



OVERVIEW OF BEST PRACTICES IN DECARBONISING URBAN TRANSPORT

Stakeholder Consultation Workshop

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On behalf of:



of the Federal Republic of Germany





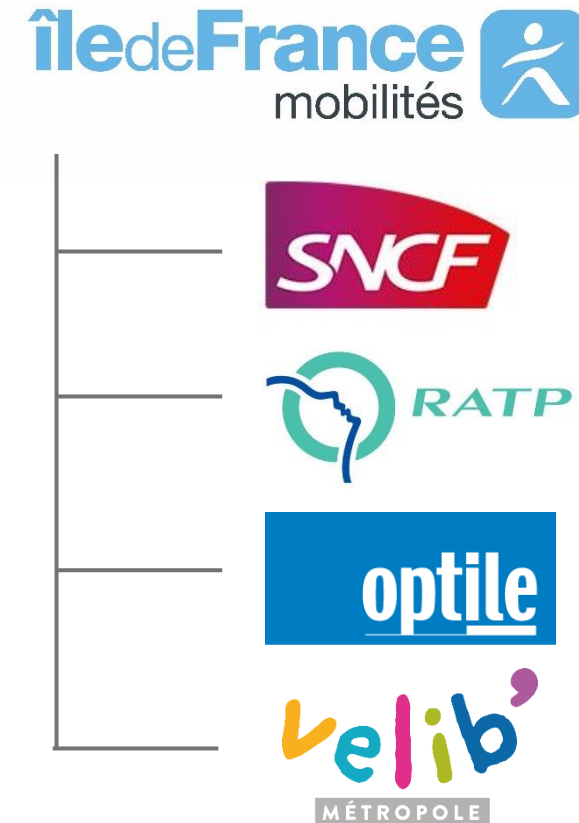
Public transport planning

- Let government plan transport services, but at a **decentralised level**
- Consider **corporatising** publicly operated transport services
- Pay close attention to **system design** where competition in public transport provision is introduced
- Pay attention to **service quality** as well as costs to achieve a sustainable public transport system
- Take the **broader urban context** into account in designing and adopting public transport reforms



Example – Paris region

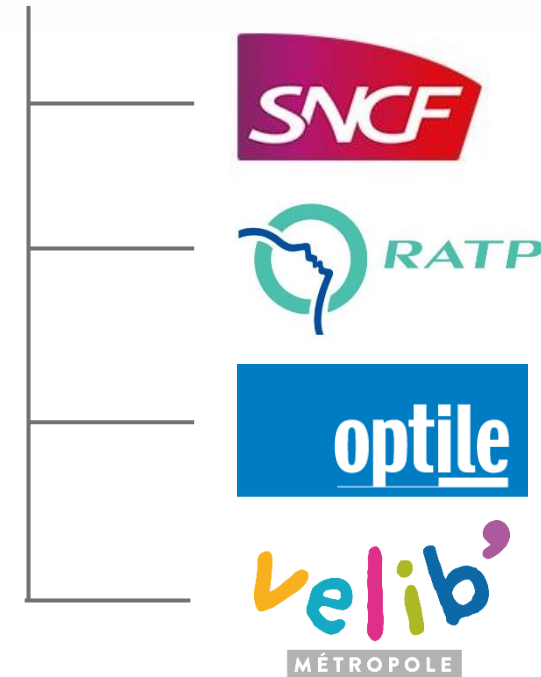
- **Location:** Île-de-France (France)
- **Modes:** regional passenger rail, metro, bus, tram, bike-share
- **Timeframe:** 2000, 2004, 2009 onwards
- **Motivations for reform:**
 - Increase the use of public transport
 - Improve co-ordination
 - Decentralise planning powers





Example – Paris region

- **Transport supply** (two tram lines, upgraded metro line)
- **New fare system + smartcard**
- **Real time information and a new app**
- **Performance outcomes:**
 - +21% number of trips
 - +43% passenger-kilometres
- **Alternative funding sources** (transport tax, fare revenues)
 - 30% → 1% national government contribution





