

ICAO Aviation Green Recovery Seminar

TIME TO BUILD BACK BETTER





Systematic perspective on the environmental impact of transport modes

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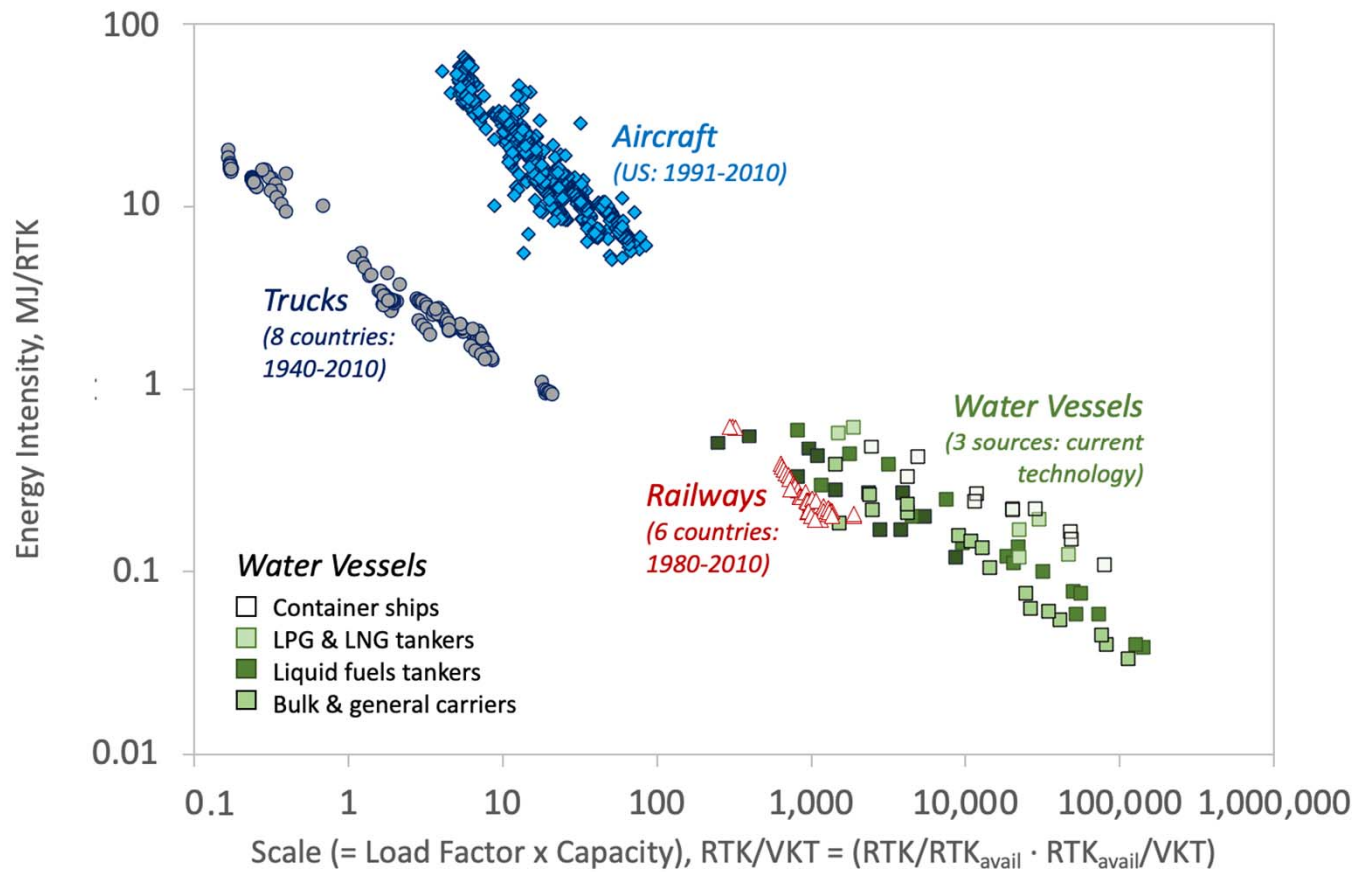


