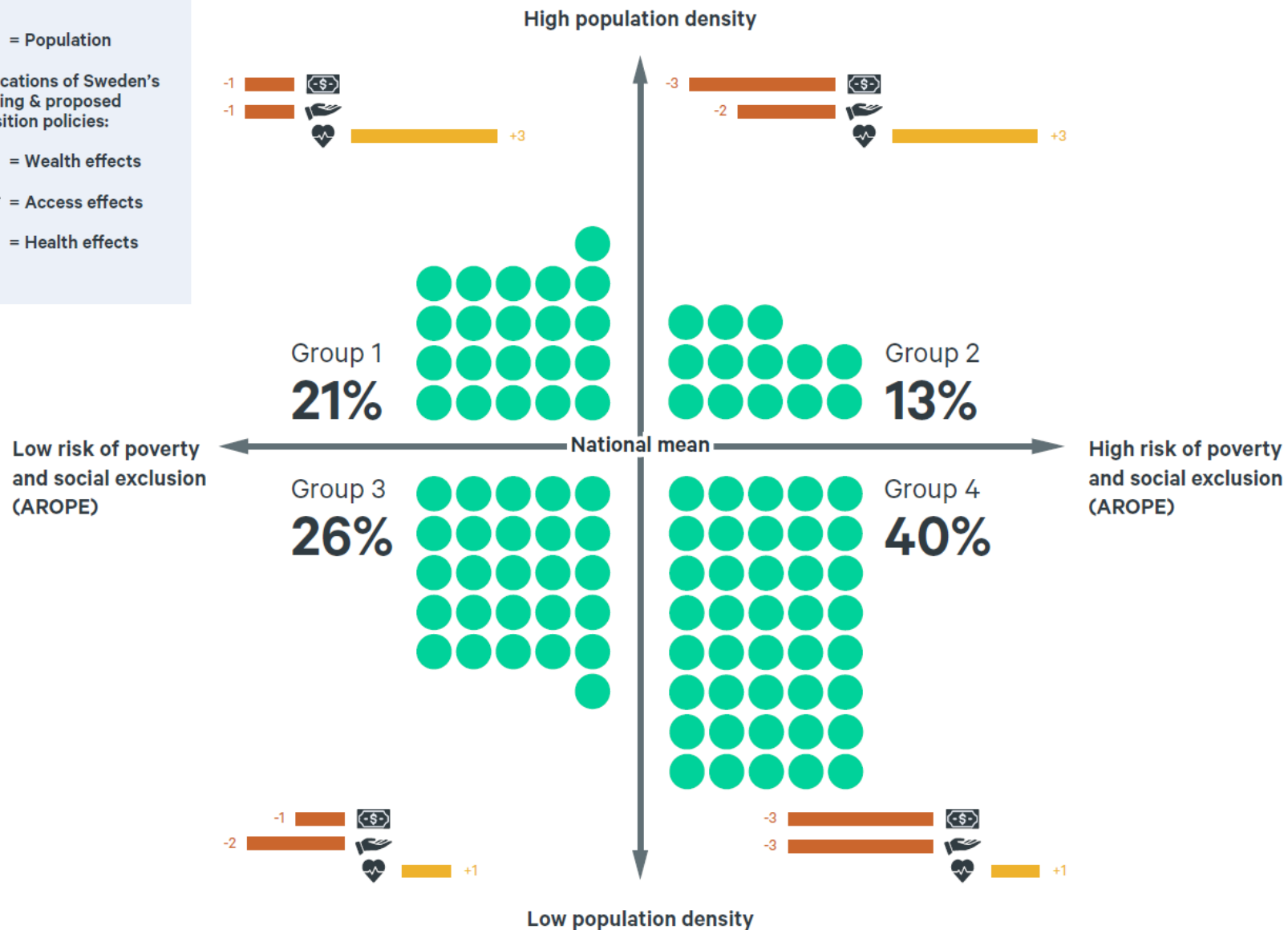


Wealth, access, and health impacts of the transition

 = Population

Implications of Sweden's existing & proposed transition policies:

-  = Wealth effects
-  = Access effects
-  = Health effects



Group 4 - below mean population density and risk of poverty and social exclusion rates above the mean

- 40% of Sweden's population
- 15.6% of households are classified as 'at risk of poverty and social exclusion'
- Highest proportion of elderly
- Lowest average emissions per capita
- Highest average emissions per capita from vehicle use
- Highest average ownership of cars and SUVs
- Greater average distance to retail, healthcare, and public transport

