ACT

SECTOR METHODOLOGY

Assessing low-Carbon Transition

Transport

VERSION 2.1 | March 2022

ACKNOWLEDGMENTS

ADEME and CDP warmly thank:

- the members of the Technical Working Group for their inputs and feedbacks on the methodology
- the companies involved in the road-test of the transport methodology for their contribution to the methodology improvement

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1. Introduction

1.1. CONTEXT FOR THE TRANSPORT SECTOR

The 2015 United Nations Climate Change Conference (COP21) in Paris solidified the global recognition to act on climate change with the political agreement to limit warming to a 2°C pathways, and if possible, a well below 2°C above pre-industrial levels. The 'Assessing low-Carbon Transition' (ACT) Initiative measures a company's alignment with a future low-carbon world. The goal is to drive action by companies and encourage businesses to move to a well-below 2°C compatible pathway in terms of their climate strategy, business model, investments, operations and GHG emissions management. The general approach of ACT is based on the Sectoral Decarbonization Approach (SDA) developed by the Science-Based Targets initiative (SBTi) in order to compare a company's alignment with a 2°C world, the application of which is described in the ACT Framework [1].

The transport sector accounts for 20% of the global energy-related greenhouse gas emissions, composed almost entirely of CO_2 from the combustion of oil [2]. Emissions have increased by over 30% since 2000, largely as a result of an increase in the vehicle stock by 300 million over this period. By 2050, emissions of transport sector are projected to reach 11,5 $GtCO_2$/year under current policies ambitions [3] [4]

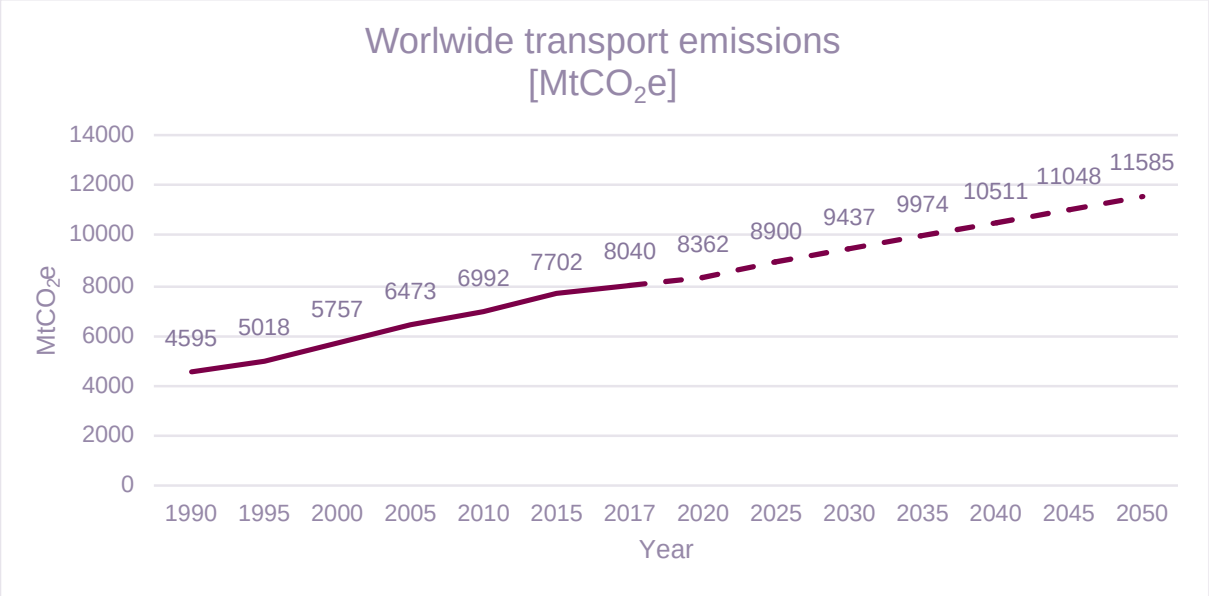


FIGURE 1 : TRANSPORT SECTOR HISTORICAL EMISSIONS AND LINEAR EXTRAPOLATION UNITL 2050 [3] [4]

The increase in transport-related CO_2 emissions is almost entirely in line with the increase in energy demand in transport, given the sector's heavy reliance on oil-based fuels, with every percentage point increase in transport energy demand bringing about a commensurate rise in emissions. One area in which progress has been slow (compared with light-duty vehicles fuel efficiency) is the fast-growing freight fleet [5]. Only four countries (Canada, China, Japan and the United States) have introduced efficiency standards for heavy-duty freight vehicles. Facilitating the introduction of such standards in other G20 countries, through international collaboration, would yield important climate, local air pollution and health benefits. A new ISO standard with provisional number ISO 14083 is under preparation and expected to be released in 2022 [6]. On top of that,

