

Seminar on

BEHAVIOURAL ECONOMICS FOR ENERGY AND CLIMATE CHANGE POLICIES

Carbon pricing for deep decarbonization?

With behavioural insights towards more effective interventions

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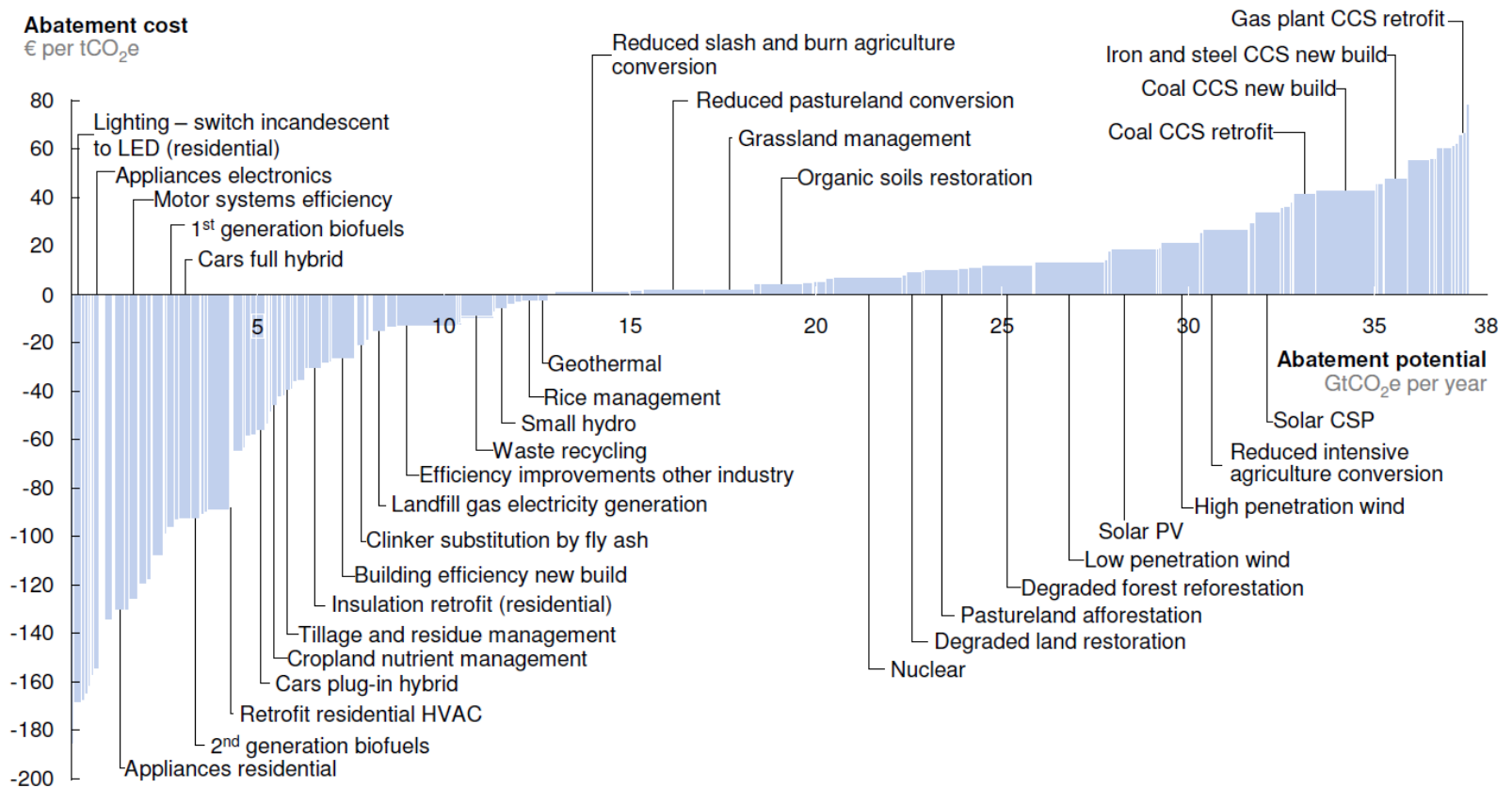
Lund, 9th November 2018



Carbon Pricing – Textbook Version

- Carbon emissions cause costs to society
- Reducing carbon emissions (abatement) also costs
- From a society perspective it is best to abate if it is cheaper (per ton of CO₂) than bearing the social cost of carbon (SCC)
- Where SCC equals the marginal abatement cost, is the optimal carbon price level
- Ideally, one uniform global carbon price is the economically most efficient climate policy

