



UNECE workshop

Real-time upstream CO₂e emissions of electric vehicles during recharge

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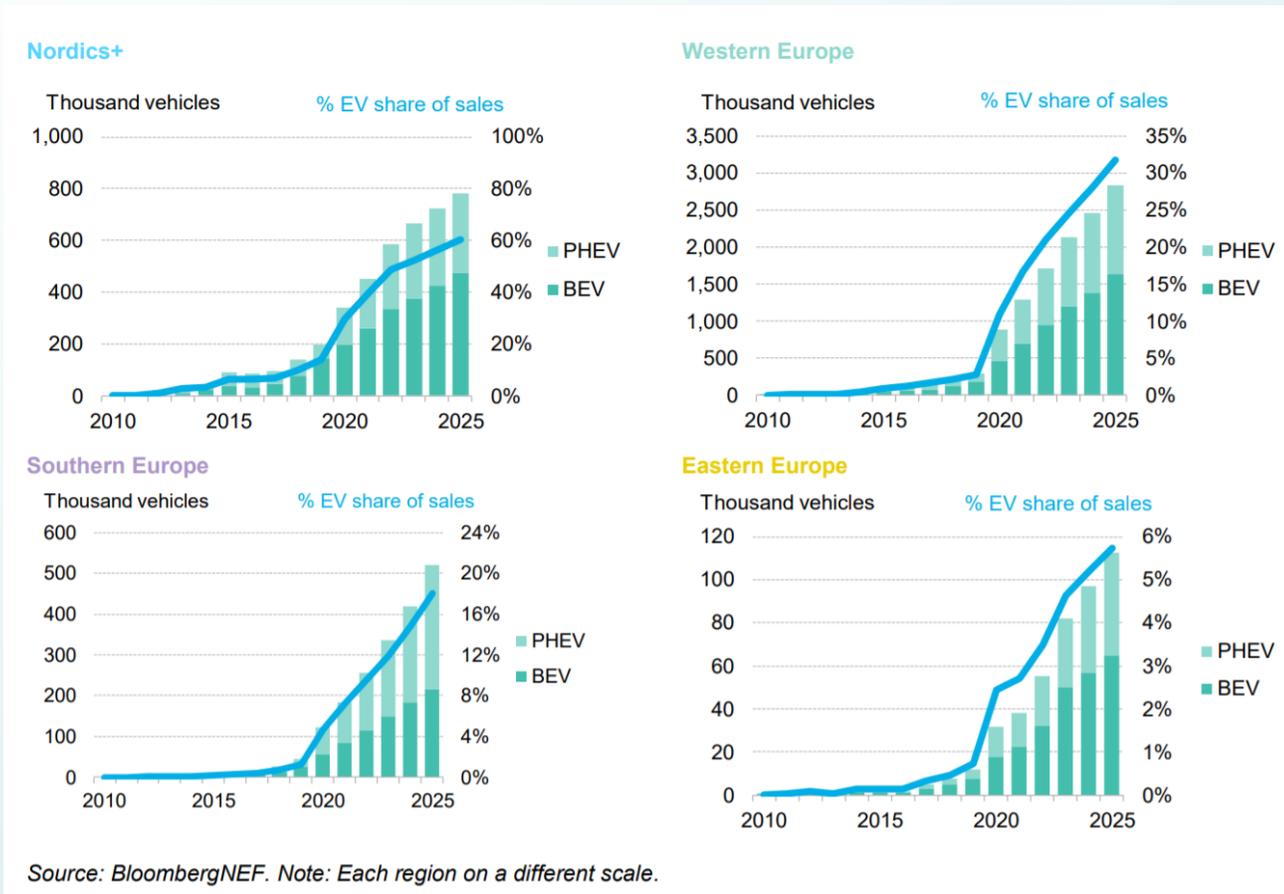
Head of Climate Action

