Electrification, biofuels and sharing in low-emission transport scenarios

Moderated by: Hampus Berg Mårtensson

Based on paper: Low emission scenarios with shared and electric cars (1)

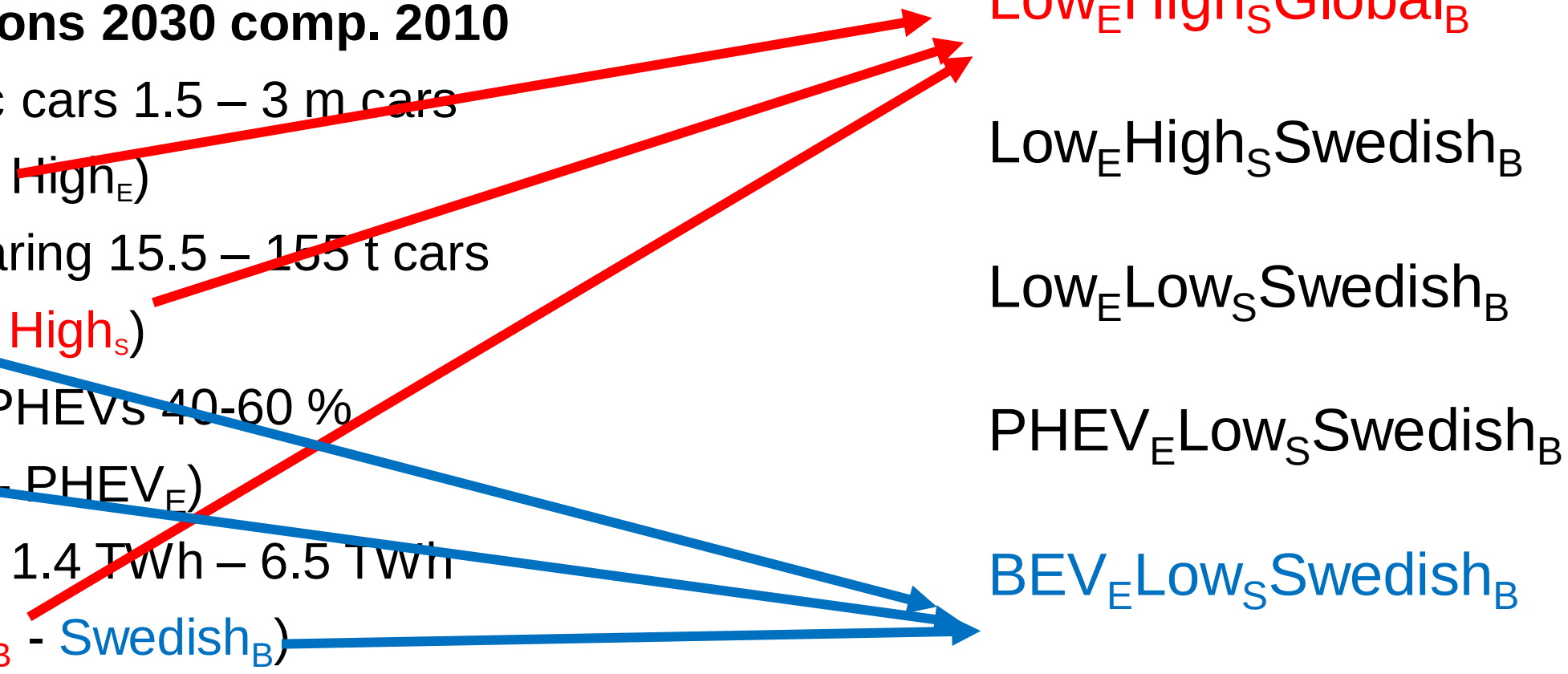
hmarten@kth.se

Berg Mårtensson, H., Höjer, M., & Åkerman, J. (2023). Low emission scenarios with shared and electric cars: Analyzing life cycle emissions, biofuel use, battery utilization, and fleet development. *International Journal of Sustainable Transportation*, *18*(2), 115–133. https://doi.org/10.1080/15568318.2023.2248049

