AR6, WGIII, Chapter 10: Mitigation in the Transport Sector

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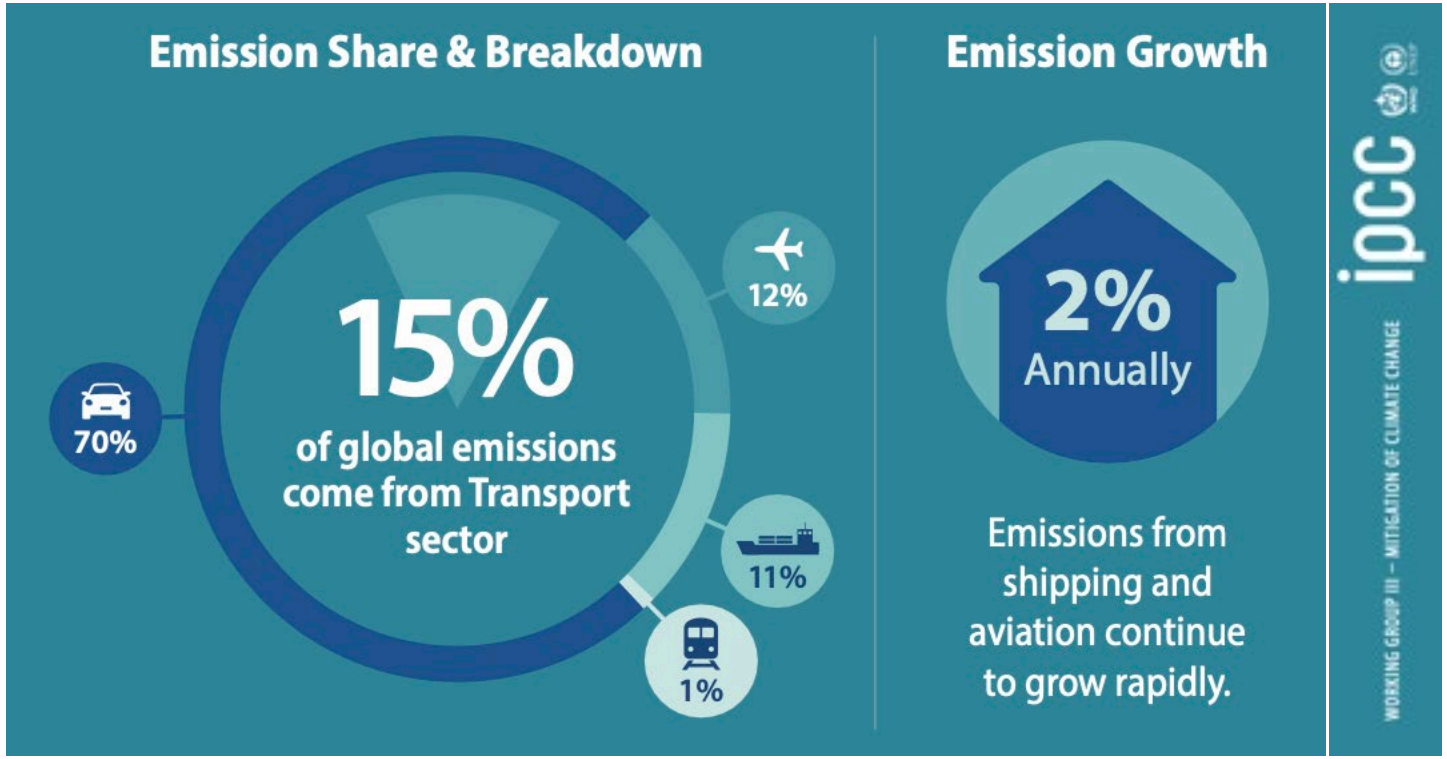
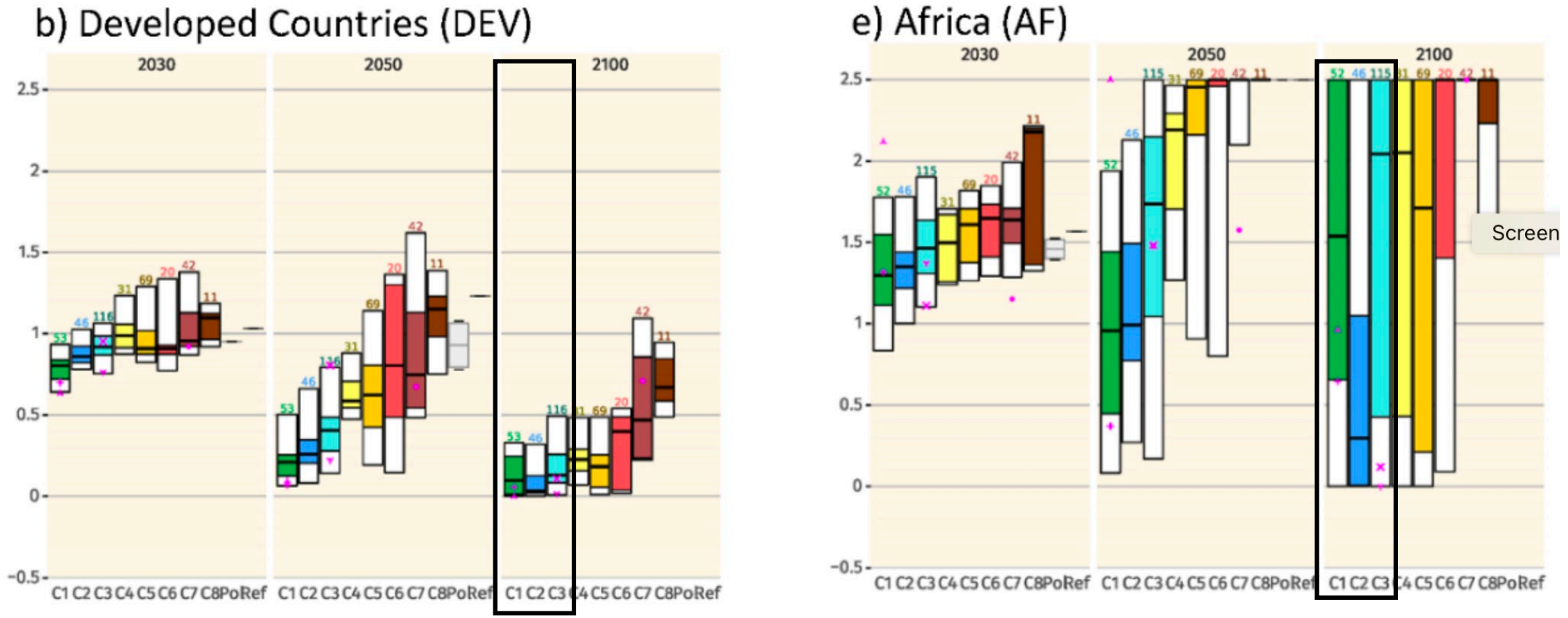
The transportation sector accounts for 15% of global greenhouse gas emissions.