Volvo Cars



Predictions differ, but the conclusion is clear; rechargeable cars are increasing in volume

Short-term EV adoption forecast for Europe



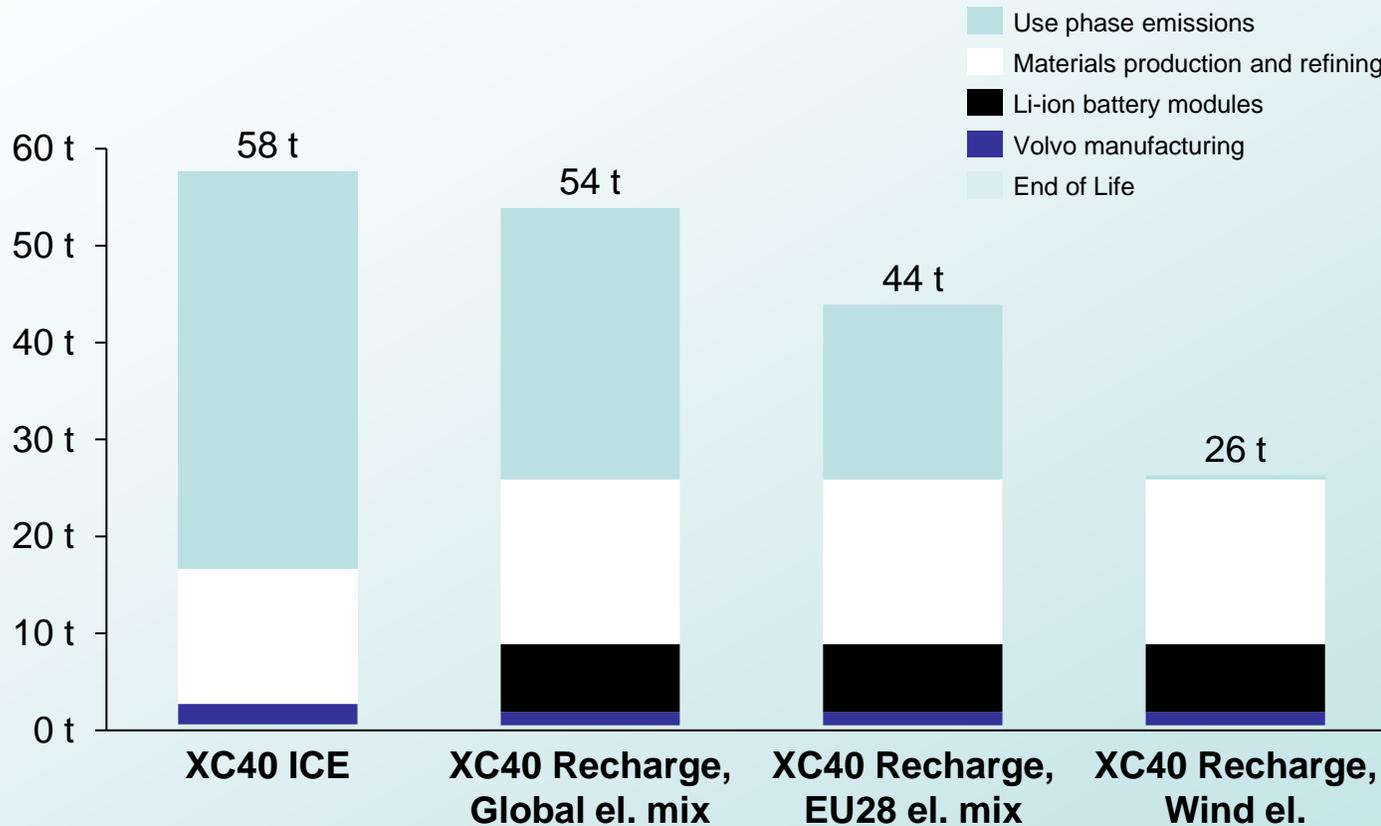
Examples of recent BEV announcements

- BMW 50 % BEV by 2030
- Volkswagen 70 % BEV in Europe by 2030
- Volvo Cars 100 % BEV by 2030