energy demand for aviation and shipping has grown robustly since 2000 (by 1.4% per year and 1.8% per year respectively), and accounts for around one-fifth of both energy demand and CO_2 emissions in transport. Energy efficiency has mitigated further rises in aviation emissions as engines and air traffic management have improved. Regulations for both aviation and shipping still lag behind those for passenger vehicles, but efforts are now being made. For example, the Energy Efficiency Design Index introduced by the International Maritime Organisation, which entered into force in 2013, is the first globally binding energy efficiency standard for shipping; it mandates a minimum 10% improvement in the energy efficiency per tonne.km of new ship designs from 2015, 20% from 2020 and 30% from 2025 [7]. In aviation, many airlines, aircraft manufacturers and industry associations have committed to voluntary, aspirational targets that would collectively achieve carbon neutral growth by 2020 and a 50% reduction in GHG emissions by 2050 (relative to 2005 levels).

However, it has to be acknowledged that heavy road transport, shipping and aviation fall among the list of the harder-to-abate sectors (with the cement, steel or plastics industries) [8], as shown on the Figure 2 the hereafter.

FIGURE 2: ILLUSTRATION OF THE MAJOR HARDER-TO-ABATE SECTORS TO MEET THE PARIS AGREEMENT[1] [8]

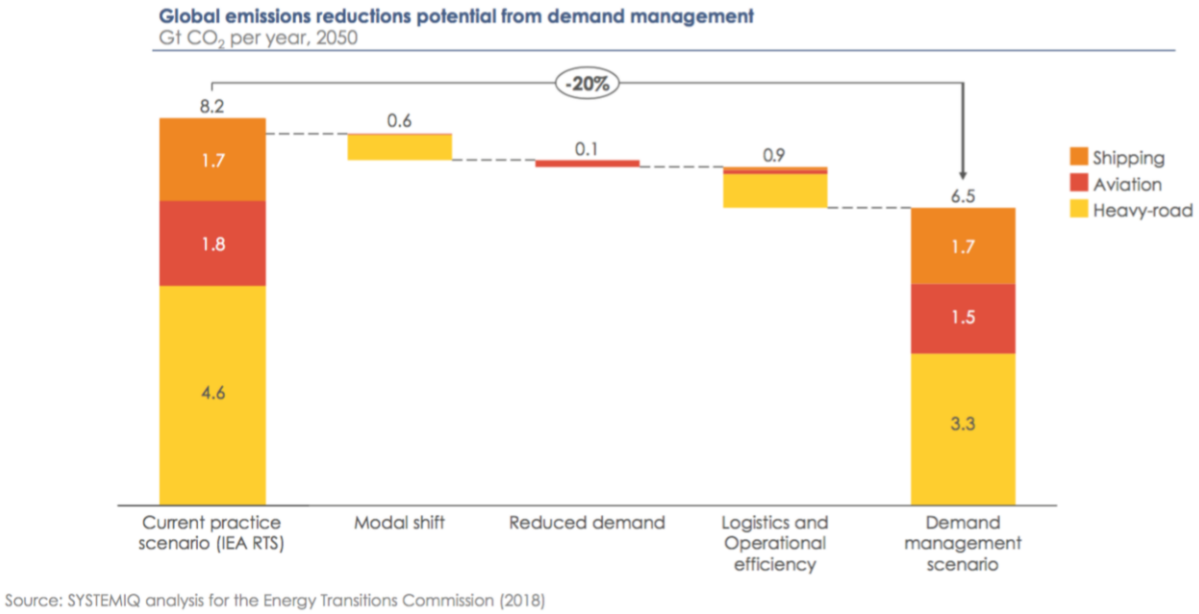
Hopefully, there is also some motive for optimism, especially regarding urban passenger transport: in some cities, modal shifts have also played a prominent and increasing role in reducing private car use. In Paris, for example, the introduction of Velib' and Autolib' programmes, which make available shared bicycles and electric-powered cars, and the development of bus and bicycle lanes, has contributed to a 25% reduction in car use. Therefore, solutions and levers to reach net zero emission-mobility by 2050 hopefully exist, and some best practices can foster the adoption of the right combinations of solutions through collaborative approaches between companies, cities and countries. Such best practices should rely on 4 strategic imperatives for reaching GHG-neutral mobility, to leverage initiatives either to avoid, shift or improve transport:

- Imperative 1: Move away from oil and other fossil fuels to focus on very-low-GHG energy
- Imperative 2: Lower the energy intensity of our mobility patterns (global economy & individual lifestyles), through better energy efficiency, modal shift and avoided mobility
- Imperative 3: Prepare the physical and IT infrastructure needed to accompany those changes
- Imperative 4: Inform, educate and train populations to embrace the transformation

Companies involvement, along with other stakeholders such as public authorities, is key to achieve these four imperatives, in particular through innovation (but not technological only). Technology will of course play a key-role, but is not necessarily the only one, as for instance the potential to reduce carbon emissions in heavy

[1] Emissions from international aviation do not fall under the Paris Agreement

freight, shipping and aviation through demand-side measures could reach 20%, which is considerably less than in the industrial sectors, but still constitutes a meaningful contribution to emissions reduction [8]. These considerations will therefore be taken into account in the definition of the methodology, through several qualitative indicators (see chapter 5).The Figure 3 below gives some more insight on this.



