



**COP28
UAE**



**International
Transport Forum**



Transport – Energy Nexus to Deliver Climate Goals and a Just Transition

Summary of the Ministers' Roundtable held on 5 December 2023 at the COP28

Introduction

The transport sector accounts for 23% of global CO₂ emissions, making its decarbonisation a vital pillar of the Paris Agreement. Transport is currently the sector with the highest reliance on fossil fuels, among all end-use sectors. Decarbonising transport implies a rapid shift from fossil energy to electricity and low-emission fuels, which will have a significant impact on global energy demand and supply chains. The electrification of the vehicle fleet is already having a tangible effect on oil demand, with EVs displacing roughly 700 000 barrels of oil per day in 2022 (equivalent to almost 2% of total road fuel demand). Additionally, the necessary shift towards active mobility and electrified public (rail and buses) and private transport will reduce overall energy demand, thanks to the higher energy efficiency of EVs compared to internal combustion engine vehicles.

The diversification of transport energy sources strengthens energy security and improves resilience to energy price shocks. However, the clean energy transition is not without its own energy security concerns. Developing resilient and sustainable critical minerals supply chains, in particular for battery-related minerals, will be essential to ensure a smooth clean energy transition. In addition, the shift towards electrification for the road transport sector will have a significant impact on the electricity grids.

Decarbonising the energy sector will require grid networks to be upgraded to support deployment of high shares of renewable energy, energy storage devices, and electric vehicle charging infrastructure. The necessary grid upgrades will require significant investment and given the long lead times, will require advanced and coordinated planning. However, integrating transport and energy systems can provide great benefits: the electric vehicles fleet and smart chargers can represent an energy storage opportunity to support balancing, rather than burdening, power grids reliant on renewable energy.

To decarbonise the shipping and aviation sectors, there is an urgent need to scale up the production and deployment of low-emission fuels. Sourcing sustainable carbon feedstock (e.g., from direct air capture) and producing low-3 carbon hydrogen (e.g., from water electrolysis) to make electrofuels (e.g., ammonia, hydrogen, and e-kerosene) are highly energy-intensive processes. Furthermore, for electrofuels to be truly sustainable the energy inputs need to be renewable. ITF analysis estimates that producing enough hydrogen to displace the global shipping fuel demand in 2021 with synthetic methanol would require installing an additional 1.1 TW renewable electricity assets – this is 167 times the total renewable capacity additions in Germany in 2021 of renewable energy in Germany.

Many technical solutions enabling the decarbonisation of transport, and power grids sit at the nexus between the two, with many policy levers available to support the decarbonisation of both. It is essential that there is strong collaboration between these sectors to align policies, overcome shared challenges, and forge coalitions to decarbonise both sectors in tandem.

While the transport sector has seen some strong representation in energy discussions at the Clean Energy Ministerial, more can be done to bring transport and energy decision-makers to the same table to discuss actions.

This event served as a key moment to do this and have a strategic discussion on how to work together to achieve and leverage the benefits of an aligned energy and transport transition. Key outcomes can be taken forward to continued discussions between transport Ministers at the ITF Summit in May 2024, and energy ministers at the Clean Energy Ministerial in Brazil in 2024, with the aim to continue to draw lines for collaboration between both sectors.

Summary of discussion

The ministers' roundtable opened with remarks from the UAE COP28 Presidency, the International Energy Agency and the International Transport Forum on the urgent need to align net zero pathways of the transport and energy sectors.

On transport, there was a strong emphasis on urgently addressing the sector's 23% contribution to CO₂ emissions. A call for governmental action to enable the rapid adoption of clean technologies and requisite infrastructure in close collaboration with the industry. The shift to electrification will significantly increase demand for clean electricity, and collaboration is necessary to ensure grid readiness for this, and to realise opportunities of this shift to support grid balancing and energy storage. Managing transport demand through a shift to electrified public transport and active mobility will also support a reduction in energy demand from the transport sector. To decarbonise shipping and aviation the need to scale up low carbon fuels was emphasised, and notably working with the energy sector to address through energy-intensive processes involved in producing fuels to make them truly low carbon. The overarching message underscored the need for joint planning, coordination, and collaboration among decision-makers to align policies, overcome challenges, and form coalitions for the simultaneous decarbonisation of transport and energy supply sectors.