Comparing energy and CO₂ intensity across modes

- Energy (CO₂) intensity: energy use (CO₂ emissions) per passenger-km or tonne-km
- Transport modes provide different levels of service (comfort, privacy, speed, etc.) and carry different commodities: “everything else equal” does not apply
- System scale (not technology!) as key determinant of energy and CO₂ intensity
- Energy intensity declines with increasing system scale (= load factor x capacity)
 - Increase in load factor > increase in vehicle energy use
 - Increase in capacity: square-cube law (“bigger is better”)
- Consider only operations (tank-to-wheel/wake) of petroleum-consuming modes
 - Upstream (well-to-tank) energy use and CO₂ emissions scale with operations
 - Relative importance of vehicle and infrastructure is small
- In the interest of time, focus on energy intensity; CO₂ intensity scales accordingly

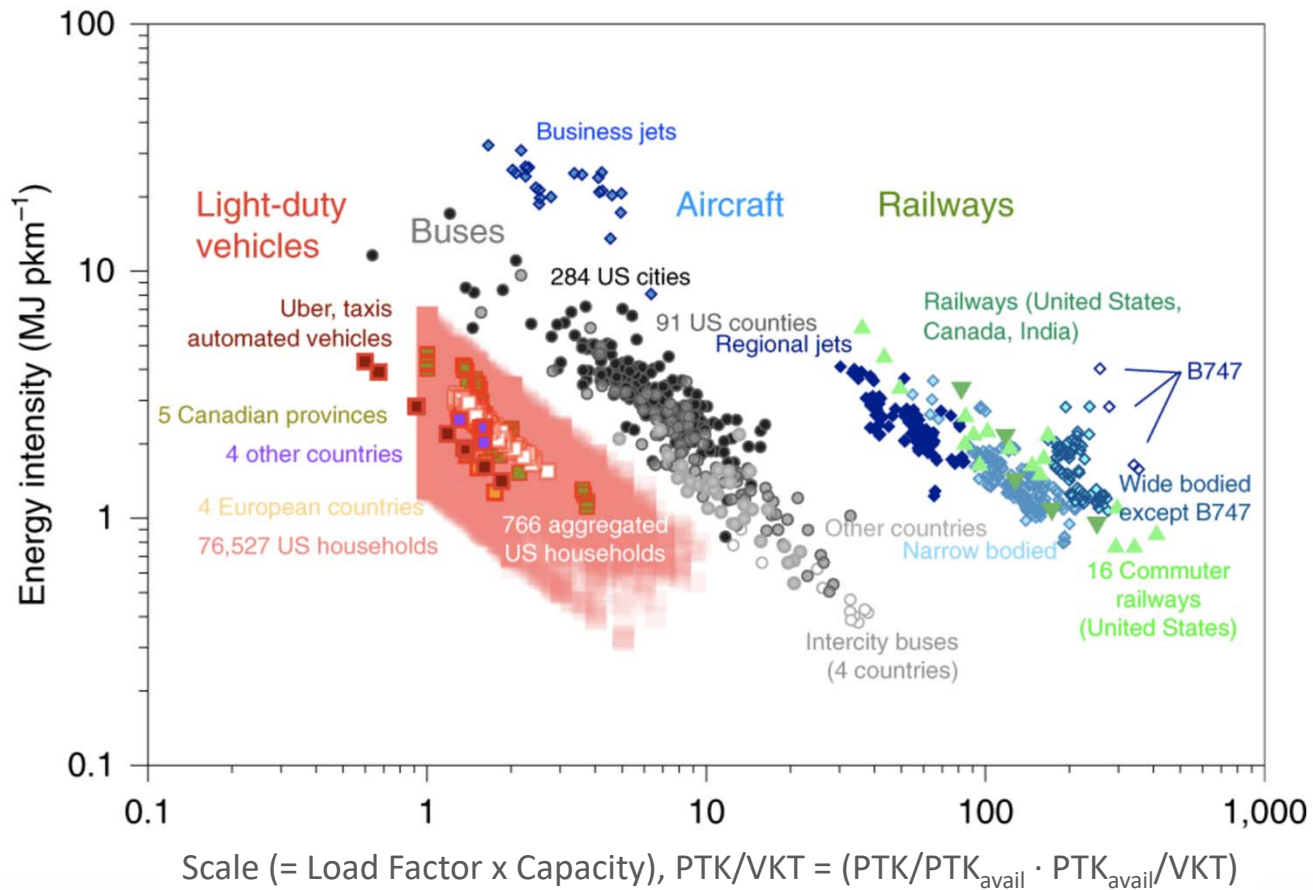


Energy and (CO₂ Intensity) in Freight Transportation





Energy (and CO₂ Intensity) in Passenger Travel



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