Source: SYSTEMIQ analysis for the Energy Transitions Commission (2018)

FIGURE 3: DEMAND MANAGEMENT CAN CUT EMISSIONS FROM THE HARDER-TO-ABATE SECTORS IN TRANSPORT BY 20% BY 2050 [8]

1.2. PHILOSOPHY OF THE METHODOLOGY

What matters most when dealing with the GHG emissions of transport is of course vehicles operations. Therefore, as it will be explained in detail in section 4:

1. Emissions linked to vehicle manufacturing, or transport infrastructures construction are excluded from ACT Transport methodology
2. ACT Transport methodology shall embrace all emissions linked to vehicles operation. For the transport sector as a whole, a Well-to-Wheel (WtW) approach is used when assessing GHG emissions related to vehicles operations, similarly to the ACT Auto sector methodology. The WtW emissions reflect not only the direct use emissions from fuel combustion (TtW: Tank-to-Wheel) but also upstream emissions related to fuel production and distribution (WtT: Well-to-Tank), including electricity generation for electric vehicles [9]. When data on WtW emissions are not available, a TtW approach shall be used taking into consideration WtT regional conversion factors.

The choice is made to gather all transport sub-sectors into one single ACT methodology. Two aspects justify this choice: (i) many companies have multi-modal activities, and (ii) several assessment modules cover aspects common to all subsectors.

2. Principles

The selection of principles to be used for the methodology development and implementation is explained in the general ACT Framework. *Table 1* recaps the principles that were adhered to when developing the methodology.

TABLE 1: PRINCIPLES FOR IMPLEMENTATION

RELEVANCE - Select the most relevant information (core business and stakeholders) to assess low-carbon transition.
VERIFIABILITY - The data required for the assessment shall be verified or verifiable.
CONSERVATIVENESS - Whenever the use of assumptions is required, the assumption shall err on the side of achieving a 2°C maximum global warming.
CONSISTENCY - Whenever time series data is used, it should be comparable over time.
LONG-TERM ORIENTATION - Enables the evaluation of the long-term performance of a company while simultaneously providing insights into short- and medium-term outcomes in alignment with the long-term.

3. Scope

3.1. SCOPE OF THE DOCUMENT

This document presents the ACT assessment methodology for the Transport (TR) sector. It includes the rationales, definitions, indicators and guidance for the sector-specific aspects of performance, narrative and trend scorings.

It was developed in compliance with the ACT Guidelines for the development of sector methodologies [10], which describe the governance and process of this development, as well as the required content for such documents.

It is intended to be used in conjunction with the ACT Framework, which describes the aspects of the methodology that are not sector-specific.

3.2. SCOPE OF THE TRANSPORT SECTOR

The Transport (TR) sector includes **transport operators and providers of transport services, both for passengers and goods**. Transport sub-sectors covered are listed in the Table 2 below, along with their NACE classifications[2]. NACE Classification is a good starting point to describe the transport sector as the distinction is made between passenger and freight. Indeed, most often, transport companies are specialized either in passenger or freight transport. Moreover, the metrics to be used in terms of low-carbon pathways differ between passenger and goods / freight transportation (e.g. passenger.km or tonne.km).

This ACT Transport methodology should be used to assess companies within the subsectors listed in Table 2. Light-duty vehicles and personal mobility by car are excluded from ACT Transport methodology as they are covered by ACT Auto methodology previously developed [9]. Transport services by car (such as hail-riding services, car-sharing services or taxis) are not covered by ACT Transport methodology for now, but could possibly be included in a future version of the methodology, when data relative to this type of passenger transport are available (low-carbon benchmarks for instance) and also when business models of such companies become more mature.

[2] "Removal services", "Postal activities under universal service obligation" and "Other postal and courier activities" are already included in the categories listed in the table.

TABLE 2 : TRANSPORT SUB-SECTORS IN ACT TR SCOPE

Categories		NACE Classification
	Passenger rail transport, interurban	49.10
	Freight rail transport	49.20
	Urban and suburban passenger land transport[3]	49.31
	Freight transport by road[4]	49.41
	Sea & coastal passenger water transport	50.10
	Sea & coastal freight water transport	50.20
	Inland passenger water transport	50.30
	Inland freight water transport	50.40
	Passenger air transport	51.10
	Freight air transport	51.21

For this first version of ACT TR, it is proposed to exclude the “Sea & coastal passenger transport”, as well as “inland passenger water transport” activities, since no aggregated data were found to design the low-carbon pathways. Some action, however, is currently being undertaken by national authorities (in France for instance) to collect information both on activity and emissions. Therefore, we propose to postpone the integration of these activities in an updated version of ACT TR.