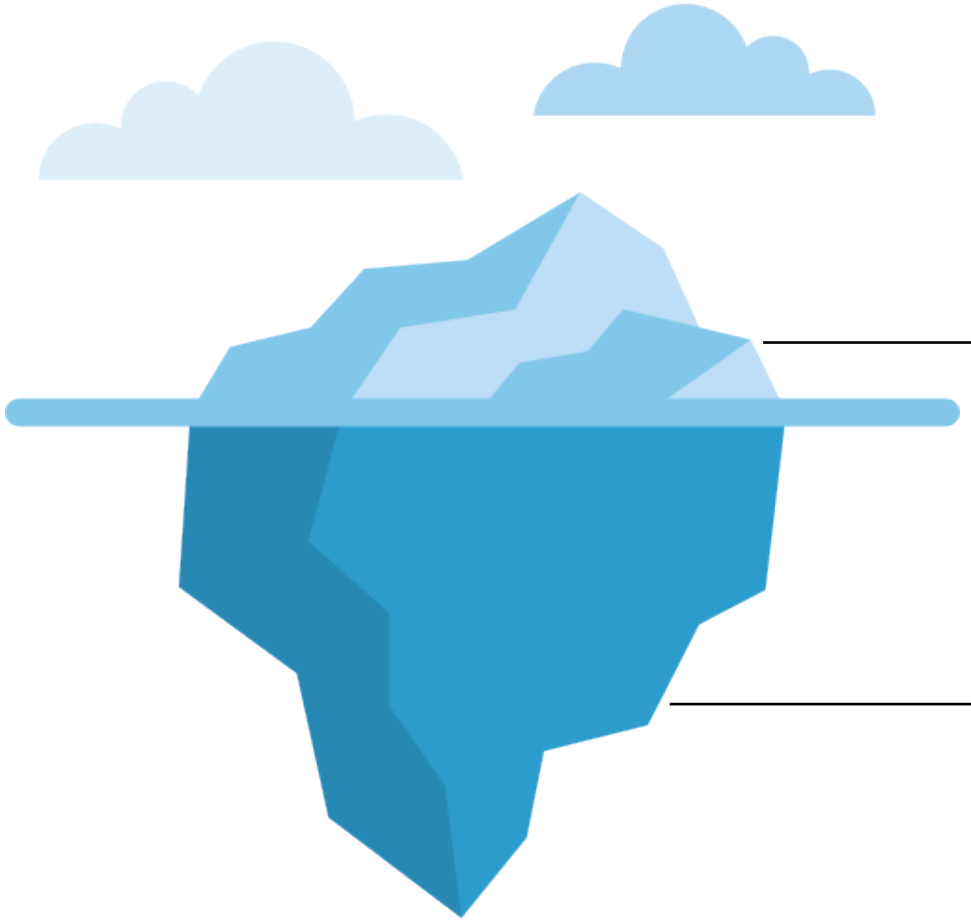


“Demand-side options and low-GHG emissions technologies can reduce transport sector emissions in developed countries and limit emissions growth in developing countries (high confidence).”