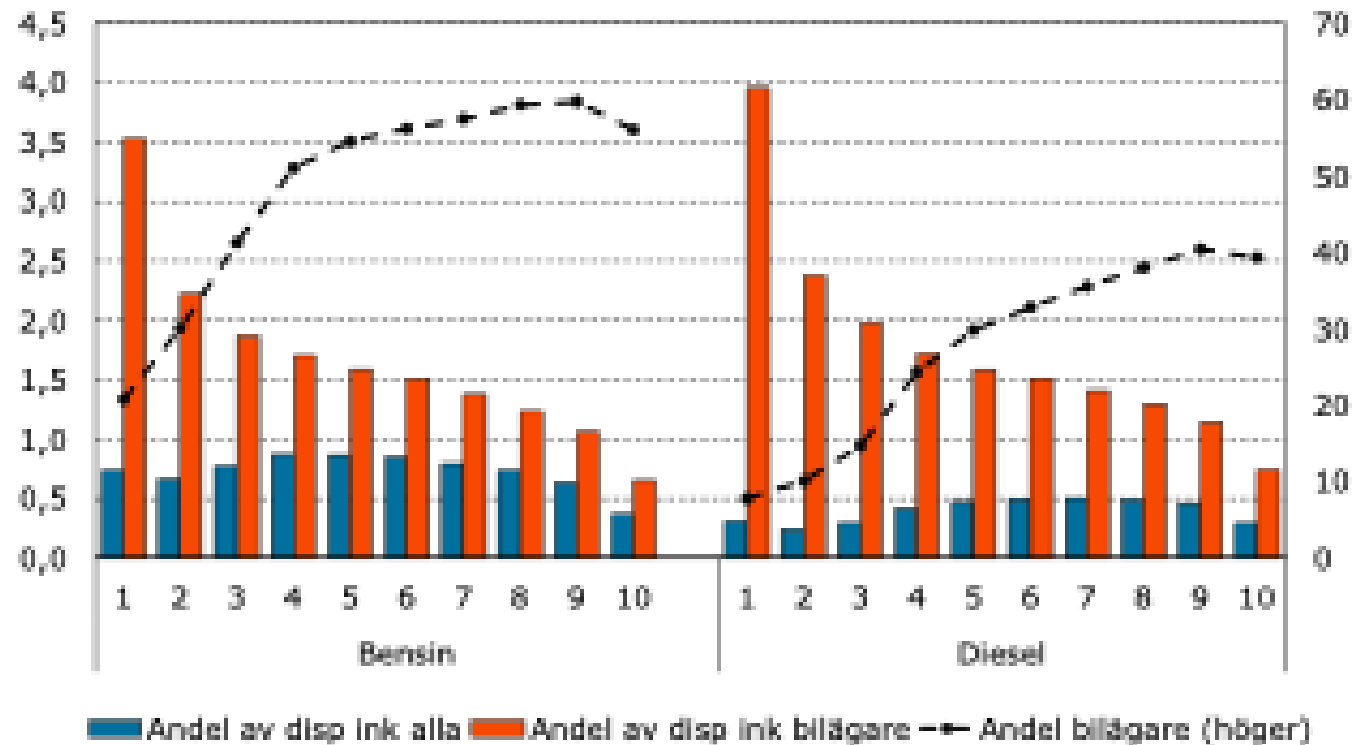
Who is at the greatest risk of negative consequences during the transport transition?

- Households with lower incomes in sparsely populated areas with poorer access to services are particularly vulnerable.
- Elderly and younger people with low incomes are overrepresented among those most exposed to negative effects in Sweden.
- Students and low-wage earners in urban peripheries, as well as elderly or pensioners in rural areas, are at high risk of negative effects.