On energy, it was highlighted that transport is the largest oil-consuming sector, representing almost two-thirds of global oil demand. Given that energy, transport and climate change are closely connected, it's promising that the International Energy Agency expects transport oil consumption to peak this decade on the basis of current policies. Electric vehicles are a key technology to reduce transport oil dependency, and recent exponential growth of electric car sales is set to continue throughout this decade. Of course, low-emission fuels will also play a major role in decarbonising hard-to-electrify transport modes, such as shipping and aviation. Technology innovation and investments will be required to scale up the production and use of such fuels. Coordination across energy, transport and investment communities is important to ensure a smooth transition.

The discussion centred around three questions:

- (1) How do we align net zero pathways of the transport and energy sectors? How can we forge coalitions between the sectors and continue collaboration?
- (2) How can decarbonising transport stimulate investment and technology innovation in the energy supply sector and support the energy sector's transition to the production of green/clean energy?
- (3) How can the energy sector support the acceleration and pace of the transport sector's transition to low-zero carbon energy sources?

Key messages

1 – Further action is urgently needed to accelerate decarbonisation of the transport sector in order to overcome the many complex challenges involved.

- The challenge of decarbonising transport is a primary concern for stakeholders, as the sector is not on track for a trajectory aligned with 1.5°C.
- Diverse geography and climate conditions in different regions impact solutions, emphasising the importance of ensuring various pathways to transport.

2 - Deployment of clean technologies in the transport sector needs to be accelerated.

- Governments must supercharge deployment of zero-emission technologies for the road transport sector.
- Collaboration on hydrogen and low-carbon fuels is crucial for decarbonising difficult to decarbonise transport modes, addressing technology and finance challenges.

3 - Accelerated deployment of supporting infrastructure is also imperative.

- Governments will play a key role in accelerating deployment of supporting infrastructure, notably sufficient vehicle recharging infrastructure.

- Expansion of grids and digitalisation is crucial for supporting electrification of the transport sector and scale up of low carbon fuels.
- Scalability and concrete planning and charging infrastructure are key to meeting transport needs and energy demand.
- It is imperative that electric vehicles are powered by electricity from zero-emission sources. Additionally, electric vehicles can contribute to the overall transition of the grid to renewables by providing a source of storage and flexibility.

4 - Public transport, including rail provides an opportunity to reduce energy demand.

- Achieving a significant modal shift can substantially reduce global energy demand for transport, promoting a transition to a renewable energy mix.
- Renewable sources of energy and support from governments are crucial for increasing the uptake of new technologies in the rail sector.

5 - Particular attention is needed on the decarbonisation of long-distance transport.

- Shipping and aviation pose significant challenges, requiring governments and industry to set out and deliver on accelerated pathways to scale up low carbon fuels, including SAF.
- Individualised plans for subsectors, including seaports, are essential for addressing unique challenges and solutions.

6 - Energy needs and interlinkages with the broader energy system are key to transport decarbonisation.

- Transport and energy are interconnected, necessitating an examination of the transport transition's impact on energy needs to ensure sufficient low-emission energy supply is in place to meet the needs of all sectors.
- Regulation and cooperation to ensure critical mineral supply chains are sustainable and ethical is crucial for a successful transition.
- Efficiency of transport within the broader ecosystem should also be a focus of collaboration, for example building more efficient cities and more efficient systems for freight transport.

7 - The transition will not occur at the speed and scale needed without strong coalitions and cooperation.

- Forging coalitions and collaboration is essential for a successful transition especially between ministries of transport and energy. It's crucial to extend these collaborative efforts to include other key ministries/offices such as environment, labour, and housing.
- Public-private partnerships and coalitions with industry play a pivotal role in driving transformative change.

8 - Sufficient finance and funding are needed to back transitions objectives and plans.

- Governments worldwide have committed substantial financial resources to support the decarbonisation of the sector, including for charging infrastructure and subsidies to R&D and transition finance packages.
- Despite these commitments, additional funding is crucial to address key challenges and attract private sector participation.
- Joint investments from both transport and energy sectors, covering charging infrastructure, vehicles, and clean energy production, are vital. This approach fosters economies of scale, facilitates new business models, and supports the necessary fleet transformation, particularly with the expanding adoption of e-mobility in the medium and heavy-duty segment.
- Identifying the required financial resources is pivotal, emphasising the need for clear legal frameworks governing financing sources (public, private or PPP) and defining project design and execution. Government plays a crucial role in establishing inter-institutional cooperation formulas.
- Governments should also explore defining regulations in carbon finance markets to recognise emission reductions resulting from shifts to low-emission modes such as rail and active mobility.

Participants

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