Electrification only is not enough to reduce the CO₂e emissions of an electric car

Results from the Volvo Cars XC40 Recharge LCA
(ton CO₂e per car over its lifetime)



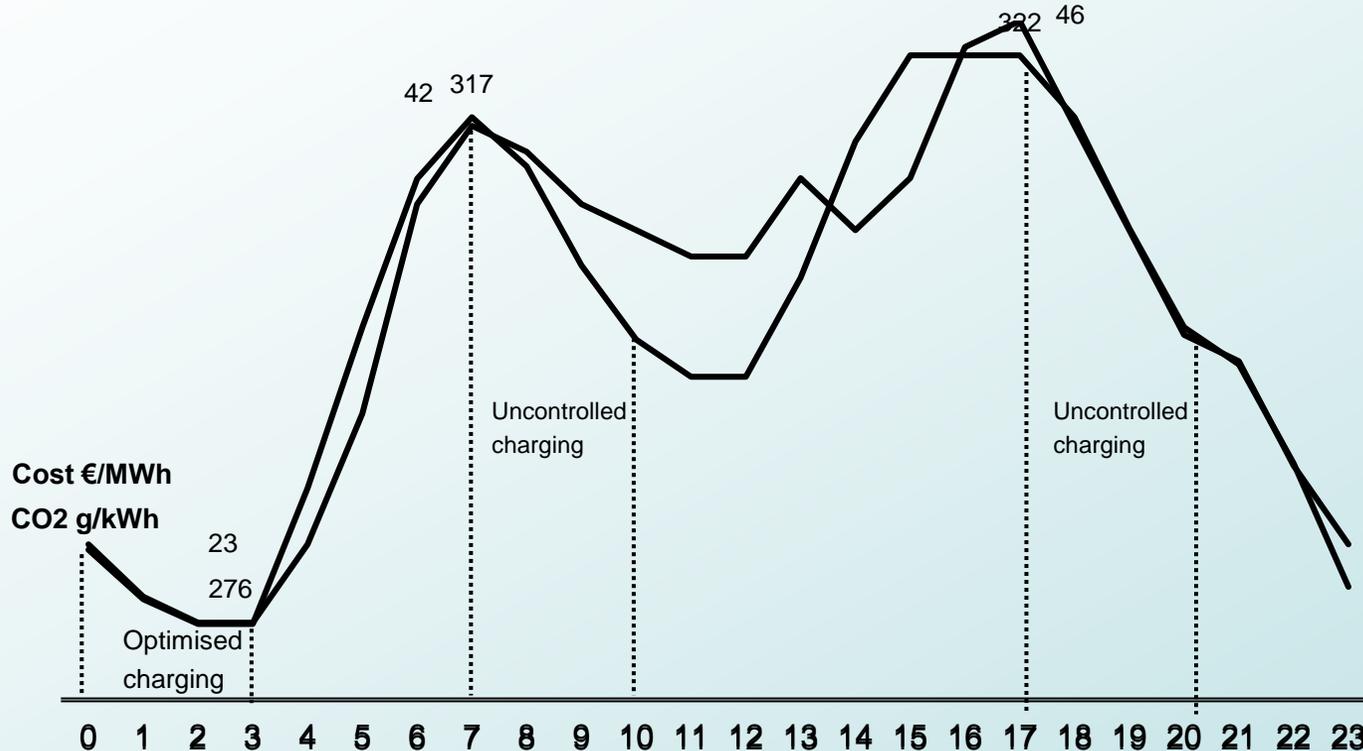
Priorities

1. Fully electric cars
2. Renewable electricity in charging
3. Reduce emissions from the material and the supply chain



In theory, changing the charging behavior can reduce real-time upstream CO₂e emissions of electric vehicles...