Carbon Pricing – Textbook Version

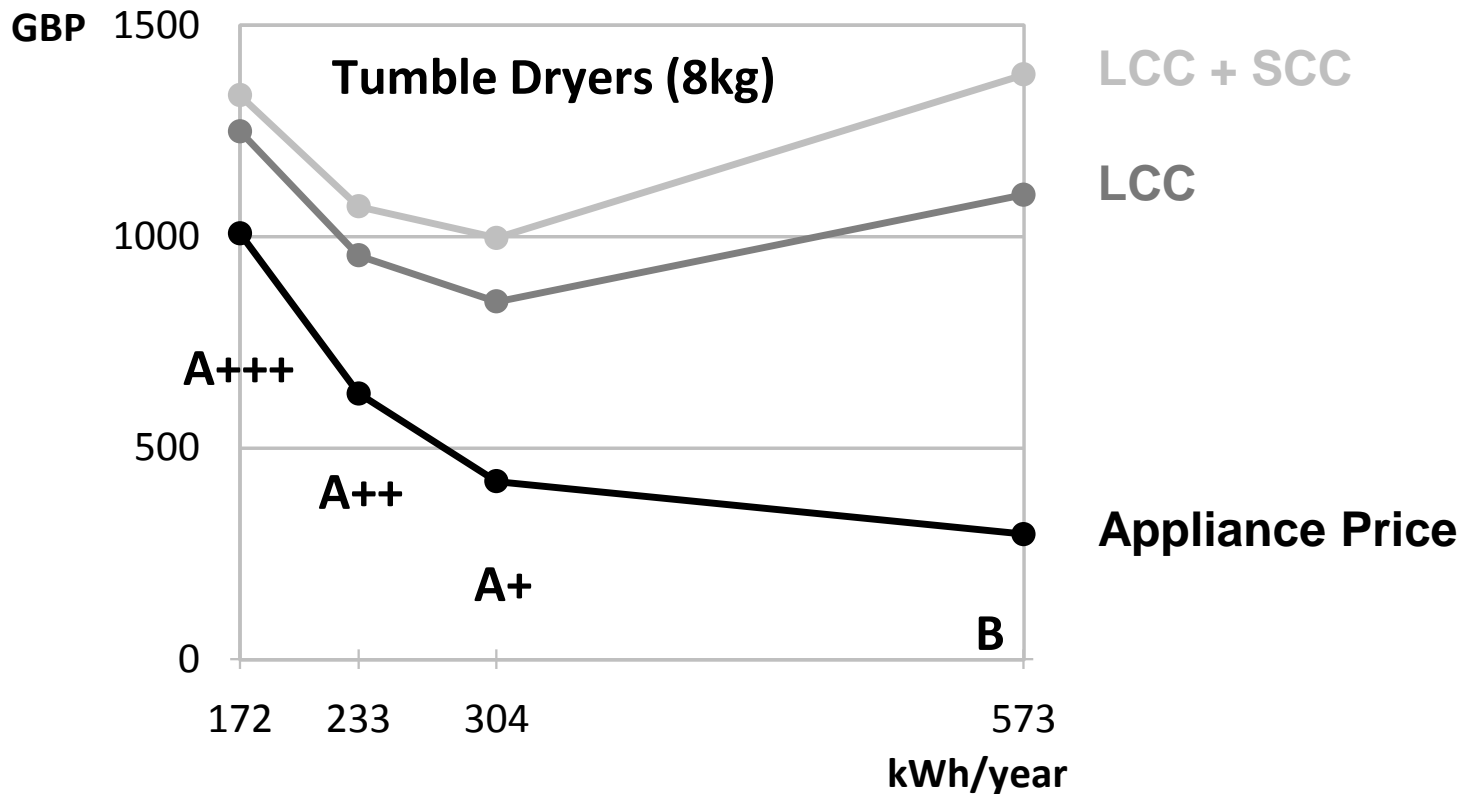


Policies for EE appliances

Minimum Energy Performance Standards (MEPS)
versus Carbon Pricing