Direct CO_2 emissions in 2030, 2050, and 2100 indexed to 2020 modeled year.

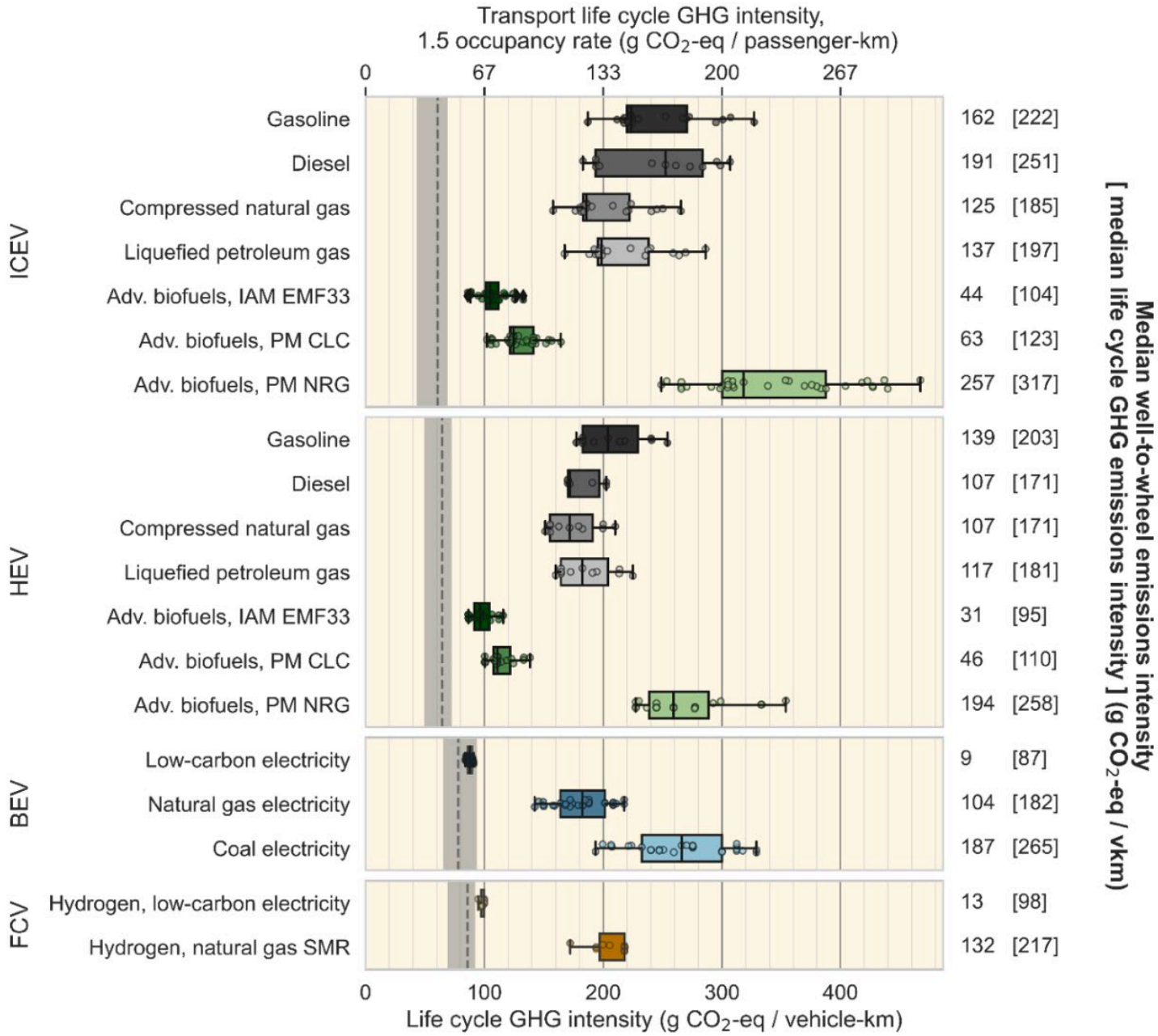
“Demand-focused interventions can reduce demand for all transport services and support the shift to more energy efficient transport modes (medium confidence).”