CO₂e intensity and cost per kWh of electricity*



Needs

- Real-time data on electricity supply
- Predictive model of (user) electricity demand

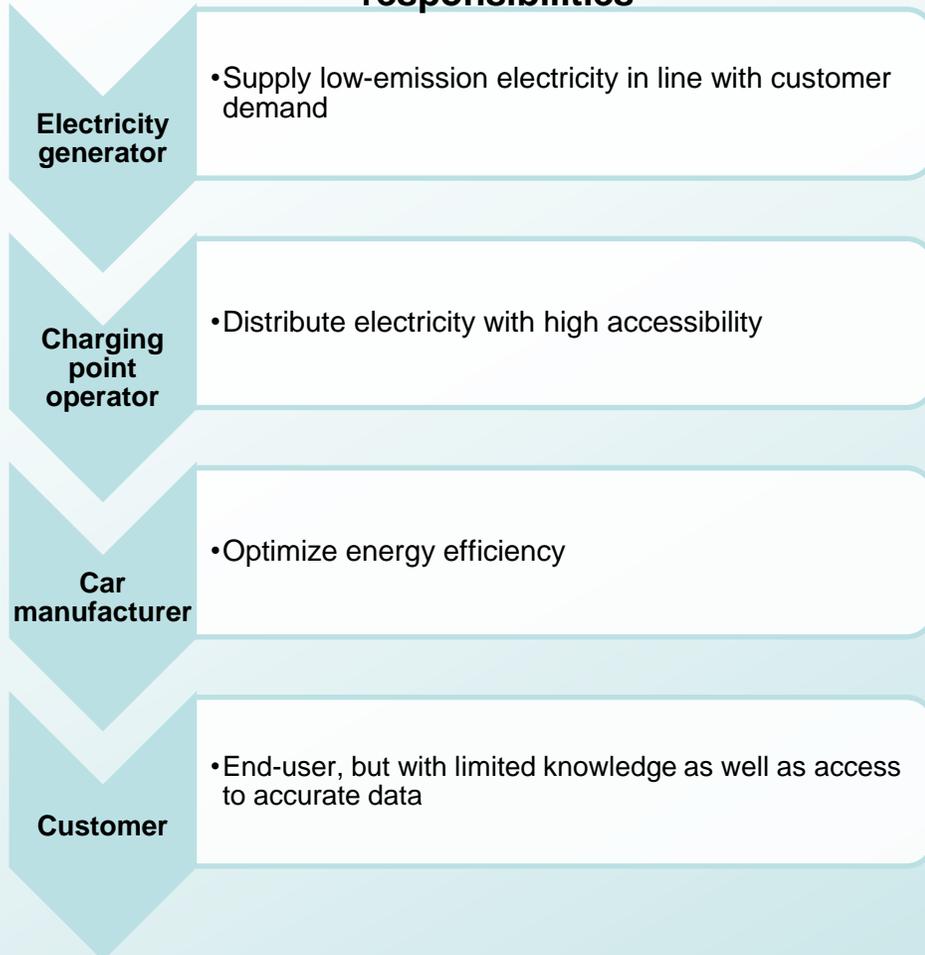
*Example from Germany's average January 2020
Not representative on all markets or all days of the year





...but since different stakeholders have different insights and capabilities, collaboration is key

Complex eco-system with different responsibilities



A voluntary pathway for the informed customer

- Adjusting charging time to the real-time CO₂ emissions of the grid could lead to both CO₂ savings as well as cost savings for the customer
- A theoretical data set of customer behavior could likely achieve parts of the result, but high accuracy in predicting departure time is likely needed to achieve customer acceptance
- Car manufacturers have detailed insights of customer behavior to help predict departure time* and
- Targeted “nudging” to change customer behavior, e.g. through mobile app push notifications, could enable customers to make informed decisions

*based on customer consent