Transport strategy and urban land-use planning

- **The “Five Ds” of the city:**
 - Density (of population and/or jobs)
 - Diversity (mix of uses)
 - Design (pedestrian quality, street network density, etc.)
 - Distance to transit
 - Destinations
- **Two extremes:**
 - Urban sprawl (all the criteria are low)
 - Compact city development (all the criteria are high)
- **Example: Transit-Oriented Development (TOD)**



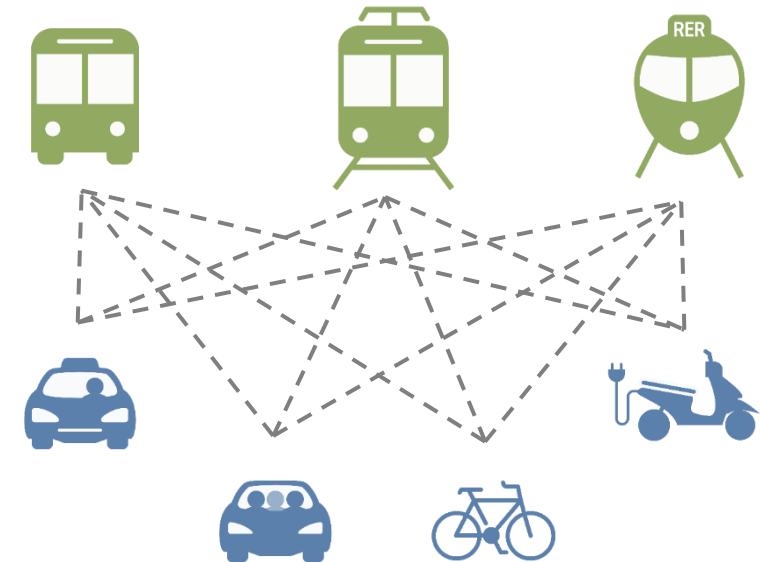
Transport strategy and urban land-use planning

- **Outcomes:**
 - Reduce travel demand
 - Reduce average trip length
 - Increase share of active modes
 - Contribute to smaller transport networks
 - Decrease expenditures on infrastructure investment and maintenance
 - Improve (possibly) accessibility
- **Ultimately: lower trip volume, more sustainable modes**



Make public transport easy and attractive

- **Provide appealing network and service design**
 - Hierarchical route structures
 - Variation in station spacing
 - Vehicle sizes adapted to passenger demand
 - Comfort and convenience as important factors to attract ridership
- **Impact (Barcelona, Spain):**
 - Up to 50% reduction of carbon emissions
 - 17% reduction of operator costs
 - No significant change in user costs or travel times





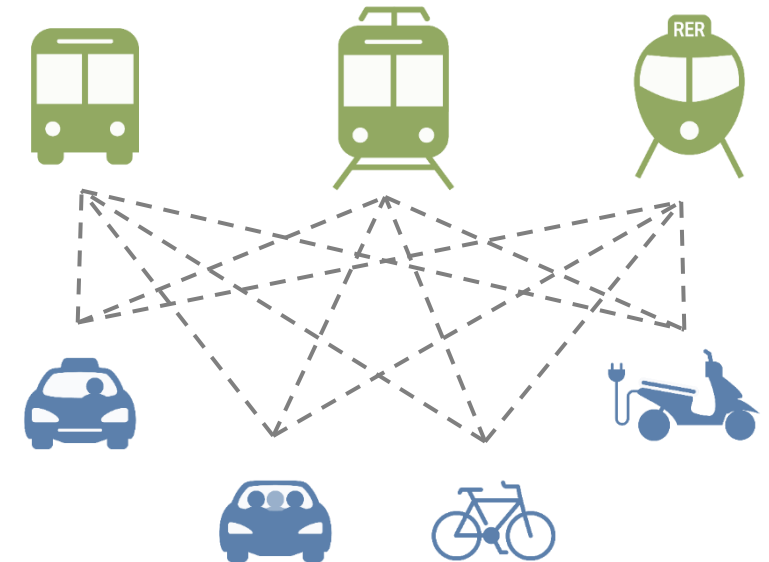
Make public transport easy and attractive