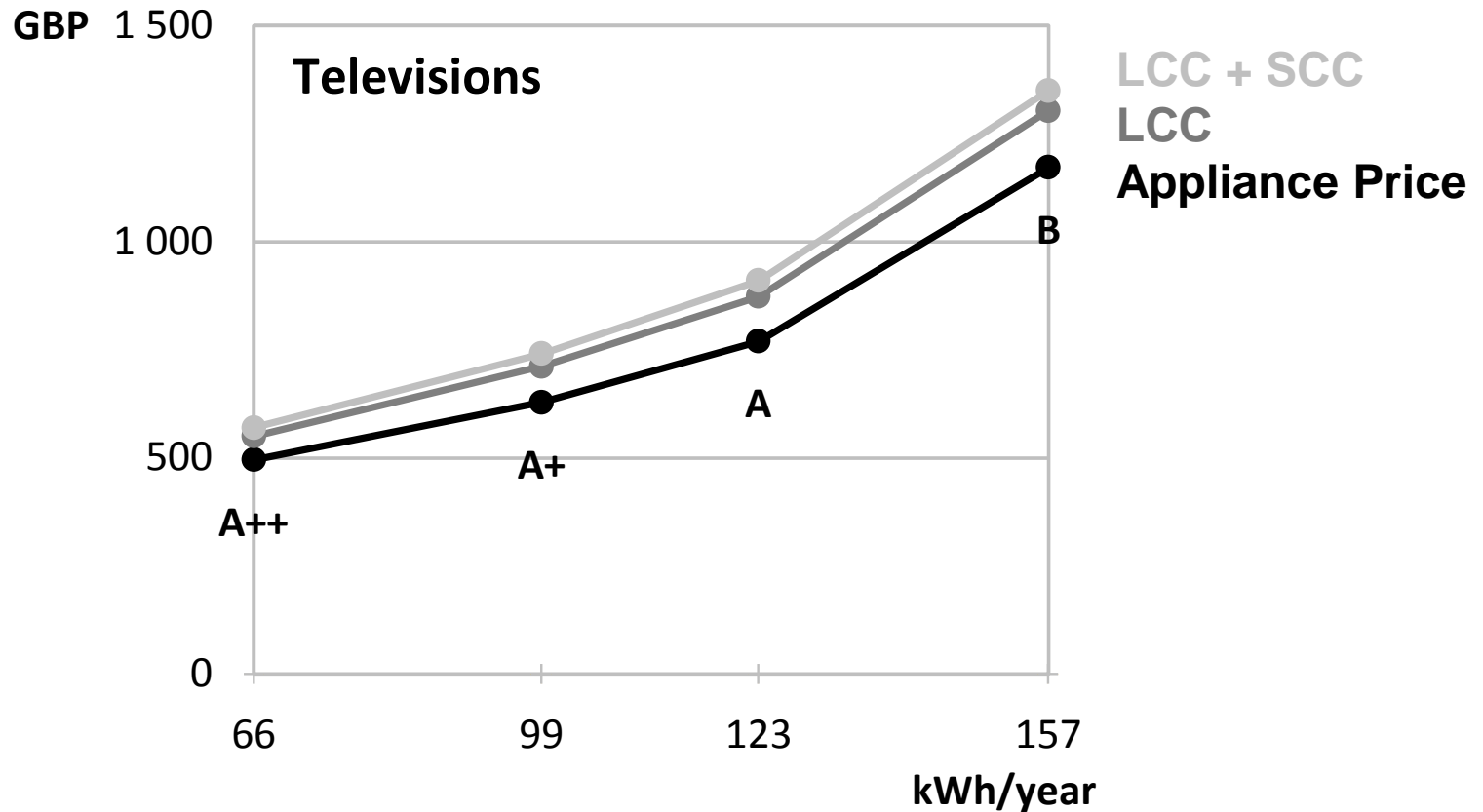
The Life-Cycle Costs (LCC) for Tumble Dryers



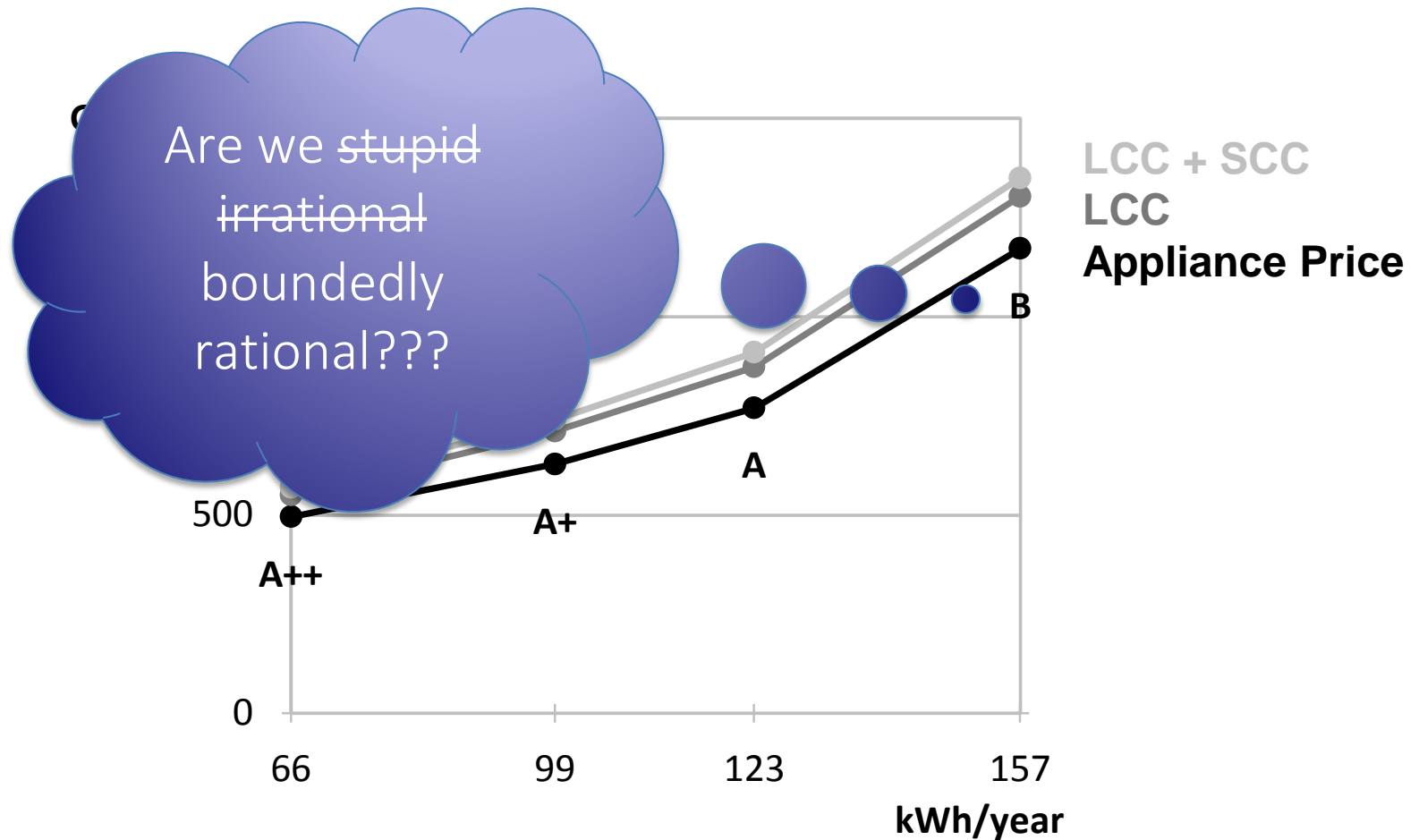
Why do people still buy 'B' rated dryers?

