International Transport Forum

Global dialogue for better transport

Zero-Carbon Transport Transition: Opportunities and Challenges

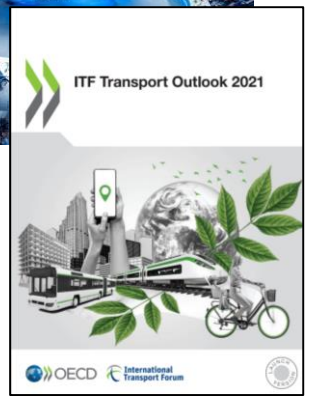
20 September 2021

Decarbonizing the Transport Sector through Innovative Technologies

OECD

The ITF

- **Intergovernmental organisation**
  - OECD framework, but 63 member countries
- Only global body covering **all transport modes**
- **Think tank** for transport policy
  - **Data and statistics**
  - **Analysis, identification of best practices**
  - **Knowledge sharing**
- Organising global dialogue for better transport
  - **Annual Summit**, largest gathering of transport ministers
  - **Corporate Partnership Board**
  - "Platform for **discussion and pre-negotiation**"
- Current **focal areas**
  - Digitalisation, connectivity, safety & security, universal access, **decarbonisation**



Transport & the economy

Transport is essential for economic growth and development…

- Facilitating the movement of people and goods across the globe, **transport plays a vital role in the world's economy**
- **Global demand for transportation services expected to increase**, as the global economy keeps developing (and recovering from Covid-19)

… but also requiring action to ensure that this is sustainable

- **Transport is also a major energy end-use and a source of emissions** (GHGs, local pollutants, especially in high exposure areas like cities)
- IPCC analyses on impacts of climate change, related biodiversity loss and health-related impacts from pollution (especially in cities) indicate that it is **imperative to identify ways to reduce pollutant emissions and advance towards the decarbonisation of the transport sector**

Covid-19 is having major impacts

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On the economy and society

- Lockdowns, GDP growth reversal, exposure of major global inequalities (e.g. access to vaccines)
- Surge in relevance of digital technologies (which was already bringing disruptive effects…)

On the transport sector

- Major hit on transport demand (public transport, aviation, shipping activity) and transport industry turnovers (aviation, but also public transport, automotive)
- Supply chain disruptions (example of semiconductors, again linked to digital)

On energy

- Falls in demand exacerbated by a supply shock in March 2020, consequences on oil supply (risk of underinvestment, lading to rising fossil energy prices now that demand bounces back)

But this is unlikely to lower the bar on the sustainability challenge

- Growing interest in solutions that combine lower environmental impacts (resilience, climate), greater energy efficiency (security) and positive impacts for the economic recovery (growth)
- Consensus on need for public debt and target on investments to "build back better"

Achieving sustainability in transport

Key pillars for decarbonisation

- Manage travel demand
  - Reduce trip distances
  - Shift modal choice towards energy efficient modes
  - Maximise the capacity utilisation of vehicles
- Enhance energy efficiency of vehicles
- Decarbonise energy vectors/fuels
- Minimise emissions beyond vehicle use and energy/fuel production
  - Vehicle manufacturing and infrastructure construction

+ Need to place this in the broader framework of the SDGs

- Importance of meeting multiple targets: co-benefits for safety, affordability, health/pollutant emission reduction, energy security, accessibility, connectivity, industrial development, economic growth, equity…

+ Also need in to place this in the broader context of major tech transitions

- Implications of technology learning: clearly visible for digital tech (linked to transport via connectivity and automation), electricity storage (batteries, and hence electrification), renewable energy

Manage travel demand (passenger)

Key actions

- Avoid urban sprawl and promote compact cities
- Regulate/modulate the cost of transport to reflect full impact for all modes
  - Eliminate fossil fuel subsides, use fuel taxes and carbon pricing
  - Adopt pricing/charges and regulations sensitive to location, time and occupancy/capacity utilisation
- Capture and reinvest the value generated by public transport/rail infrastructure
- Increase the value proposition of non-motorised & public transport modes
- Promote shared mobility and ensure that it is steered towards complementarity with public transport (MaaS)

Why is this helping manage passenger transport demand?

- Greater proximity of origins & destinations, similar travel cost (need to manage rebound)
- Cost pressure, reduced barriers to access and greater appeal for NMT and public transport/rail

\+ Better economics for public transport/rail, also offering the possibility to better handle equity concerns

Manage travel demand (freight)

Key actions

- Regulate/modulate the cost of transport to reflect full impact for all modes
  - Eliminate fossil fuel subsides, use fuel taxes and carbon pricing
  - Adopt pricing/charges and regulations sensitive to location, time and occupancy/capacity utilisation
- Enable the use of high capacity vehicles
- Foster physical compatibility, asset sharing & collaboration in logistics
- Foster the adoption of digital technologies for route optimisation and trip chaining
- Capitalise on the experience of green freight programmes
- Avoid urban sprawl and promote compact cities

Why is this helping manage freight transport demand?

