CIRC-S POLICY BRIEF

BRIEF

Understanding the impact of policy perceptions on zero-emission truck adoption in Sweden

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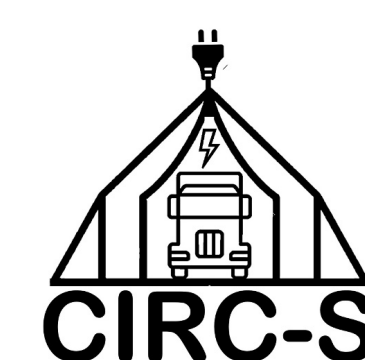
Sweden's road freight transport is a major source of greenhouse gas emissions, making it a key factor in the country's efforts to meet both national and EU climate goals.

The Swedish government has set ambitious targets to cut emissions from heavy-duty vehicles by 70% already in 2030, and reach net-zero emissions by 2045. However, despite these policy ambitions and the increasing availability of zero-emission vehicles (ZEVs), the adoption of these trucks by

road haulage companies has been slow. By the end of 2023, ZEVs constituted only about 0.6% of Sweden's total truck fleet, pointing towards a gap between policy goals and market adoption. *Can policy design and its perceptions by target groups play a role in forming this adoption gap?*

This policy brief examines how the perceptions of the prevailing policy amo-ong transport operation managers, particularly regarding its technology neutrality design influence their decision to delay ZEV adoption.

KEY CHALLENGES IN POLICY PERCEPTIONS

The research reveals that perceived technology neutrality in policy design to a certain extent contributes to the decision of transport operation managers to delay adoption. Technology-neutral policies aim to support various low-carbon technologies without favouring one

over the other to meet the emission reduction goals. However, we argue that technology-neutral policy design might hinder the rapid adoption of ZEVs, because it creates uncertainty and perceived risks for the decision makers.

TECHNOLOGY NEUTRALITY:

The study finds that when managers perceive prevailing policy as highly technology-neutral, they are more likely to experience anticipated regret over adopting ZEVs. Anticipated regret is a psychological response where decision-makers fear making the wrong choice, especially in a context where no clear technological pathway is favoured. In the case of Sweden's road freight sector, this means transport operation managers are concerned about investing in ZEV technology that might soon become outdated or economically unviable. This fear of future regret leads to a postponement in adopting ZEVs, as managers prefer to wait until a dominant technology, or a clearer policy direction emerges.

RATE OF TECHNOLOGICAL CHANGE:

The perception of a rapid rate of technological advancement in ZEV technologies further increases anticipated regret. Managers who believe that technological changes occur swiftly and continuously may opt to delay adoption, anticipating that better and more cost-effective technologies could soon be available. This "wait-and-see" approach is particularly prevalent when policies do not prioritise certain technologies or provide a stable, predictable framework for adoption.

3 KEY POLICY RECCOMENDATIONS

Addressing the gap between policy intentions and real-world adoption of ZEVs requires a better understanding of the psychological and cognitive dimensions influencing adoption decision-making among transport operators. Based on our research findings, we propose the following recommendations to policymakers.

TARGETED SUPPORT:

While technology neutrality aims to provide a level playing field, it may not always align with the urgency needed for a low-carbon transition. Policymakers should consider evolving from a purely neutral stance to providing more targeted support for specific ZEV technologies, based on their maturity, cost-effectiveness, and suitability for different transport needs in a specific context such as Sweden. This approach could help reduce uncertainties and build confidence among decision-makers by providing clearer guidance on future investments.

ENHANCE DECISION-MAKING TOOLS:

To support more informed decision-making, it is crucial to develop comprehensive tools that provide clear, up-to-date information on the costs, benefits, operational requirements, and infrastructure needs (e.g., electric road systems, mega-watt chargers or hydrogen refueling stations) for different ZEV technologies. Transparent information can mitigate fears of making suboptimal choices and help align managerial decisions with broader climate policy objectives.

FACILITATE KNOWLEDGE SHARING:

Providing opportunities for hands-on experience with different ZEV technologies can help reduce anticipated regret and foster a more positive attitude towards adoption. Policymakers should collaborate with industry stakeholders to set up test centres and pilot programs where transport managers can try out various ZEV models, understand their operational capabilities, and assess their economic viability. Practical experience with ZEVs has been shown to significantly lower perceived risks and increase adoption rates, as familiarity can ease concerns about new technologies.

CONCLUSION

The slow adoption of zero-emission trucks in Sweden's road freight sector is not only due to technical and economic barriers but also significant cognitive and psychological challenges faced by decision makers. To address these, policymakers should rethink their current policy making approach by considering the perceptions, emotions, and experiences of transport managers. Moving towards a more targeted policy approach, enhancing transparency, and supporting practical experience can align policy actions more closely with Sweden's climate goals and accelerate the transition to a net zero freight transport sector.

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PROJECT AND PUBLICATION

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