- People disregard life-cycle costs and focus on the price
- Implicit discount rates of consumers are 20% or higher
(Wada et al.,2012).
- This reflects behavioural anomalies, e.g. inattention, myopia, reference-dependent preferences, bounded rationality
(Gerarden et al.2017; Schleich et al., 2016)

The Life-Cycle Costs (LCC) for Televisions

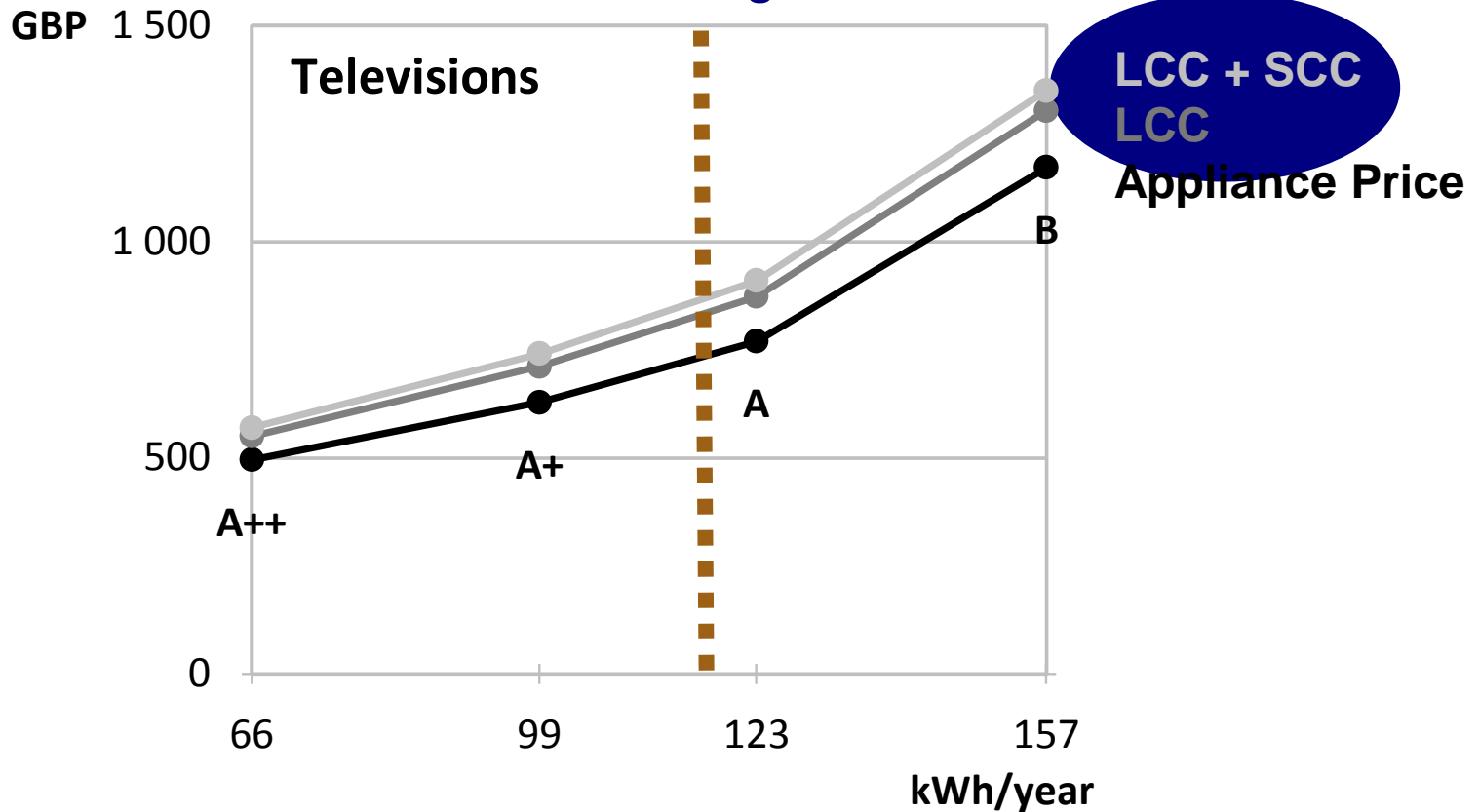


The Life-Cycle Costs (LCC) for Televisions