○ Ensure accessible and reliable services

- Bus lanes (express lanes)
- Public transport priority
- Access for sustainable modes (e.g. car sharing)
- Intermittent traffic management

○ Impact (Thessaloniki, Greece):

- Improved bus service
- Intensified congestion
- +6.7% for CO₂ and +6.9% for carbon monoxide





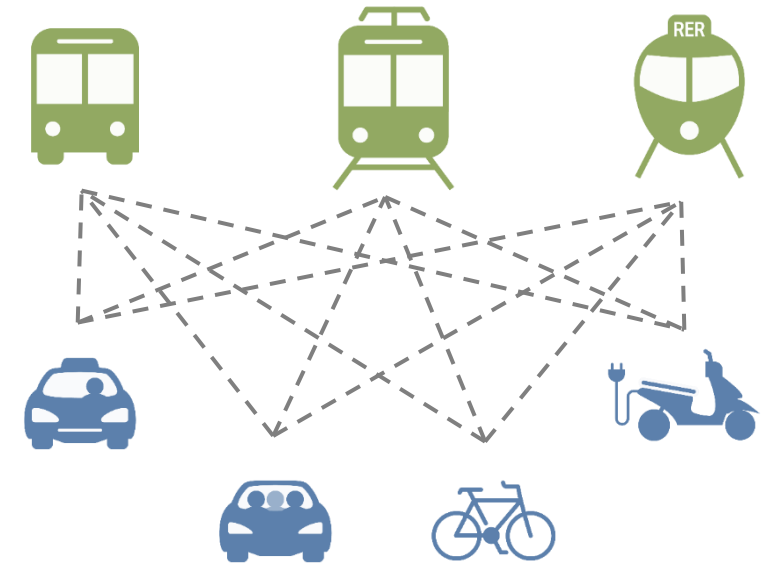
Make public transport easy and attractive

○ Support integration and seamless experience

- Integrated ticketing (modes, zones)
- Unified pricing structure
- Upgraded fare collection system
- Multimodal hubs

○ Impact (European cities):

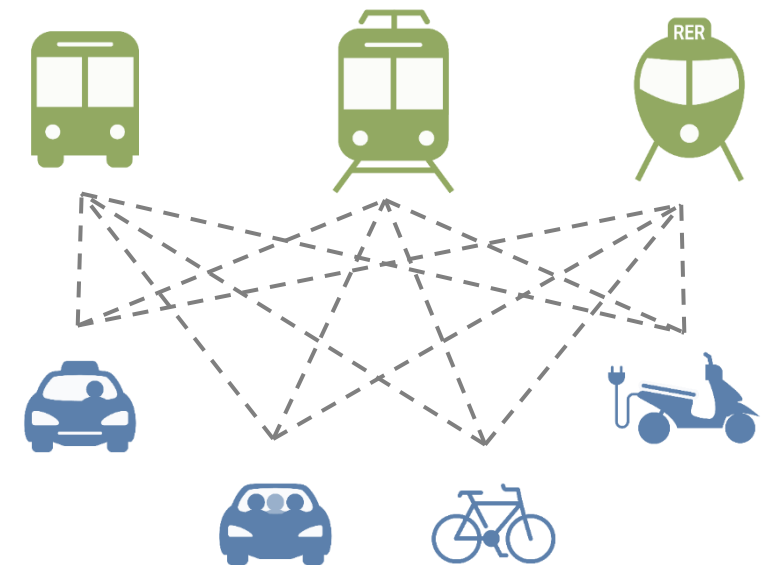
- Increase in public transport ridership between 4% over two years in Manchester, United Kingdom, and 33% over 18 years in Paris, France