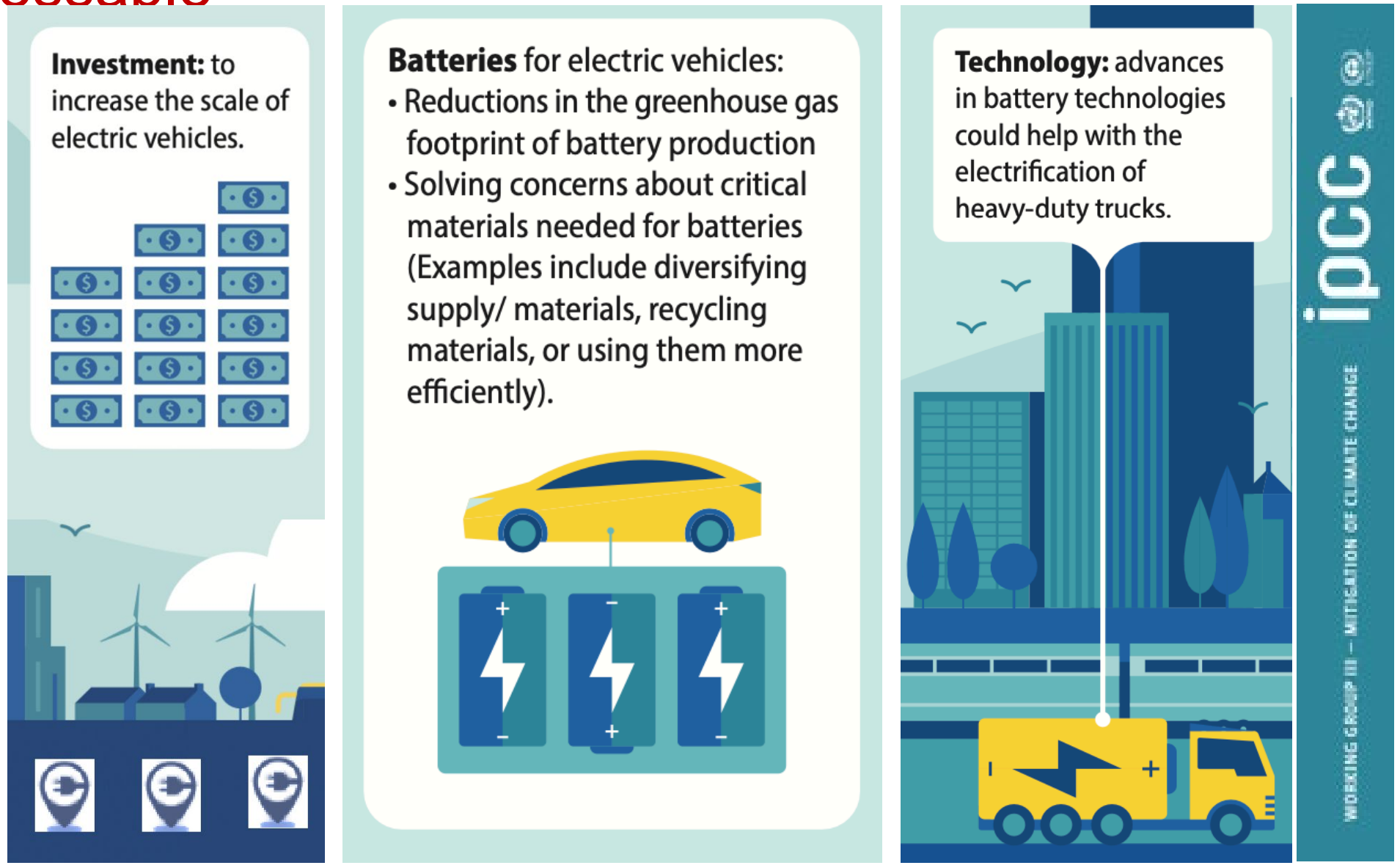
Behavioral change: Avoid demand for transport services; Shift to more-efficient modes