The Life-Cycle Costs (LCC) for Televisions

(Higher) carbon prices will not change this market



MEPS 'cut-off' the market at a certain energy performance level

Behavioural Insights in Carbon Pricing

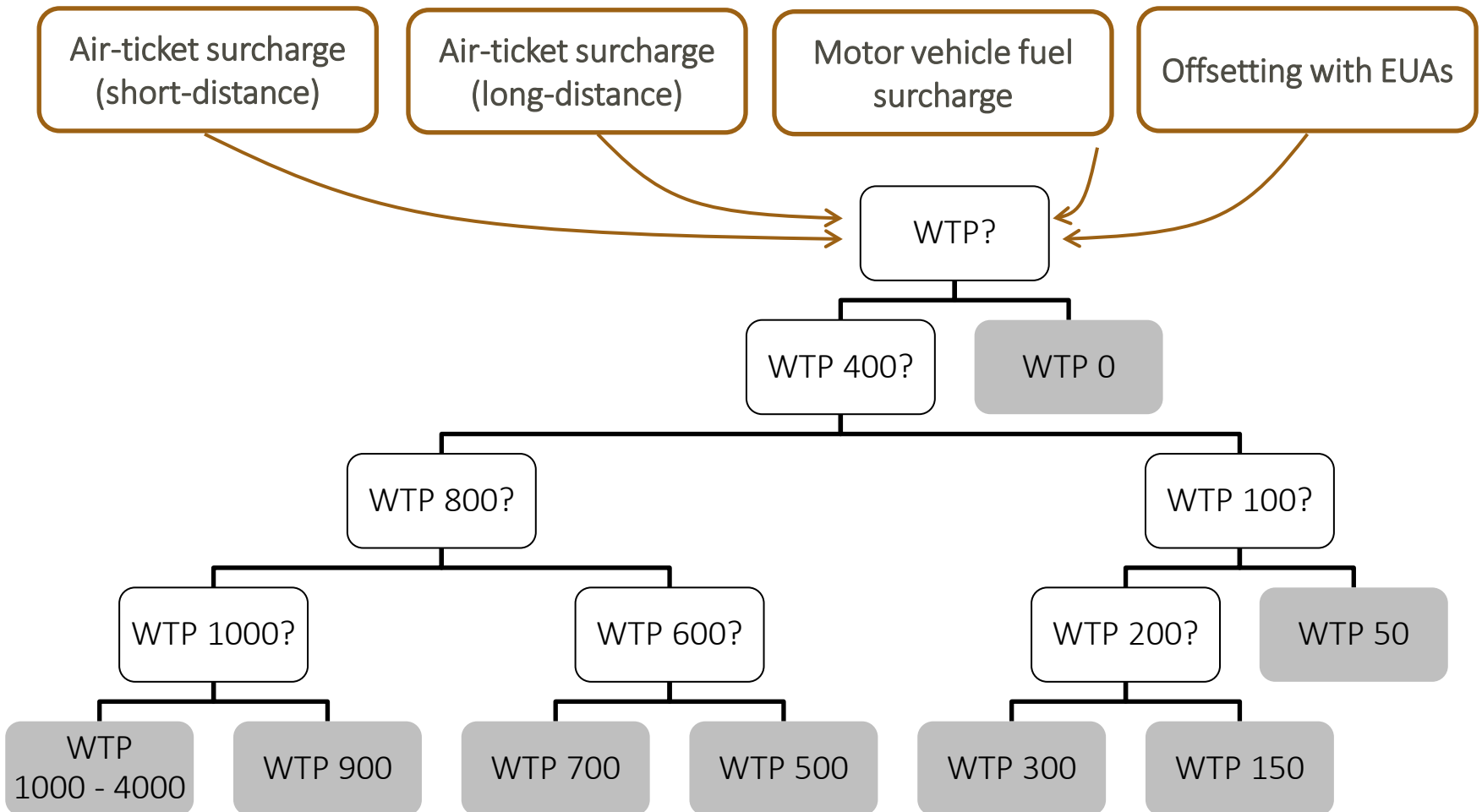
1. Due to behavioural 'failures' carbon prices do not necessarily result in rational consumer behaviour, which in turn can be mandated by regulation.