All other types of vehicles are included in the ACT Transport methodology: trains, ships (for sea freight), airplanes, trucks and heavy-duty vehicles, all vehicles for public transport (metros, tramways, buses, coaches…).

The case of multimodal companies is described in section 6.2.

[3] Nace Class 49.31 covers all urban and suburban public transportation modes : bus, tramway, metro

[4] NACE Class 49.41 includes both class 49.41A Interurban freight transport by road, and 49.41B Proximity freight transport by road.

SPECIFIC CASE OF SUB-CONTRACTING

The case of sub-contracting is also covered by the methodology, since a company whose activity is mainly to provide transport services (not operating vehicles itself) is also fully concerned by the low-carbon transition, through its capacity to influence all the downstream value chain of transport. It particularly applies to the freight transport sector, and particularly road transport within it. The weighting of some modules used for performance scoring varies depending on the subcontracting used or not by the company. This choice is justified by the fact that some data cannot be collected by the company when the transport service is subcontracted (e.g. on Direct operations) and that other responsibilities arise when subcontracting a service (e.g. engage the subcontractor on a low carbon pathway). The way the methodology addresses this issue is detailed in the subsequent chapters.

SPECIFIC CASE OF PUBLIC SERVICE DELEGATION

In some countries, certain territories delegate the operations of a public service, including for example public transport services. This specific case concerns a non-negligible number of companies in the Transport sector and thus, the methodology has integrated the specificities of this type of activity. It particularly applies for rail and road passenger transport. The modifications in the methodology for these companies concern the modules 4, 6, 7 and 8. The weighting of these modules are adapted due to the particularities of public service delegation. Indeed, the stakeholders and their roles are different. The way the methodology addresses this issue is detailed in the subsequent chapters.

SPECIFIC CASE OF AVIATION

For almost all subsectors listed in the table above, the metrics to be chosen for calculating the decarbonisation pathways is obvious (either passenger.km or tonne.km).

However, because of the nature of air transport, cargo is often shipped alongside passengers which makes the case of aviation industry a special one (and to a certain extent, the same holds for sea and costal passenger transport) [11]. The choice of the metrics is then not straightforward and makes the assessment a bit more complex.

The International Air Transport Association (IATA) provides an allocation method of GHG emissions for passengers and freight (IATA RP 1678) [12] The allocation key recommends use of a standard weight of 100kg per passenger (including luggage) plus 50kg per available seat. In this approach, it is assumed that fuel usage is proportional to weight. So, passenger fuel usage is the ratio of total passenger weight to total weight multiplied by the total fuel used. In the framework of ACT TR, we therefore recommend that airlines apply these guidelines[5] to compute GHG emissions related to passengers' transport on the one hand, and freight transport on the other hand. The correct ratios will then respectively be in gCO_2/RPK (revenue passenger kilometer) and in gCO_2/FTK (freight tonne kilometer), according to the correct weight-based allocation.

[5] A new ISO 14083 standard "Quantification and reporting of greenhouse gas emissions of transport operations" is under progress and is intended to prevail over this choice once adopted, certainly in 2021 or 2022.

4. Boundaries

➔NOTA BENE

- Hereafter, the term “emissions” will refer to all GHG emissions (not only CO_2) which shall be measured in CO_2 equivalent.
- ACT provides guidelines concerning the scope and boundaries of the sector covered by this methodology to determine which type of GHG emissions are included or excluded. However, it does not provide tools and databases to measure and compute these emissions. In particular, the choice of emission factors does not fall under the responsibility of the ACT methodology. ACT recommends using company-specific emission factors, or if unavailable, standard emission factors recognized in the sector. As such, some recommendations but not prescriptions may appear in this document.

Emissions linked to the energy used by vehicles in operation are the main emissions source to assess for the transport sector, be it emissions of direct combustion of fuel in the vehicle engine, or emissions linked to the production of energy (electricity, hydrogen, upstream of fuel…). Well-to-wheel (WtW) emissions corresponding to energy usage are considered, to account for the upstream part of the energy value chain (Well-to-Tank – scope 3 as defined by the GHG Protocol[6] [13], ISO 14064-1 [14] and ISO 14069 [15]) and not only the energy usage itself (Tank-to-Wheel – scopes 1 and 2, as defined by the GHG Protocol [13], ISO 14064-1 [14] and ISO 14069 [15]). The WtW perspective is essential to cover the case of electric propulsion, very common for some transport sub-sectors (rail, urban transport) and that will increase in others over the coming decades (land transport, inland or sea water transport). Figure 4 illustrates the decomposition of emissions in the WtW perspective.

[6] The scopes defined by the GHG Protocol shall not be confused with the scope defined within the ACT methodology. The former refers to the reporting of GHG emissions by a company, whereas the latter refers to other kind of companies covered by this methodology.