Don't shut down zoom after the converstation

Scenarios with building blocks

- **ALL SCENARIOS = 70 % direct emission reductions 2030 comp. 2010**
- Electric cars 1.5 – 3 m cars
- (Low_E – $High_E$)
- Car-sharing 15.5 – 155 t cars
- (Low_S – $High_S$)
- BEVs/PHEVs 40-60 %
- (BEV_E – $PHEV_E$)
- Biofuel 1.4 TWh – 6.5 TWh
- ($Global_B$ - $Swedish_B$)



$High_E Low_S Global_B$

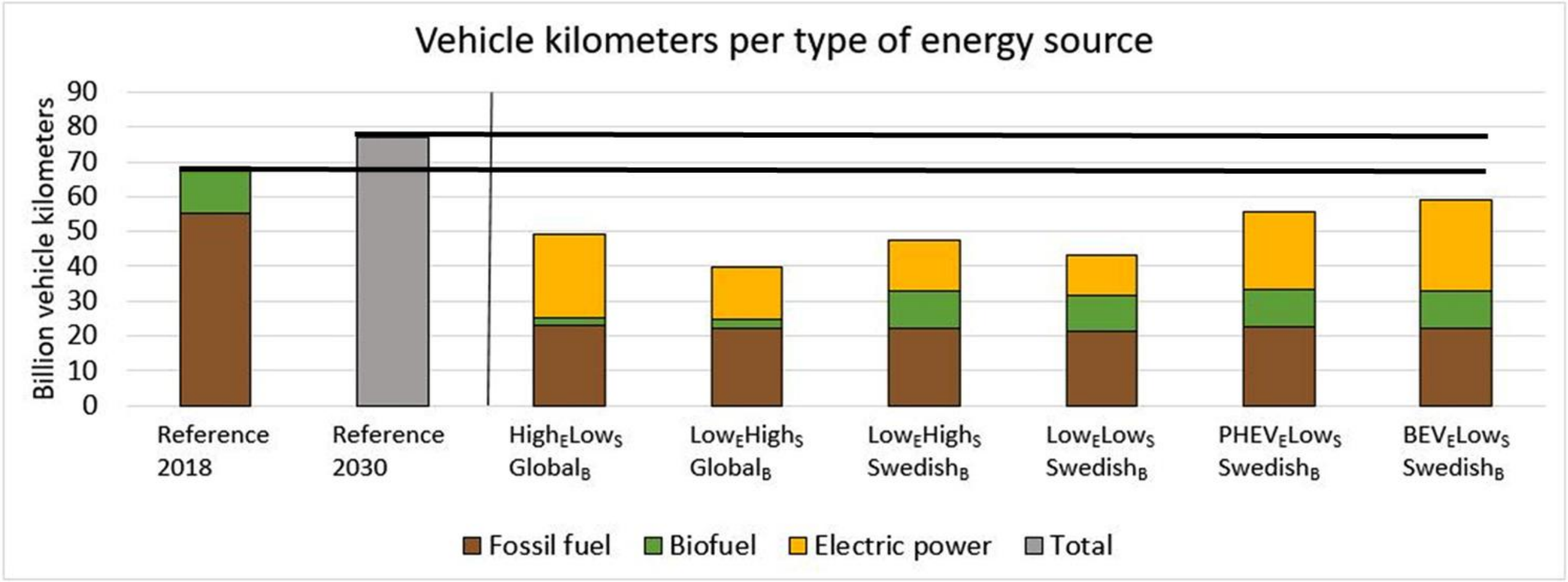
$Low_E High_S Global_B$

$Low_E High_S Swedish_B$

$Low_E Low_S Swedish_B$

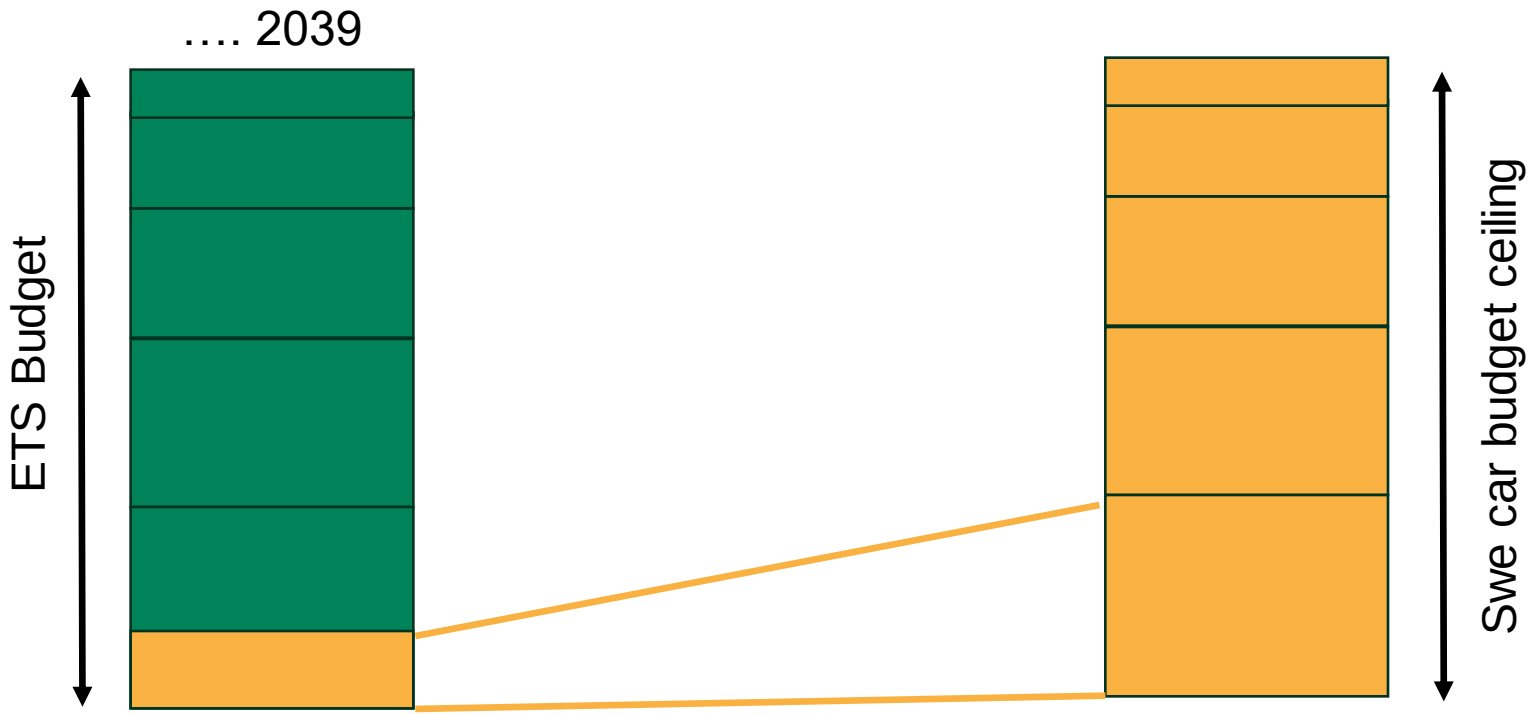
$PHEV_E Low_S Swedish_B$