Systemic change: Changes in urban form; Investments in transit and active transport infrastructure; Changes in economic structures; Teleworking; Dematerialization of the economy; Supply chain management; e-commerce; Smart mobility; Shared mobility; Vehicle automation.

"Electric vehicles powered by low-emissions electricity offer the largest decarbonization potential for land-based transport, on a life cycle basis (high confidence)."



EV technology is at a high technology readiness, costs are decreasing, and concerns are increasingly addressable

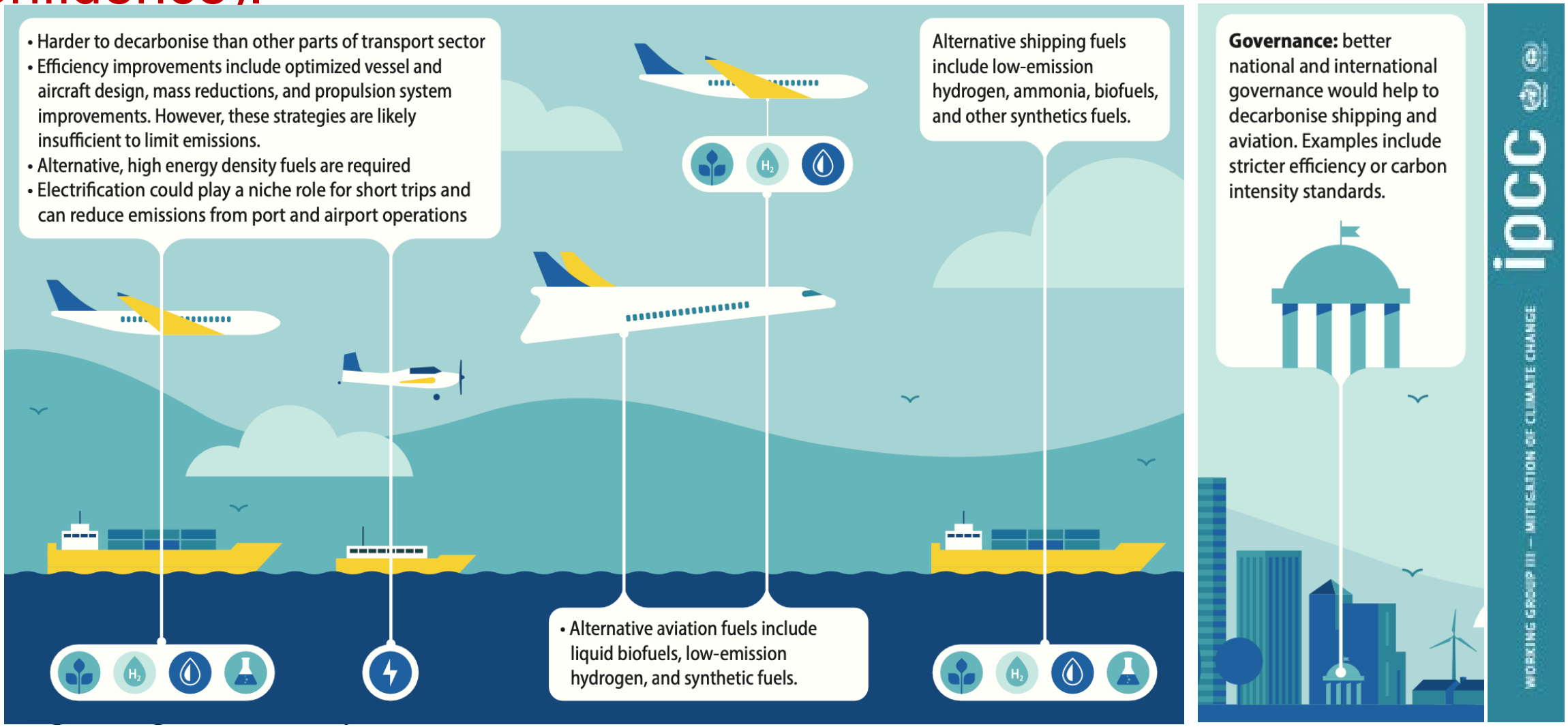


"Sustainable biofuels, low-emissions hydrogen, and derivatives (including synthetic fuels) can support mitigation of CO_2 emissions from […] and **heavy-duty land transport** but require production process improvements and cost reductions (medium confidence)."