The National Institute of Economic Research - *Distributional effects of environmental and climate policy*

Diagram 1 Förändring i andel av disponibel inkomst som går till bensin respektive diesel, per inkomstdecil

Procentenheter (vänster) respektive procent (höger)



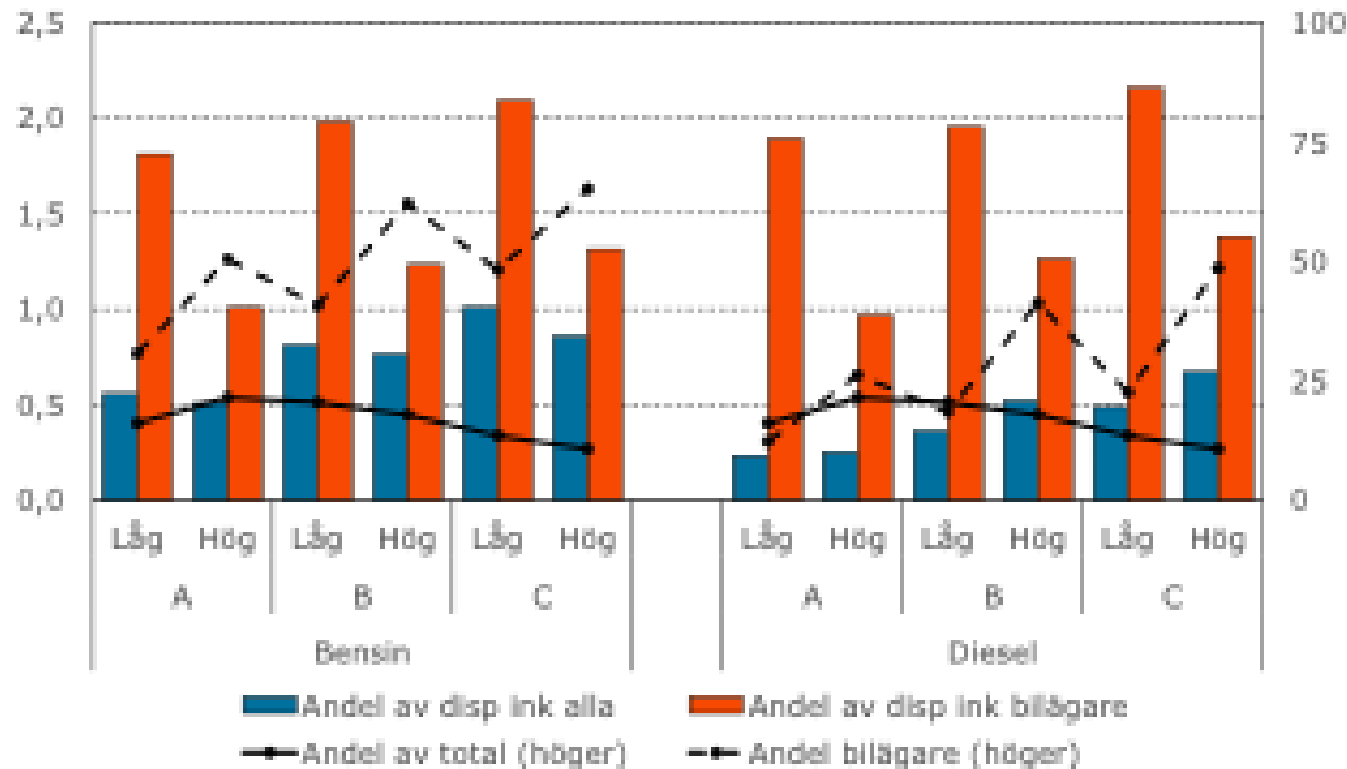
Källa: KI (2023). Miljö, ekonomi och politik 2023:

<https://www.konj.se/download/18.5bab959718c38c02b1e3f6e/1701783675528/MEK%20Årlig%20rapport%20december%202023.pdf>

The National Institute of Economic Research - *Distributional effects of environmental and climate policy*

Diagram 3 Förändring i andel av disponibel inkomst som går till bensin respektive diesel, per kommuntyp och inkomstnivå

Procentenheter (vänster axel) respektive procent (höger axel)



Källa: KI (2023). Miljö, ekonomi och politik 2023:

<https://www.konj.se/download/18.5bab959718c38c02b1e3f6e/1701783675528/MEK%20Årlig%20rapport%20december%202023.pdf>

Households in areas with lower-than-average population density, who have incomes below the median and have access to a car, make up between 9-10% of the total population.

Källa: KI (2023). Miljö, ekonomi och politik 2023:

<https://www.konj.se/download/18.5bab959718c38c02b1e3f6e/1701783675528/MEK%20Årlig%20rapport%20december%202023.pdf>

Principles of fairness for the transport transition

1. Focus on Abilities, Not Usage

Ability to access and use the transport system to meet needs, not how much or what kind of transport is used.

2. Equitable Public Investment

Everyone should have fair access to transport services, regardless of their economic status. This doesn't mean equal spending per person, but sufficient investment to ensure that everybody's basic transport needs are met.