Willingness to pay for CO₂

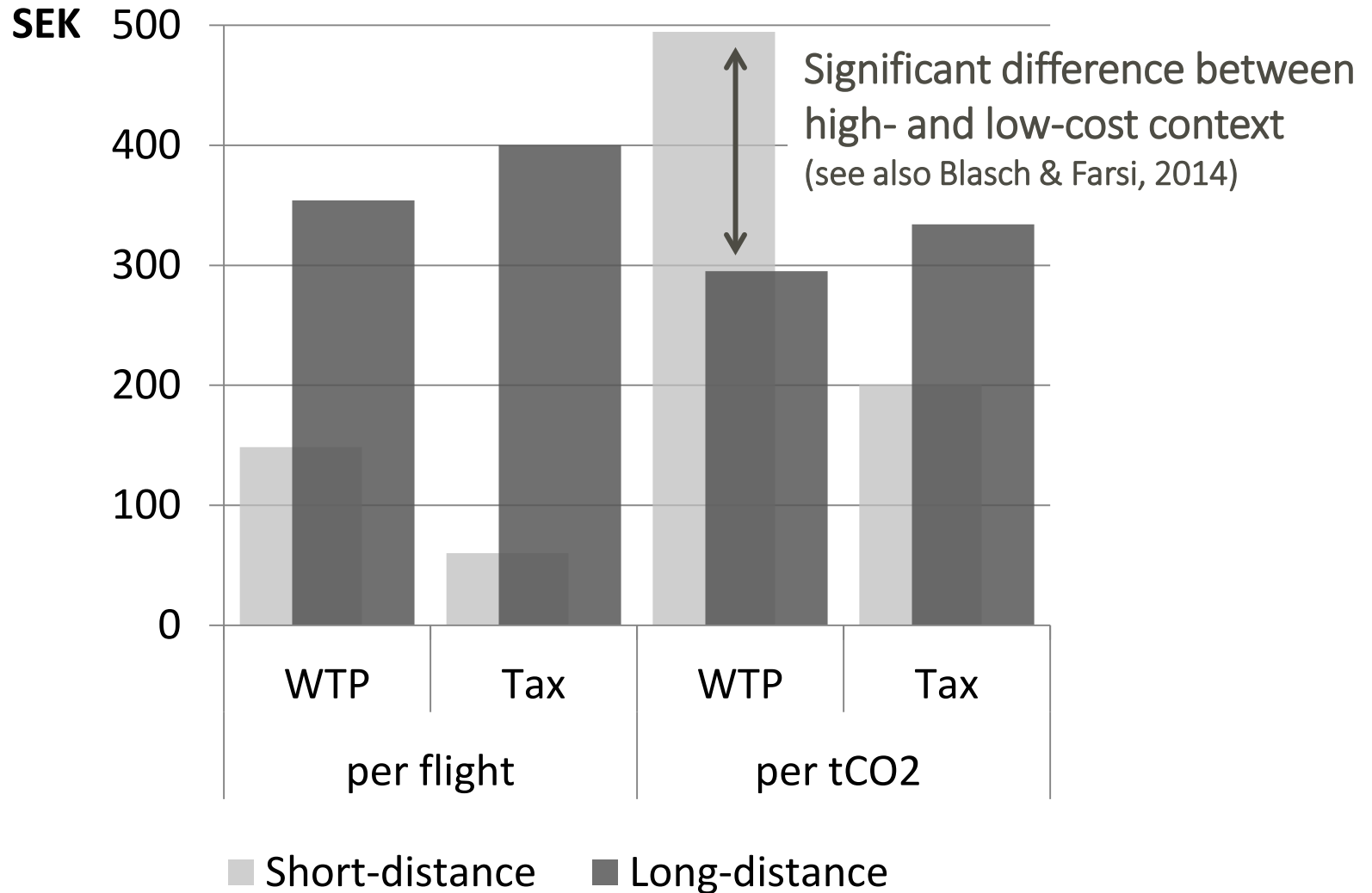
The carbon price people accept depends on decision context and choice framing (between ca. 5 and > 100 EUR/ tCO₂ in previous studies)