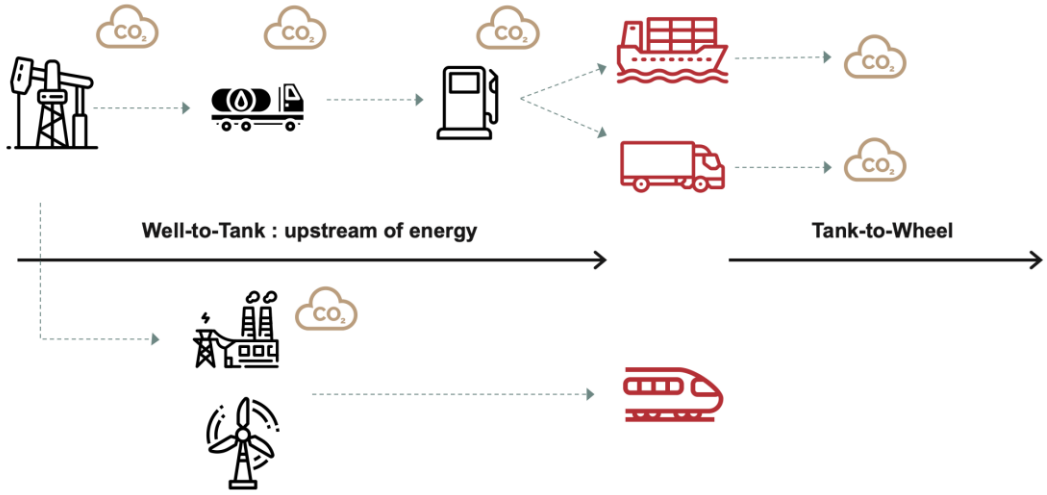


FIGURE 4: WELL-TO-WHEEL EMISSIONS

Emissions from vehicle manufacturing are not taken into account in this methodology since they are only significant compared to emissions of the use phase, in case of a low-carbon transport modes. In order to decarbonize the transport, the first priority is to shift from fossil-fuelled vehicles to low-carbon ones. The manufacturing emissions shall be added to future versions of the methodology as they will represent an increasing part of the carbon footprint of transport.

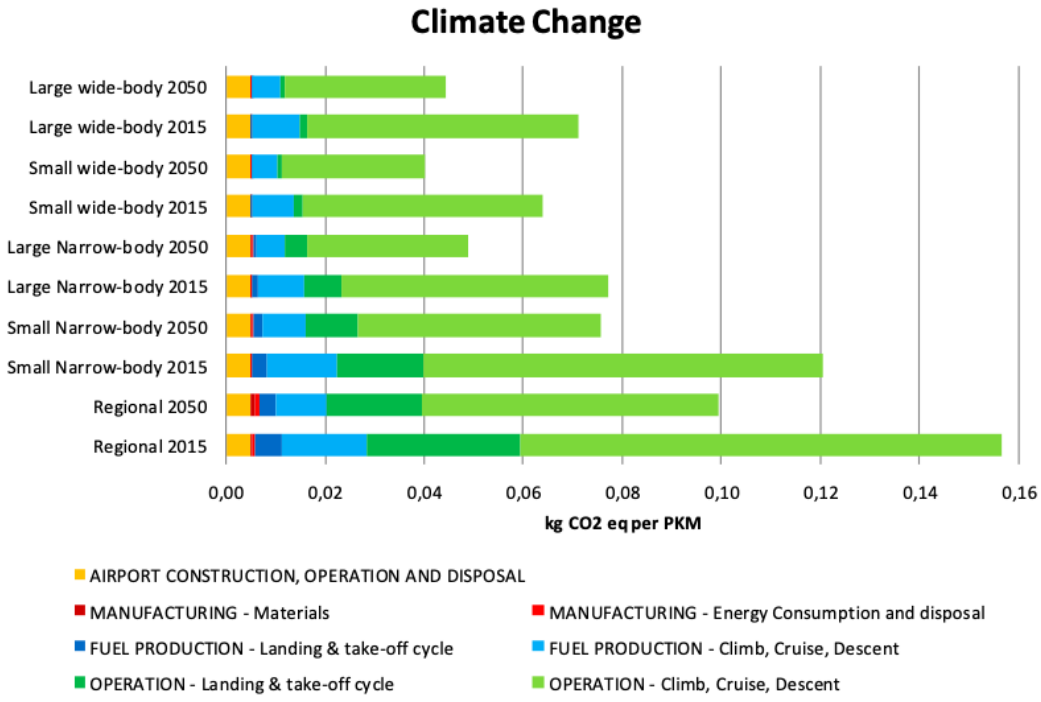


FIGURE 5: GHG EMISSIONS FROM AVIATION PER STAGE OF THE LIFE CYCLE [16]

Emissions from the construction, maintenance and operation of transport infrastructures is not taken into account in the boundaries of ACT TR. It excludes railways, airports, port terminals, roads, stations. The rationale for this exclusion is that ACT TR aims at assessing the transportation practices in operation. Infrastructures have a lower capacity to change once they are built. Moreover, the impact of infrastructure construction varies a lot depending on the mode, whether it is a ground transportation mode requiring

infrastructures all along the travel pathway (roads, railways, urban transportation network) or a transport mode requiring infrastructures only for departure and arrival points (airports, ports).