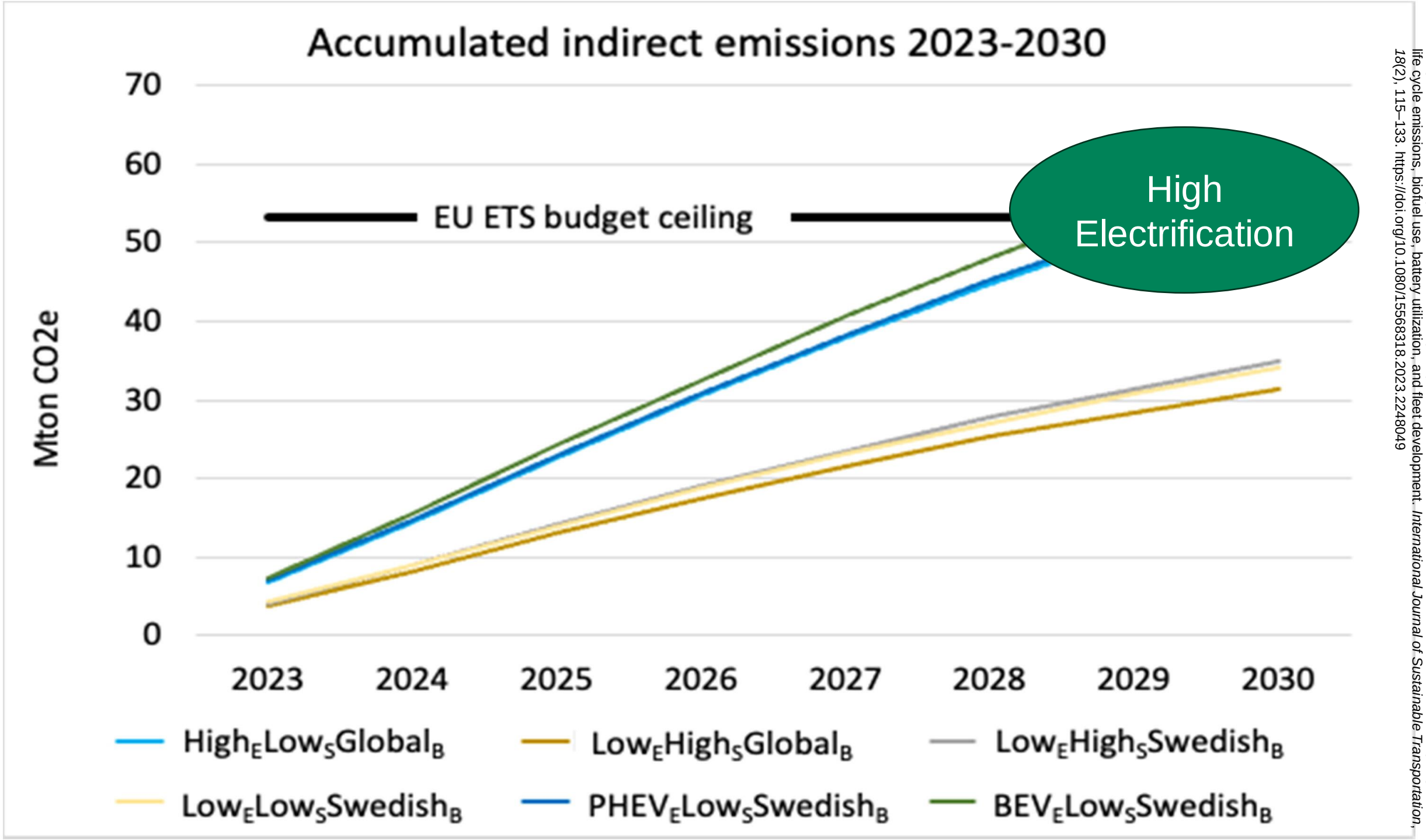
$BEV_E Low_S Swedish_B$



Berg Mårtensson, H., Höjer, M., & Åkerman, J. (2023). Low emission scenarios with shared and electric cars: Analyzing life cycle emissions, biofuel use, battery utilization, and fleet development. *International Journal of Sustainable Transportation*, *18*(2), 115–133. https://doi.org/10.1080/15568318.2023.2248049

Indirect emissions and the ETS





Berg Mårtensson, H., Höjer, M., & Åkerman, J. (2023). Low emission scenarios with shared and electric cars: Analyzing life cycle emissions, biofuel use, battery utilization, and fleet development. *International Journal of Sustainable Transportation*, *18*(2), 115–133. https://doi.org/10.1080/15568318.2023.2248049

Batteries

- Challenges: ramping up (until recently?), geopolitical, impact
- 4 –15 times global average (cf IEA 2020)
- New metric electric vkms/ (kWh battery * year)

Questions for discussions

1. Who should/will be the ones who reduce their car-dependence and how should it bed accomplished?
2. Is it reasonable to cap indirect emissions and resource use in Sweden, if the Swedish footprint is comparatively large?

(hmarten@kth.se)