Make public transport easy and attractive

- **Provide good public transport information**
 - Routes and timetables online
 - Real-time travel information on board and at stations
 - Mobile applications
- **Impact (Ireland):**
 - Implementation costs 2200 EUR per stop, 6000 EUR per vehicle
 - Increase of between 1% and 3% in public transport use





Ensure fleets support sustainable outcomes

- **Green public procurement** for zero or low emission fleets
- Public authorities and/or companies take **sustainability issues** into account when tendering for goods and services
- CO2 benefits from public procurement accrue primarily from to the transition from petrol or diesel vehicles to **low- or zero-emissions vehicles**
- For electric vehicles, the gains are most significant in areas where electricity is produced from **renewable energy sources**



Create a multimodal urban transport system with public transport as its backbone

- **On-demand public transport**
 - Market share potential between 5 and 20%
 - High potential for long commuting travel
 - Operates as a feeding service
 - Requires integration with mass transit
- **Impact:**
 - Up to 4-7 times lower CO2 emissions than for private vehicles
 - With mode share around 20%, CO2 reductions between 10 and 20%





Create a multimodal urban transport system with public transport as its backbone

○ Shared micromobility

- Improves access to public transport by serving first/last-mile connections
- Decreases total travel time
- Can substitute short car trips

○ Impact:

- Every car-kilometre replaced by bike is equivalent to 0.185 kg of CO₂
- Average system-wide CO₂ reductions are close to 1%, thus combined measures are needed





Create a multimodal urban transport system with public transport as its backbone

○ Mobility as a Service

- Combines traditional transport modes and new mobility services in one digital space
- Integrates information and payment services
- Allows seamless door-to-door travel
- Requires legislative, commercial, governance and technological changes

○ Impact:

- Contribute to emissions reductions through reduced vehicle-km and private car use
- Ulm, Germany: potential of 10% CO2 reduction





Consider other measures to support strategic outcomes

- **Congestion pricing**
 - Charge for the use of urban roads
 - Can vary per time of the day or length of use
 - Can be dynamically linked to traffic levels
 - Can be specific for city zones or certain roads
- **Impact (London, UK):**
 - Reduction of CO2 emissions by 16% within the charging zone and by 1% for the entire city
 - Implementation costs 160 million GBP, generated surplus 60 million GBP per year
 - 40-70 fewer road fatalities per year



Consider other measures to support strategic outcomes

- **Road charging and tolls**
 - Charge for the use of infrastructure
 - Can be based on distance or time
 - Can vary per vehicle type or occupancy rate
 - Potential to reflect the vehicle's emissions
- **Impact:**
 - Reduction of CO2 emissions by between 5 and 20% in European countries
 - Issue with acceptance by lower-income population cohorts
 - Shift of traffic to non-tolled roads



Consider other measures to support strategic outcomes

- **Parking pricing**
 - Charge for the use of parking facilities
 - Can apply to commuter, non-commuter and residential parking
 - Can be dynamic (based on demand, vehicle's environmental performance)
- **Impact:**
 - 10% increase in parking prices results in a 1-3% decrease in the demand for parking
 - Issue with social inclusion and traffic shift
 - Netherlands: at least 10% of total tax revenues



Consider other measures to support strategic outcomes

- **Parking regulation**
 - Controls who, when and how long may park at a particular location
 - Considers spatial distribution and capacity
 - Applies to on-street parking and also buildings
- **Impact:**
 - 5-10% decrease in car use for European cities
 - Combined with other measures, potential of improving the PT use by up to 25%



Consider other measures to support strategic outcomes

- **Urban access restrictions**
 - Create cordons with limited access
 - Zones can be entered only by certain vehicles during specific time periods
 - Can be combined with low emission zones (LEZs)
 - Can target specifically peak hours
- **Impact:**
 - Decrease of private vehicle use by 5-10%
 - Issue with social inclusion
 - Shift of traffic to other streets or areas



Catalogue of CO2 mitigation measures



**Transport
Climate Action
Directory**

<https://www.itf-oecd.org/tcad>

- Provide **targeted analytical assistance** for countries and partners to identify climate actions that work
- Gather and shares **evidence for best practices** that will accelerate the transition to carbon-neutral mobility
- **Shape the climate change debate** by building a global policy dialogue and by bringing the transport perspective to the table

"The International Transport Forum's TRANSPORT CLIMATE ACTION DIRECTORY is a key tool for moving from ambition to climate action - our most urgent challenge in climate policy today.