Eventually, this simplification choice is supported by some major industrial referentials in the transport sector, such as the Global Logistics Emissions Council (GLEC) framework [11] In that case regarding freight transport, the GHG emissions embedded in the manufacturing of vehicles and construction of infrastructures is not accounted for, neither for rail, road, air or inland waterways.

Subcontracting is a common practice in the transport sector, especially for freight. The ACT Transport methodology wants to focus on emissions from vehicles and the transport service performed, no matter of the scope it is accounted in. Indeed, subcontracted services are accounted in indirect emissions (scope 3) of the company but must be reported in ACT Transport methodology with the same importance as a similar transport operation performed by the company's own fleet.

Nevertheless, in that case of subcontracting (in the freight sector mostly), there is a known issue of data availability and robustness. To tackle it, the GLEC framework allocates roles to the transport chain players according to their data access [11]. It should be adopted by actors of the logistics sector (LSP or transport operators) to better manage CO_2 information and hence set more robust foundations in order to implement the ACT TR methodology.

In case of subcontracting:

- Transparency is low
- Information may be harder to obtain and verify
- Power to change the subcontractors' practices may be limited.
- Even if subcontracting provides flexibility, and allows to change easily for another subcontractor, it is likely that all subcontractors are approximately at the same level of transparency and data reporting, preventing the company from improving data collection though a change of subcontractor.

In case of owned fleets:

- High level of transparency
- Simpler data collection
- Easier to enact change

The following tables (Table 3, Table 4, Table 5) summarize the emissions boundaries for each sub-sector, with more details on what to consider for each activity of the scope.

TABLE 3 : EMISSIONS BOUNDARIES BY SUB-SECTOR (1/3 - RAIL, ROAD, URBAN AND SUB-URBAN)

Transport subsectors	Rail passenger & freight transport	Road freight transport	Urban and sub-urban passenger transport
Well-to-tank emissions	Emissions from the production[7] of: • Fossil fuels (diesel, gasoline, LNG, CNG, etc.) • Biofuels *(+ emissions from Land Use, Land-Use Change and Forestry (LULUCF))* • Electricity • Other (Hydrogen, e-Fuels[8], etc.)		
Tank-to-wheel emissions	Emissions from the combustion of: • Fossil fuels (Diesel, LNG, CNG, etc.) • Biofuels *(biogenic CO_2 emissions are not accounted for[9])* • e-Fuels *(CO_2 emissions from combustion have to be accounted for unless C was captured in the atmosphere or biomass-based)*		

TABLE 4 : EMISSIONS BOUNDARIES BY SUB-SECTOR (2/3 - SEA AND INLAND WATER)

Transport subsectors	Sea passenger & freight transport	Inland water passenger & freight transport
Well-to-tank emissions	Emissions from the production of: • Fossil fuels (HFO, diesel, LNG, etc.) • Biofuels *(+ emissions from Land Use, Land-Use Change and Forestry (LULUCF))* • Electricity • Other (Hydrogen, Ammonia, e-Fuels, etc.)	
Tank-to-wheel emissions	Emissions from the combustion of: • Fossil fuels (HFO, Diesel, LNG, etc.) • Biofuels *(biogenic CO_2 emissions are not accounted for)* • e-Fuels *(CO_2 emissions from combustion have to be accounted for unless C was captured in the atmosphere or biomass-based)*	

[7] Raw materials production, transport to production plant, transformation, transport to market, conditioning and distribution

[8] e-Fuels stand for electro-fuels. They are also called Power-to-Liquids or Synfuels. These are hydrocarbon liquid fuels produced synthesizing hydrogen from electrolysis and CO_2. Synfuels can be (near) zero-carbon if the electricity input is very low-carbon and the CO_2 from direct air capture or biomass-based (with low production emissions, including land-use changes).

[9] Other GHG biogenic emissions have to be accounted (ex: methane) see ISO 14064-1 [14] and ISO 14069 [15]

TABLE 5: EMISSIONS BOUNDARIES BY SUB-SECTOR (3/3 - AIR)

Transport subsectors	Air passenger & freight transport
Well-to-tank emissions	Emissions from the production of: • Conventional jet fuel from oil • Biofuels *(+ emissions from Land Use, Land-Use Change and Forestry (LULUCF))* • Other (synthetic fuels, e-Fuels, etc.)
Tank-to-wheel emissions	Emissions from the combustion of: • Conventional jet fuel from oil • Biofuels *(biogenic CO_2 emissions are not accounted for)* • Synthetic or e-Fuels *(CO_2 emissions from combustion have to be accounted for unless C was captured in the atmosphere or biomass-based)*

➔ EMISSIONS EXCLUDED FROM THE BOUNDARIES OF ACT TRANSPORT

- Emissions from energy that is not consumed by vehicles (e.g. warehouses, offices, …)
- Other scope 3 emissions: staff commuting, professional travels, waste disposal, purchase of goods and services (other than transport services of course), capital goods (other than vehicles)
- Vehicles manufacturing emissions
- Infrastructure construction and operations
- Refrigerant fluid leakage

RATIONALE AND GUIDANCE

Decarbonization of the transport sector is one of the major transitions in any low-carbon scenario. Raw materials and manufactured goods are transported around the globe. Personal mobility is expected to keep on increasing. Therefore, it is crucial to put the transport sector at the heart of a low-carbon transition.

