UNCOVERING BLIND SPOTS IN THE ENERGY & TRANSPORT SECTORS: DIVERGENT THINKING ON TRANSPORT DECARBONISATION

Hannah E. Murdock, Centre for Environmental Policy, Imperial College London, +33 695 66 29 28, h.murdock21@imperial.ac.uk

Iain Staffell, Centre for Environmental Policy, Imperial College London, +44 207 594 2711, i.staffell@imperial.ac.uk

Overview

Transport is arguably the most difficult sector to decarbonise. The share of renewable energy has increased by only about one percentage point during the past decade to reach 3.4% (REN21, 2021). During the same time, transport energy demand has increased more than 22%, much faster than in other sectors, and with the vast majority of that demand increase being met by fossil fuels (REN21, 2021).

The transport and energy sectors will not be able to decarbonise independently. However, evidence suggests that actors within the transport and renewable energy sectors do not always see the 'full picture' when considering transport decarbonisation. The two sectors often operate in silos, attending different conferences, reading different materials, their government ministries not interacting, and so on. It is unsurprising that the Avoid-Shift-Improve (ASI) framework, which was created within the transport sector, originally did not consider sources of energy. That changed in 2019 when REN21 (the Renewable Energy Policy Network for the 21st Century) created and began promoting a revised ASI framework that included renewable energy under Improve. Nevertheless, transport actors have often still tended to focus on Avoid, Shift, and only on electrification and efficiency under Improve, while renewable energy actors have still tended to focus only on energy source.

By better understanding the perspectives and starting points of actors within the two sectors, 'blind spots' can be identified, more common ground could potentially be found, communication could be better tailored to reach the different communities, and points of disparity or discord could be addressed. To that end, this study seeks to address the following questions:

- What differences are there between how energy and transport sector experts think about decarbonising transport when it comes to: which energy sources they consider to be clean and sustainable; the biggest challenge for decarbonising transport; key determinants for choosing transport mode; importance of Avoid vs Shift vs Improve; or what will be the primary source of financing for transport decarbonisation?
- Is one sector or the other more optimistic about: achieving net-zero; the feasibility of 100% renewable electricity or renewable energy by 2050; or the global renewable energy share in transport by 2050?
- Are there differences in perspectives between: OECD/non-OECD countries; major oil producing countries vs other countries; or different demographics?

Methods

In collaboration with REN21, a survey was developed with 26 questions, including 15 multiple choice/selection, 2 ranking, and 9 open-ended questions on the SoGo online survey platform. The survey began with a few demographic questions while the vast majority of the questions were aimed at gauging respondents' perspectives about energy and transport. Some questions were forward-looking (to 2050), while some were about energy and/or transport in general.

The survey was distributed among REN21's mostly energy-focused network but also within the networks of partner organisations from both the energy and transport sectors. The survey was active for 6 weeks, and 79 responses were collected while 74 were retained for analysis. Respondents were from 40 different countries representing all major continents. Respondents included 35 primarily energy sector experts, 9 primarily transport sector experts, 24 people having expertise in both sectors, and the remainder focusing on other sectors. 116 variables were analysed for correlation, and significance was tested using a 0.05 and 0.10 significance level. Insights were drawn from the strength and confidence of the observed correlations.

Results

Experts working in the energy sector were more likely to rate positively nearly all renewable energy sources and rate negatively natural (fossil) gas, whereas the opposite was true for experts working in the transport sector. While energy experts were more likely to consider geothermal energy, hydropower, and waste-to-energy as clean and/or sustainable, transport experts were less likely to do so. Transport experts were also less likely to consider biofuels and biomass to be clean/sustainable. Transport experts were more likely, and energy experts were less likely, to consider gas to be clean/sustainable. Transport experts were less likely to consider hydrogen (from any source) to be

clean/sustainable, while experts working in both sectors were more likely to consider it clean/sustainable. All respondents considered solar and wind energy to be clean/sustainable.