Governments now have a new resource to help them choose mitigation and adaptation measures that work in their specific context and that support their objectives."



Patricia Espinosa

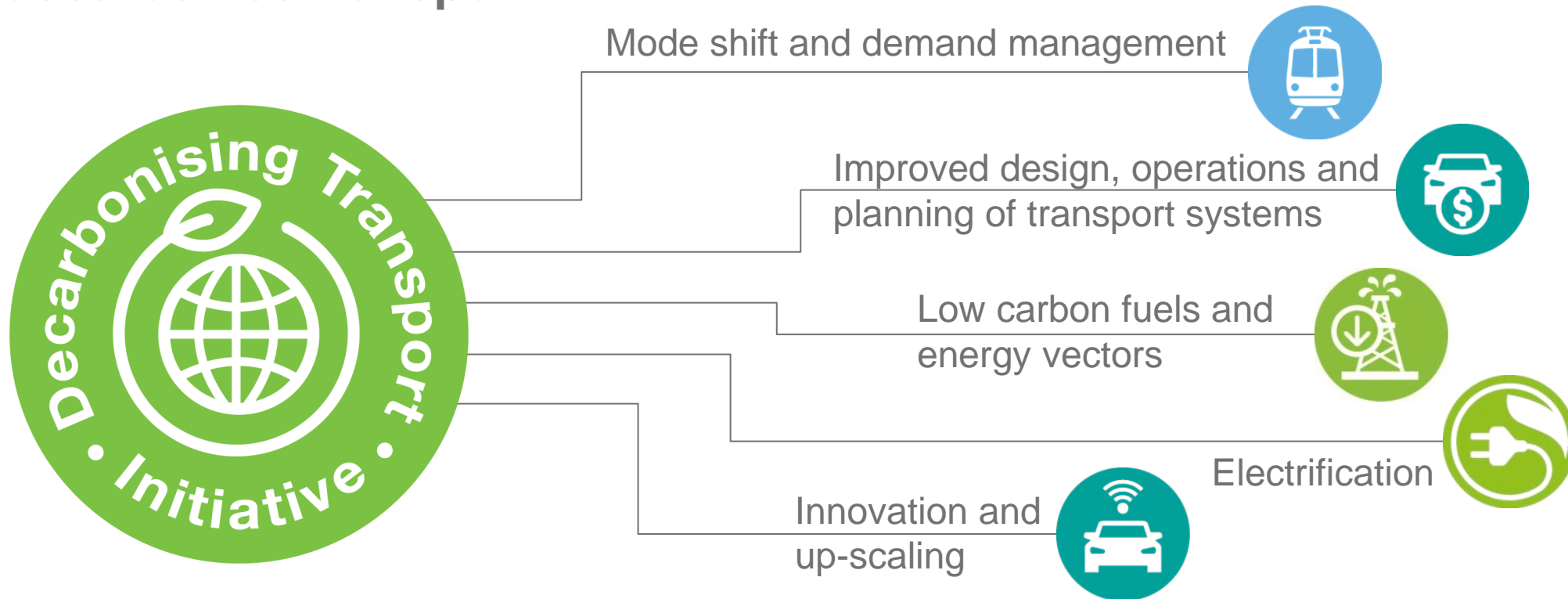
Executive Secretary
UNFCCC



Transport Climate Action Directory



Multiple objectives must be achieved, across different sectors, to decarbonise transport





Transport Climate Action Directory



A tool for delivering decarbonisation

The Transport Climate Action Directory allows you to translate your decarbonisation ambitions into actions to achieve your climate objectives. Over 60 mitigation measures with the evidence to assess their effectiveness are included. Each contains information on CO₂ emissions impacts, costs, co-benefits and other considerations. Use the filters to refine your requirements.