Willingness to pay (WTP) for climate mitigation – Study design (n=500)



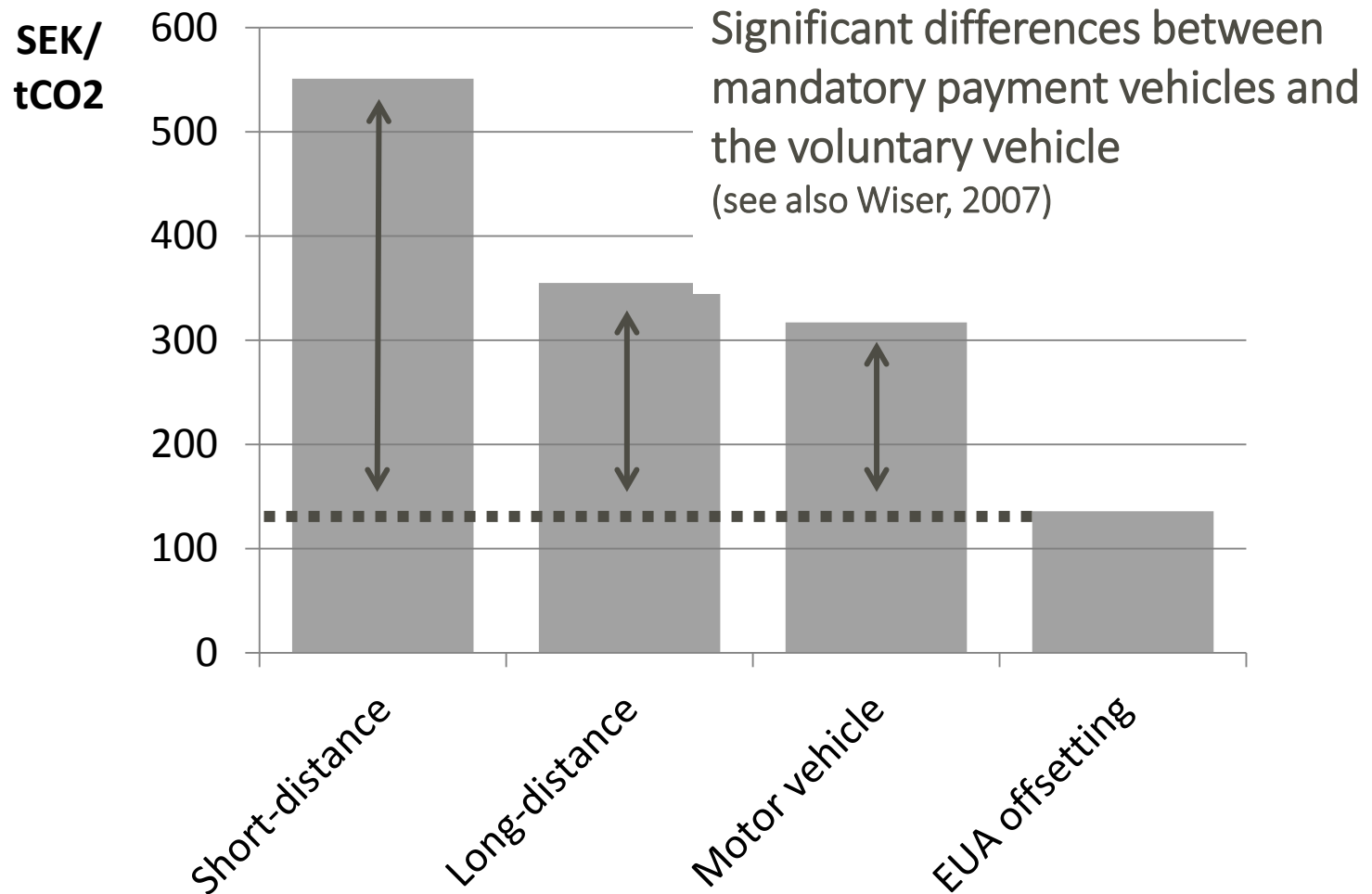
WTP a climate surcharge on air tickets



Behavioural Insights in Carbon Pricing

1. Due to behavioural 'failures' carbon prices do not necessarily result in rational consumer behaviour, which in turn can be mandated by regulation.
2. In a low-cost context higher carbon prices are accepted.