- Cost pressure (greater penalties/tkm for small or empty vehicles)
- Reduced physical barriers
- Greater opportunities for larger shipments

Enhance energy efficiency of vehicles

Key actions

- Adopt operational measures: regulate speed (including slow steaming), require periodical driver training
- Ensure that fuel-saving technologies are ready to scale up (testing, standardisation…)
- Promote the uptake of low- & zero-emission vehicles (in particular EVs, for land transport)
  - Adopt fuel economy regulations/standards that are progressively more stringent over time
  - Adopt differentiated taxation & regulations (vehicle purchase taxes, road use charges, port and airport fees, access restrictions & waivers, sales share mandates) based on environmental performance
- Enable EVs to become an asset rather than a liability to the electricity sector
  - Smart grids, electricity market reforms, demand response thanks to availability of EV batteries
- Develop criteria defining the sustainability of supply chain, adopt minimum standards, promote good practices
- Support/finance RD&D on innovative low- & zero-emission vehicle technologies

Why is this helping enhance energy efficiency?

- Reduced barriers, bridging the cost gap and direct impact of policies on increased market uptake/adoption
- Electric motors inherently more efficient, electrification enables zero well-to-wheel physical flows and emissions: crucial to decouple energy, GHG and economic growth

+ Vast technology transition, opening up opportunities for industrial development (but also transitional risks!)

Decarbonise energy vectors/fuels

Key actions

- Develop criteria defining the sustainability of transport fuels/energy vectors, adopt minimum standards, promote good practices
- Promote the use of low- & zero-emission energy vectors with economic incentives and regulations
  - Give priority to the dispatching of electricity from renewable energy sources
  - Introduce Low Carbon Fuel Standards (or similar policy frameworks) to promote energy vectors with best environmental profile (and riase revenues to do so, while also applying carbon price that needs to increase over time)
- Support the deployment of refuelling/charging infrastructure for LZEVs
- Support RD&D on innovative low- & zero-emission energy vectors

Why is this helping decarbonise energy vectors?

- Reduced barriers, bridging the cost gap and direct impact of policies on increased market uptake/adoption
- Measures broader than electrification, well fit to have impact for long-distance modes

+ Fits with the broader context of the *energy transition* (e.g. renewables)

Minimise emissions beyond vehicle use

Key actions

- Minimise material need per unit of passenger and freight transport service (pkm, tkm)
  - Promote shared and collective passenger transport modes (provided that they still have a sound lifetime) and asset sharing in logistics
  - Discourage overbuilding of infrastructure, as well as parking oversupply
- Reward material efficiency in design, fabrication, use and end-of-life of vehicles and infrastructure
- Minimise energy and GHG emissions from vehicle and infrastructure construction

Why is this helping minimising emissions beyond vehicle use?

- Vehicle manufacturing and infrastructure construction are main sources of energy and emissions beyond vehicle use
- Asset sharing has impacts similar to management of travel demand in transport analogy
- Material efficiency has impacts similar to energy efficiency in the same analogy
- Consistent with 3R (reduce, reuse, recycle) paradigm for minimisation of waste and management of resource use

Making it happen

High-level considerations

- Best to look for win-win solutions, providing multiple advantages
  - Not only climate change mitigation: co-benefits for safety, affordability, health/pollutant emission reduction, energy security, accessibility, connectivity, industrial development, economic growth…
- Need to account for a life-cycle perspective when looking at transport…
  - Need to ensure that action on transport is mirrored by action in other sector (power generation, construction industry…)
- … and to look beyond transport
  - Major opportunities from synergies between transport-related technologies (e.g. EVs, electricity, possibly hydrogen) and other sectors
  - Look carefully at transitional risks, requiring adequate anticipation (and action): key examples are available within the transport & energy fields (decline in costs of batteries and renewable energy), but there are also other major disruptions unfolding (digital technologies)
  - A lot is happening in finance (market capitalisation of companies, expectations for changes)
- Seizing opportunities and reducing risks requires improved foresight to define a clear and up to date vision, plus significant policy (and voluntary) actions to make it happen

Actions undertaken by the ITF

Progress tracking

- Evaluate how current mitigation measures contribute to reducing transport CO_2.

In-depth sectoral reports

- Analyse in detail effective policies for decarbonising transport sub-sectors.

Focus studies

- Analyse specific decarbonisation issues (e.g. specific transport modes).

National pathways

- Help countries define pathways to meet their transport CO_2 reduction ambitions.

Policy dialogue

- Organise global dialogue on transport and climate change through roundtables, policy briefings and technical workshops etc.
- Act as a conduit for transport sector input to climate change negotiations.

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Thank you

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