Filter by:

Measure Type

Policy Outcome

Transport Mode

Geographic Scope

Activity Type

Apply

Reset all

Propose a new measure

Urban

Education and awareness raising



Campaigns



Public transport information

Economic





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Filter by:

Measure Type

- Economic
- Regulatory
- Infrastructure
- Innovation / R&D
- Education and awareness raising
- Logistics

Policy Outcome

Transport Mode

Geographic Scope

Urban

Education and awareness raising



Campaigns



Public transport information

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Green public procurement



Road charging and tolls



Pricing measures



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Filter by:

Measure Type

Policy Outcome

- Improved design, operations and planning of transport systems
- Electrification
- Low-carbon fuels and energy vectors
- Mode shift and demand management
- Innovation and up-scaling

Transport Mode

Geographic Scope

Urban

Education and awareness raising



Campaigns



Public transport information

Economic





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Filter by:

Measure Type

Policy Outcome

Transport Mode

- All Transport
- Aviation
- Maritime
- Rail
- Road
- Walking and Cycling

Geographic Scope

Urban

Education and awareness raising


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| |
|--|
| Measure Type |
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| Transport Mode |
| Geographic Scope |
| <input type="checkbox"/> Urban |
| <input type="checkbox"/> National |
| <input type="checkbox"/> International |

Urban

Education and awareness raising


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Filter by:

Measure Type

Policy Outcome

Transport Mode

Geographic Scope

Activity Type

Passenger

Freight

Urban

Education and awareness raising


Campaigns


Public transport information

Economic



Transport Climate Action Directory



- Improved design operations and of transport systems
- Electrification
- Low-carbon fuel energy vectors
- Mode shift and management
- Innovation and

Transport Modes

- All Transport
- Aviation
- Maritime
- Rail
- Road
- Walking and Cycling

Geographic Scope

- Urban
- National
- International

Economic

Abolish fossil fuel tax exemptions for maritime transport

Overview:

The maritime sector enjoys waivers from fuel taxation in the vast majority of markets. The IMF (2021) categorises energy taxes below efficient taxation levels as post-tax subsidies. An efficient taxation level would correspond with tax rates applicable to other consumer products or be high enough to internalise negative externalities from fuel use, including greenhouse gas emissions. Taxation rates for transport fuels undercut efficient levels in many markets. This can be, for example, low taxes on diesel justified with the policy objective of promoting economic activity. Transport fuel taxation also generally falls short of incorporating the costs of causing climate change. However, the international shipping sector and international aviation are the only transport sectors that commonly do not pay fuel excise duties (ITF, 2020).

For the maritime sector, exemptions from taxation generally apply to international shipping and many markets also waive domestic shipping from fuel taxes (OECD, 2019). ITF (2019) takes stock of maritime subsidies, which many governments offer to the maritime sector due to its importance for national economies and high exposure to international competition. The authors identify fuel tax exemptions as one of the most prominent subsidy types made available to shipping companies, along with tonnage taxation schemes that offer more attractive conditions than regular corporate taxes applicable to other sectors.

Energy subsidies can distort markets and lead to suboptimal environmental and social outcomes. In the maritime sector, low fuel prices reduce incentives for ship owners to invest in fuel saving technologies.

Impact on CO₂ emissions:

Phasing out post-tax subsidies for maritime fuels would incentivise the sector to invest in fuel-saving measures that reduce CO₂ emissions. The effectiveness of these incentives depends on the chosen rate of maritime fuel taxation, the available measures to reduce fuel use, and their costs. The ITF (2020) provides an overview of available solutions. In the short term, solutions include using onshore renewable power at berth as well as retrofitting existing ships with energy-saving technologies with short payback times, for example, wind assistance technologies. In a longer timeframe, phasing out maritime fuel post-tax subsidies can improve the cost competitiveness of lower carbon emission fuels with taxation rates differentiated by the well-to-wake carbon intensity of fuels. Mundaca et al. (2021) evaluated impacts from a carbon price of USD 40 per ton CO₂ on emissions from maritime transport of heavy products. They project that this would achieve a 7.65% emission reduction for this segment.