3. No Widening of Inequality

The shift to a green economy shouldn't unfairly burden low-income or vulnerable groups.

4. Avoiding Large Sudden Costs

People need time and support to adjust to new transport systems. Avoid sudden large changes that cause unexpected financial strain.

Empirical research on resistance/acceptance of climate transport policies

Key determinants of policy acceptance:

- Perceived fairness: esp. distributional fairness
- Effectiveness
- Trust in government

Impact of ideological perspectives in Sweden:

- Right-wing individuals prefer financial incentives (pull policies), while left-wing individuals favour regulatory approaches (push policies).
- Right-leaning individuals find fuel taxes more acceptable with compensation; left-leaning individuals less so.

Some implications for policy design:

- Emphasise distributive fairness.
- Policy mixes: Push and pull policy mixes to enhance acceptance across ideological divides.
- Communication and transparency: esp. on effectiveness and fairness.

Fairness and political acceptability call for targeted support measures for vulnerable groups

Transition assistance policies

System design measures

- Enhancing public transport for socio-economically disadvantaged populations
- Equitable expansion of EV charging and active transport solutions

Group tailored measures

- Progressive financial incentives and support measures
- Enhancing access to affordable electric vehicles

Mitigating vulnerability outside of but linked to the transport system

- Inclusive spatial planning for equitable access
- Supporting services accessibility

Evaluation, communication, and flexibility mechanisms

- Assessment and communication of effectiveness and equity outcomes
- Adaptive policies for predictable economic impacts

System Design Measures

- Expanding charging infrastructure in rural areas, where market demand is slower to develop.
- Increased investments in railways to boost capacity and punctuality.
- Pricing strategies that consistently make train travel more cost-competitive with car travel.
- Support & regulations ensuring affordable EV charging apartments.
- Reduction of parking space and expansion of public & active transport in urban planning.
- Investment in public transport in urban peripheries and for people with irregular working hours.
- Significant investments in cycling infrastructure.
 - Ireland and Austria - 10% of infrastructure planning is earmarked for cycling measures.
 - Norway's Urban Growth Agreements –support system aimed at zero growth in car traffic.

Group-Specific Measures

- Temporary subsidies for electric cars targeted at low-income earners and rural areas.
- Subsidies for the purchase of used electric cars and leasing options for low-income groups.
- Reformed travel tax deductions that encourage sustainable choices while also supporting long-distance commuters - a progressive deduction system based on distance combined with tax support that incentivizes low-emission transport options.
- Increased support for demand-responsive transport in sparsely populated areas, especially for the elderly and retirees.
- Targeted support for rural car-dependent residents instead of a general reductions in fuel taxes. This support should gradually decrease over time and remain independent of transport mode, encouraging a shift to more sustainable transportation.

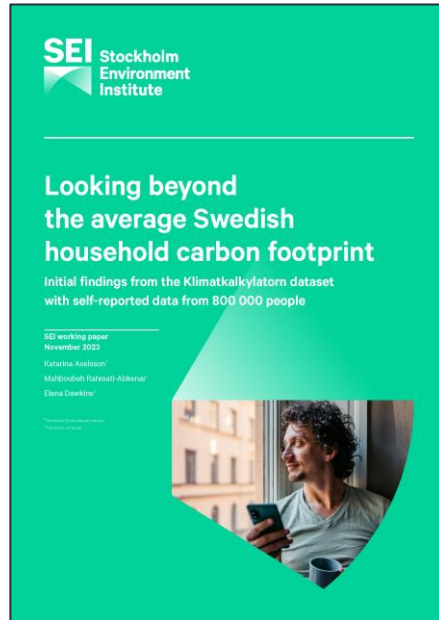
Mitigating Vulnerabilities Related to but Outside the Transport System

- Investments in improved access to healthcare, social services, and education in sparsely populated areas to reduce the need for long-distance travel.
- Increase housing construction in areas with good public transport.
- More support for energy efficiency in households to help manage increased electricity demand associated with EVs.
- Development of digital solutions (e.g., healthcare & work).

Flexibility Mechanisms

- Flexible fuel taxes that allow for gradual and predictable price increases that can be adjusted in the event of global price shocks.
- Public transport pricing where single tickets accumulate towards a monthly pass.

FORMAS - Governing a fair transition to a fossil-free welfare society



www.sei.org/projects/fossil-free-welfare-society/