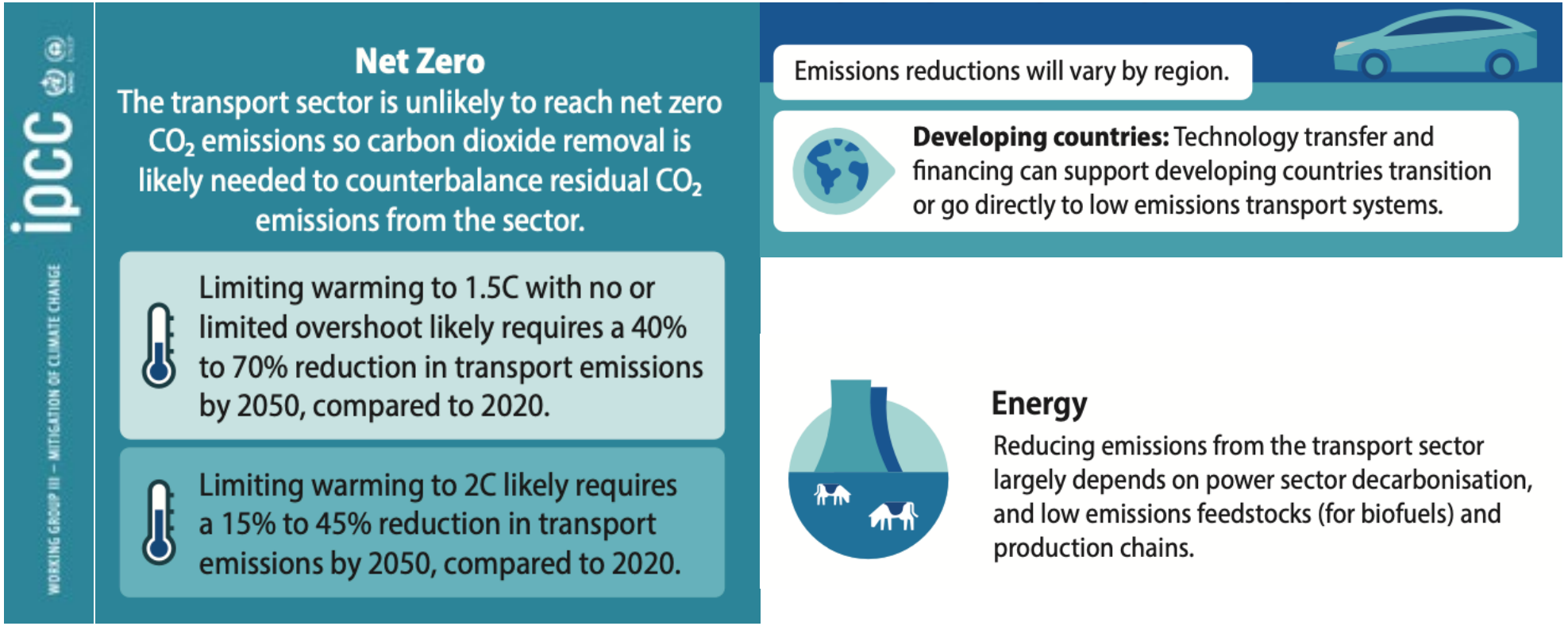
"Sourced sustainably and with low-GHG emissions feedstocks, bio-based fuels, blended or unblended with fossil fuels, can provide mitigation benefits, particularly in the short and medium term (medium confidence)."

"Low-GHG emissions hydrogen and hydrogen derivatives, including synthetic fuels, can offer mitigation potential in some contexts and land-based transport segments (medium confidence)."