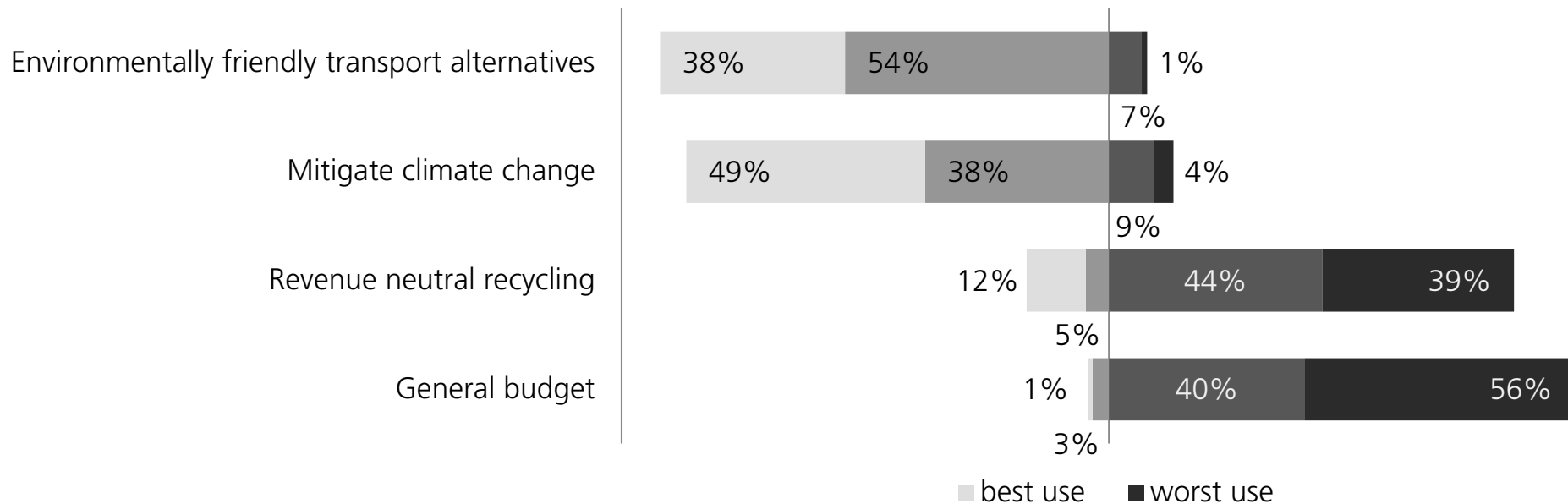
WTP – mandatory vs voluntary



Behavioural Insights in Carbon Pricing

1. Due to behavioural 'failures' carbon prices do not necessarily result in rational consumption behaviour, which in turn can be mandated by regulation.
2. In a low-cost context higher carbon prices are accepted.
3. **Voluntary carbon pricing is not popular.**

What is your preferred revenue use?



Respondents had a clear preference for earmarking revenues for environmental purposes (see also Baranzini & Carattini, 2017)

Factors behind WTP

| <i>Variable</i> | <i>Logit</i> | <i>Interval regression</i> | | |
|-----------------------------|-----------------------|----------------------------|---------------------|---------------------|
| | $WTP_{surchARGE}$ | $WTP_{airshort}$ | $WTP_{airlong}$ | $WTP_{aircombined}$ |
| <i>female</i> | 0.383 * (0.224) | | | |
| <i>income</i> | | 44.8 ** (17.5) | 34.0 *** (12.5) | 35.2 *** (13.4) |
| <i>frequentfly</i> | -0.655 *** (0.231) | -103.5 ** (50.9) | | -66.2 * (39.2) |
| <i>leftpolview</i> | 0.894 *** (0.265) | 180.9 *** (48.0) | 148.6 *** (35.7) | 156.9 *** (37.1) |
| <i>responsible</i> | 0.865 *** (0.298) | 157.1 *** (52.1) | 136.9 *** (38.7) | 142.1 *** (40.4) |
| <i>earmark</i> | 1.145 *** (0.240) | 168.1 *** (54.0) | 135.2 *** (40.1) | 162.1 *** (41.4) |
| <i>constant</i> | -0.115 (0.250) | 196.3 ** (78.9) | 45.6 (58.6) | 115.8 * (60.4) |
| <i>Pseudo R²</i> | 0.117 | | | |
| $\chi^2(9)$ | 65.6 *** | 45.5 *** | 51.4 *** | 58.3 *** |
| <i>Log likelihood</i> | -248.4 | -2289.9 | -1959.9 | -2047.8 |

Behavioural Insights in Carbon Pricing

1. Due to behavioural ‘failures’ carbon prices do not necessarily result in rational consumption behaviour, which in turn can be mandated by regulation.
2. In a low-cost context higher carbon prices are accepted.
3. Voluntary carbon pricing is not popular.
4. Intended revenue use matters for the acceptance of carbon pricing interventions (and earmarking is mostly favoured).

Behavioural Insights & Carbon Pricing

Key Messages

1. Ambitious implicit carbon pricing interventions such as regulation can be an effective alternative to explicit pricing
2. If carbon pricing is implemented, price differentiation across and within sectors should be considered.
3. Environmental earmarking of revenues is particularly relevant for modest carbon pricing interventions to ensure a minimum of effectiveness.

Thank you!

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References

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