

Disparities in a Digitalising (Post-Covid) world

Networks, Entrepreneurship
and Regional Development

 **ersq**
2022
61st Congress

23–26
August

Special Session Proposal

Electrification of transport in cities and regions: deepening spatial disparities or an opportunity for economic growth?

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Abstract

As noted by the UN climate change conference, COP26, switching to electric vehicles is essential for reducing global emissions to net zero by mid-century and keep 1.5 degrees within reach. Global emissions from transport reached 8.3 gigatonnes (Gt) in 2019 (accounting for 25% of energy sector CO₂ emissions). Consequently, the replacement of fossil fuel use in transport sector by low carbon electricity through electric vehicles is essential for the reduction of these emissions. The International Energy Agency's net zero emissions by 2050 scenario reflects this necessity where transport sector emissions fall to 0.7Gt in 2050. This is achieved through sales of almost all new light duty vehicles in developed countries by battery electric, plug-in hybrid or fuel cell electric (broadly referred as electric vehicles, EVs) by the early 2030s. If EVs are powered by renewable energy, they can deliver further co-benefits including energy security, provision of grid services and improvements in air quality.

Yet, how the electrification of transport and urban and regional economies shape and influence each other are neglected. There are two key aspects to consider. There are many policy incentives and regulations in place to incentivise the adoption of EVs, ranging from production of EVs to purchase subsidies towards their cost. Some recent analysis identifies the development of charging infrastructure as the most favourite incentive. To what degree these subsidies and investments create backward or forward linkages on urban and regional economies aren't understood. We do not know how these investments and subsidies impacting regional disparities and whether they are working to reduce or deepen the inequalities spatially. Secondly, as EVs are stationary for around 95% of their service life, they can be connected to the electricity

network to provide grid services when they are not in use. This means urban amenities like theatres, shopping centres or football stadiums with parking facilities may turn into large demand centres or power supply points via batteries, depending on the charging and discharging decision of EVs. Yet, our insights into the development of EV charging infrastructure and changing demand patterns at city level is very limited.

This session aims to answer the following research questions:

- How do EV subsidies and charging infrastructure investments create multiplier effects on the urban and regional economies?
- How are the subsidies and EV charging infrastructure investments allocated spatially? Are they addressing lagging regions or should we expect to see the regional inequalities to deepen?
- What is the role of policy and regulation in ensuring that electrification of transport doesn't deepen existing urban and regional inequalities?
- How are urban energy demands changing with the adoption of EVs?