struments to carbonisation

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[Feedback](#)



Transport Climate Action Directory



Improved design operations and of transport systems

Electrification

Low-carbon fuel energy vectors

Mode shift and management

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Activity Type

Costs:

Post-tax energy subsidies for the maritime sector represent foregone tax revenues for governments. Phasing in excise duties would generate income for governments. The amount raised would depend on the taxation benchmark. For instance, regulators can apply the same rate as other freight transport sectors, such as for diesel use in the road freight segment. Alternatively, a higher level that better incorporates negative externalities from fuel use may be chosen. The ITF (2019) reports that there is no global assessment about the costs of existing fuel taxation waivers for the maritime sector. The authors cite EEA (2007), which estimated the annual value of tax exemptions in the EU-25 region at EUR 3-19 billion for both domestic and international shipping.

Phasing in fuel taxes for the maritime sector would not only generate government revenues but also create costs to the maritime sector through higher energy prices. Rojon et al. (2021) reviewed studies about potential impacts on trade from increased transport costs were the shipping sector to be subject to carbon pricing. They found that carbon pricing would have similar effects as a fuel taxation rate aimed at incorporating externalities from GHG emissions. Expected impacts are not uniform across different goods. The authors found that the trade of bulk goods such as agricultural produce or construction materials would suffer most. However, the price increase for most products would remain below 1% if fuel costs and thus transport costs increased. The authors stressed that impacts would not fall evenly across regions. Small developing island states (SDIS) and least developed countries (LDC) far from major shipping corridors already pay comparably high transport charges and would experience proportionally higher impacts from increased costs. Targeted support programs for vulnerable groups may alleviate potential impacts from increased fuel costs (Marten and van Dender, 2019).

Co-benefits:

Phasing out energy post-tax subsidies for maritime fuel use would incentivise the sector to reduce fuel consumption. This would not only reduce CO2 emissions but also some air pollutant emissions.

Other considerations:

Phasing out fuel post-tax subsidies in the maritime sector can reduce negative impacts but faces challenges. The sector is highly globalised and increasing fuel taxes can prompt ship operators to bunker fuel at ports with lower taxes, undermining policy effectiveness. A global approach to maritime fuel taxation can prevent reforms resulting in fuel bunkering and carbon leakage, but there is no international consensus on a collective policy response. There are also legal challenges. For example, the Energy Tax Directive in the European Union explicitly forbids member states to tax fuel used in international shipping (this provision is under revision as of fall 2021 [EC, 2021]).

A first step towards efficient taxation of maritime fuels can be introducing fuel taxation for domestic or regional shipping in large regions with limited potential for fuel bunkering. Initiatives to phase in excise duties for domestic maritime fuel use have emerged in some markets. In the US state of California, for example, the state taxes maritime fuel purchased and used in the state until the first out-of-state destination (ITF, 2020).

struments to carbonisation

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Feedback



Transport Climate Action Directory



Improved design of operations and of transport systems

Electrification

Low-carbon fuel energy vectors

Mode shift and management

Innovation and digitalisation

Transport Mode

All Transport

Aviation

Maritime

Rail

Road

Walking and Cycling

Geographic Scope

Urban

National

International

Activity Type

Selection of related measures available in TCAD:

- > [Conditionalities in subsidies or tax subsidies in maritime transport](#)
- > [Financial instruments to support decarbonisation](#)

Cite this measure as:

ITF (2021) Transport Climate Action Directory – Abolish fossil fuel tax exemptions for maritime transport
<https://www.itf-oecd.org/policy/abolish-fossil-fuel-tax-exemptions-marit...>

Sources:

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Financial instruments to support decarbonisation

Carbon pricing of inland waterways

Feedback

THANK YOU FOR YOUR ATTENTION

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