Most of the emissions in the value chain of the Transport sector happen during use phase due to the combustion of fossil fuel to power vehicles. The main focus of the ACT project will therefore be on how transport operators intend to reduce their fleet emissions between now and 2050.

The way to achieve such reductions depends on the mode, the levers of decarbonisation being somewhat different. Here are some examples of decarbonisation levers acting on the supply of transport services:

- For road freight [4] [17]:
    - Systemic improvements in operations and logistics can reduce growth in road freight trucking activity and improve the on-road efficiency of truck operations (ex : GPS to optimise truck routing, driver training, use of on-board, real-time feedback devices that monitor the on-road fuel economy of trucks) and a wide range of measures to improve the utilisation of vehicles to maximise load.
    - Other measures, including autonomous trucks or the “physical Internet” – an open, shared and modular system wherein all physical assets used in goods delivery are shared across companies – could transform the road freight operations entirely, but face higher barriers to implementation.
    - Similarly, many vehicle efficiency technologies pay back their higher capital costs through fuel savings within only a few years (ex: aerodynamic retrofits, low rolling resistance tyres). For new trucks, additional technologies exist for reducing idling and for improving vehicle efficiency (ex: use of lightweight materials, improvements to truck engines, transmissions and drivetrains).
    - Finally, the use of alternative fuels and alternative fuel trucks could help achieve key energy and environmental policy goals, such as diversifying the fuel supply of road freight and reducing CO_2 and air pollutant emissions. Natural gas, biofuels (when a full LCA analysis has proven the relevance of biofuels in terms of CO_2 emissions), electricity and hydrogen are the main alternatives to oil.

- For shipping [18] :
    - Maximum deployment of currently known technologies could make it possible to reach almost complete decarbonisation of maritime shipping by 2035. It is however very optimistic and the International Maritime Organization (IMO) has established a strategy for a 50% GHG emissions reduction by 2050 [19], which is actually what governs the industry globally.
    - Alternative fuels and renewable energy can deliver much of required reductions. Advanced biofuels are already available in limited quantities. Gradually, they should be complemented by other natural or synthetic fuels such as methanol, ammonia and hydrogen. Caution is necessary regarding the type of biofuels, to ensure that the use of biofuels has a positive impact on GHG emissions on a full LCA.
    - Wind assistance could reap additional reductions. The first electric ships provide transport for short-distance routes.
    - Technological measures to improve energy efficiency of ships could yield a substantial part of the needed emission reductions.
    - Market-mature options include, among others, hull design improvements, air lubrication and bulbous bows.
    - Finally, operational measures such as ship speed reductions, smoother ship-port interfaces and increased ship size could achieve further important emission reductions.

- For aviation [8] [20]:
    - Through more efficient operations: more than a third of the planned emissions reductions could come from efficiency improvements, in planes themselves (mass reductions, more

electrical aircraft, aerodynamic improvements, etc.) and in operations (including via better air traffic management, but also at air carriers level)

- Through breakthrough innovations on aircraft configurations: battery electric and hydrogen-based planes may well play a role in short to medium-distance flights, and for an increasing range of plane sizes. Multiple plane designs are now being developed, with some experts believing that battery- or hydrogen- powered flights might become feasible for planes up to 100-seater flying 300-500 km. Radical airframe redesign could in principle make even longer- distance hydrogen-powered flight possible.
- Sustainable Aviation Fuels [21] [22]: the best current assumption is that, in the foreseeable future, international aviation will continue to rely on energy sources with a combination of gravimetric and volumetric density which can only be delivered by liquid hydrocarbon fuels. That's why most of the emissions reduction will have to come from a switch to low-carbon fuels, or Sustainable Aviation Fuels (SAF), sourced from a variety of renewable and recycled feedstocks. Most of them will be biomass-sourced (e.g. biofuels), but on the long-term, other solutions such as synthetic fuels (from water and CO_2) might be envisaged. In order for aviation fuels to be considered sustainable and not need to be offset, the fuels will need to meet ICAO's sustainability criteria. Typically, concerns for deforestation linked to palm oil production are considered very seriously by the sector. These low-carbon alternatives are significantly more expensive than traditional jet fuels, putting industry adoption and SAF production capacity development at risk. However, many airlines have concluded long-term off-take agreements with SAF suppliers and different airports have agreed to supply SAFs through hydrant systems. Notice that some corporations are also stepping in to cover the price premium of SAF, through initiatives supported by SAF producers.