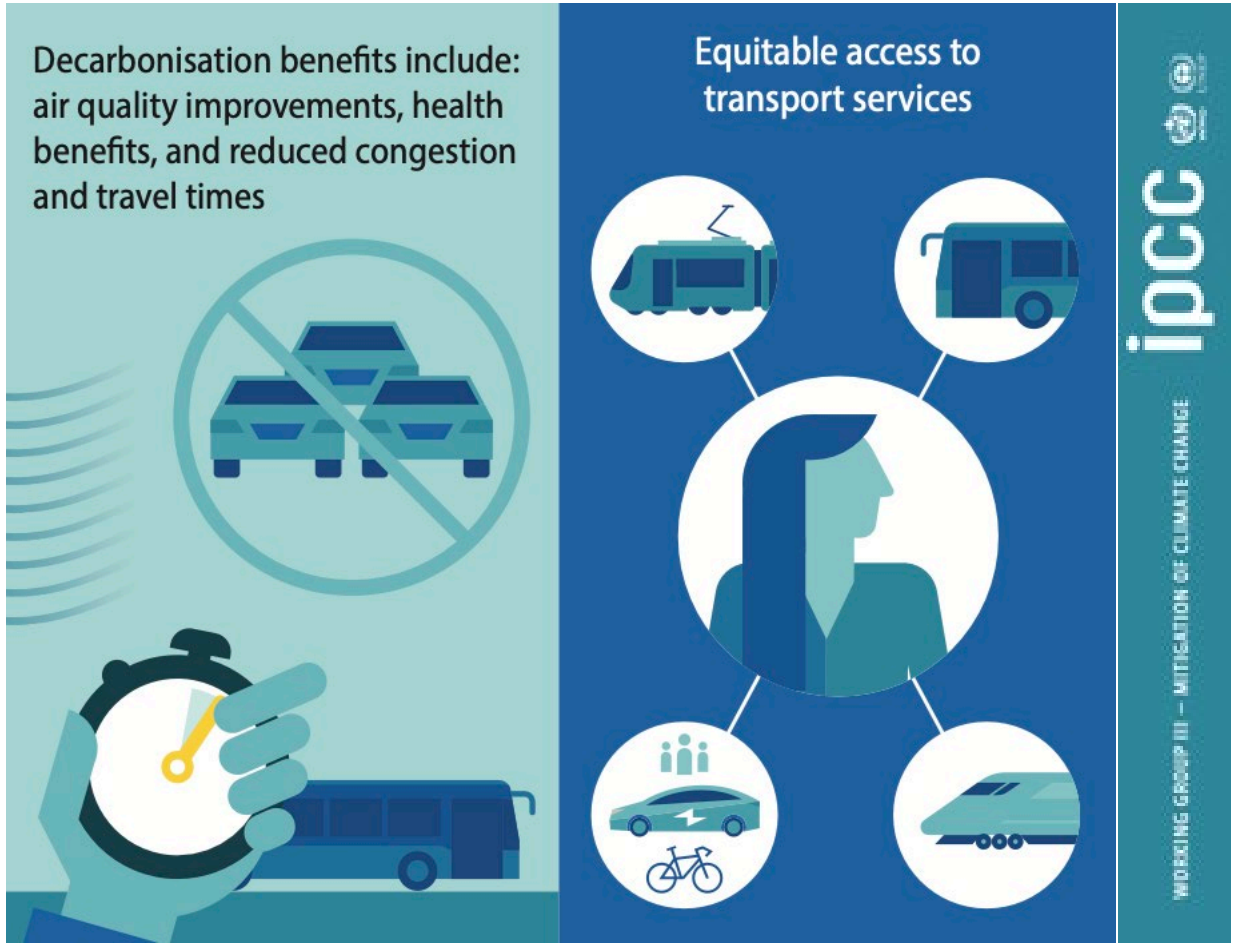
“While efficiency improvements […] can provide some mitigation potential, additional CO_2 emissions mitigation technologies for aviation and shipping will be required (high confidence).”



Will the transport sector reach net zero CO_2 emissions?



“Many mitigation strategies in the transport sector would have various co-benefits […] ((high confidence).”



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- Jaramillo, P., S. Kahn Ribeiro, P. Newman, S. Dhar, O.E. Diemuodeke, T. Kajino, D.S. Lee, S.B. Nugroho, X. Ou, A. Hammer Strømman, J. Whitehead, 2022: Transport. In IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926.012
- Many of the figures in this presentation came from a forthcoming factsheet the IPCC has prepared for the WGIII report.