In terms of the largest challenges to decarbonising transport, energy experts were more likely to consider main challenges to be vehicle technologies, the aviation or maritime sectors specifically, and cost, and were less likely to consider mode choices and shifting as a main challenge. Conversely, transport experts were more likely to consider mode choices and shifting to be the main challenge, and were less likely to consider vehicle technologies, consumer acceptance of new vehicle types, or infrastructure as main challenges. Experts working in both sectors were more likely to consider mode choices and shifting to be the main challenge, and were less likely to consider aviation/maritime or cost as main factors. Experts working in both sectors were also more likely to indicate a higher number of factors as being the challenges to decarbonising transport.

Regarding the key determinants in choosing a mode of transport, energy experts were more likely to indicate affordability, safety, flexibility of reaching multiple destinations, and satisfaction with quality of transport service. Transport experts were more likely to indicate a higher number of factors being key determinants. They were also more likely to indicate social pressure/status in particular, but also safety, flexibility of reaching multiple destinations, reliability of transport mode, availability of parking space, comfort, road conditions, and occupation. Experts working in both sectors were more likely to indicate affordability and speed and regularity of transport mode as key determinants, and were less likely to indicate most other factors.

Among Avoid, Shift, and Improve, energy experts were more likely to indicate Improve as the most important for transport decarbonisation and more likely to indicate Shift as least important, whereas transport experts were more likely to indicate Avoid or Shift and less likely to indicate Improve as most important. When asked what they think the primary source of financing for transport decarbonisation would be going forward, energy experts were more likely to indicate development banks and less likely to indicate governments, while the opposite was true for transport experts.

Regardless of sectoral expertise, respondents located in major oil-producing countries were more likely to consider energy from any fossil sources (with or without CCS) and nuclear to be clean/sustainable. They were also more likely to indicate that they anticipated the renewable energy share in transport in their country to be less than 10% by 2050, and that major challenges to decarbonising included vehicle technologies and availability of low carbon fuels.

Energy experts were less likely to indicate that net-zero emissions in the transport sector by 2050 was likely, and experts with knowledge of both sectors were more likely to indicate net-zero overall (beyond transport) by 2050 was unlikely or highly unlikely. On the contrary, regardless of sectoral expertise, respondents from OECD countries were more likely to indicate that achieving net-zero in transport or overall was moderately or highly likely.

Also regardless of sectoral expertise, a respondent's age revealed different views. Older respondents were less likely to consider energy from any fossil sources (with or without CCS), nuclear, hydropower, or waste-to-energy to be clean/sustainable. They were also more likely to indicate main challenges to decarbonisation of transport to be policy or political factors, and were more likely to indicate a higher number of factors as main challenges.

Conclusions

This work has revealed many dimensions to the understandings and perspectives on decarbonising transport and where there is particular divergence in thinking, not only between transport and energy actors, but also depending on social demographics. The results help to demonstrate the blind spots that exist between the different communities. For example, if the transport community is more likely to view renewable energy technologies negatively, this is an issue for the renewable energy community. Similarly, if the energy community is less aware of the importance of Avoid and Shift measures, this is an issue for the transport community.

If transport decarbonisation is a main goal for both sectors, and if we accept that neither sector will be able to decarbonise independently, agreement on some key points would be helpful, if not necessary in some cases – at the least what fuels are clean and sustainable, but also what the primary challenges are, what measures should be prioritised, and even that decarbonisation by 2050 is a possibility. Acknowledging that such blind spots exist can aid in achieving mutual goals. Both energy and transport practitioners can use this knowledge to help inform their work – from awareness raising to coalition building and policymaking – ultimately increasing the chances of making decarbonised transport a reality. Additional research would be helpful to gain insight into the reasons behind the divergent views, which could further aid in developing more understanding between the sectors.

References

REN21, 2021, *Renewables 2021 Global Status Report*, (Paris: 2021), www.ren21.net/gsr.