- For rail [23] [24]:
  - More low-carbon electricity: as rail is the only mode of transport that is widely electrified today (even if not fully electrified, especially outside Europe), it is uniquely positioned to take advantage of the growing role that renewable forms of energy are playing in electricity mixes. Many railway operators take this further, ensuring that they source their energy from renewables, thus reducing the overall carbon intensity of the transport services they offer. Worldwide, rail operators and infrastructure managers are increasingly taking advantage of the land they own to reduce dependence on the grid by operating their own renewable energy production means (Japan Rail-East, SBB CFF FFS, ÖBB, Santiago City metro, etc.)
  - Better occupancy: trains operating high loads that minimize emissions per train-kilometer, thanks to efficient electric motors and a low-carbon power mix.
  - High passenger or freight throughput: to facilitate maximizing the emission savings for every passenger/tonne.kilometer switched from road and aviation to rail
  - Railway energy efficiency improvements: as a result of progression in diesel technology combined with operational improvements, though the curve may already be flattening out, because practical limits on train length and axle loading are being approached. Improvements to rail efficiency through more electric traction are possible.
  - Alternatives to diesel: electric batteries (Inc. hybridization), green hydrogen fuel cells, biodiesel (from different feedstocks and processes), compressed or liquefied biogas are as many solutions to replace diesel for rail transport
  - Magnetic levitation (maglev) or vacuum (hyperloop) systems might be considered relevant solutions if they become able to demonstrate their efficiency in terms of energy consumption and low GHG emissions levels

Beyond the reduction of fleet emissions through technological means, the transition of the transport sector will also imply a rethinking of the way mobility needs are encouraged and answered in society. Transport operators are challenged to present their views on modal shift, and how they see their role evolving in scenarios that imply a different client need or behaviour. Emerging business models are potential opportunities that companies will have to seize to engage in a low-carbon economy. Reversing the trend of growing emissions, especially for sub-sectors developing very rapidly (such as aviation or freight road transport), can also be addressed through new services encouraging optimized mobility, even non-mobility, like the energy performance services sold by Utilities today.

THE SPECIFIC CASE OF CARBON OFFSETTING

Carbon offsets are avoidance or reductions in emissions of carbon dioxide or greenhouse gases made by a company, sector or economy to compensate for emissions made elsewhere in the economy, where the marginal cost of decarbonisation proves to be lower [8].

Currently, the sector placing the most importance on carbon offsets is the aviation sector. Indeed, its decarbonization strategy assumes that it will achieve flat emissions (from international flights) by purchasing carbon offsets from 2021 until 2035, only later achieving emission absolute reductions within the sector itself. The scheme is known as Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) [25] It comes on top of other measures related to energy efficiency and operational improvements.

In the ACT TR methodology detailed in this document, the proposed low-carbon pathways are largely based on the IEA modelling (see section 5.3). Practically, the IEA calculates carbon budgets for the different sectors of the economy (namely power production, transport, buildings, heavy industry, etc.) **excluding the use of offsets** [4] [26]. This is based on the rationale that the IEA's economy-wide carbon budget is allocated between sectors in a cost-effective way and that **emissions reductions in other sectors are already taken into account in the overall carbon budget** including effects of land use, land-use change and forestry (LULUCF), which eliminates the possibility of using offsets.

Thus, all these elements pledge for a methodology **where emissions reductions are assumed to be achieved directly by the company**. Therefore, as the emissions intensity benchmark pathways derived from the IEA model do not allow for offsets, **the ACT TR methodology does not account for offsets when defining absolute emissions reductions.** This is in line with the general ACT philosophy which aims at assessing the low-carbon transition through real emissions reductions. It is also in line with SBTi, that does not allow offsetting as a mean toward meeting an SBT [27]

5. Construction of the data infrastructure

5.1. DATA SOURCES

In order to carry out a company level assessment, many data points need to be gathered which can be sourced from various locations. Principally, ACT relies on the voluntary provision of data by the participating companies. The data provided by the companies may be of different types. Alongside this, however, external data sources are consulted where this would streamline the process, ensure fairness, and provide additional value for verification and validation.

The ACT assessment uses the following data sources:

TABLE 6: ACT ASSESSMENT DATA SOURCES

DATA SOURCE	MAIN USE
Company data from survey	Data source for calculating indicators.
Company data from models and simulations	Data source for calculating indicators.
Company data from life cycle assessment	Data source for calculating indicators.
Company data from econometric data	Data source for calculating indicators.
Contextual and financial information database sources (E.g. Online and press news, RepRisk)	Contextual and financial information on company and events related to the company that could impact the ACT assessment

Where indicators use third-party data sources as the default option, reporting companies may provide their own data if they can provide a justification for doing so, and information about its verification status, any assumptions used and the calculation methodology.

5.2. COMPANY DATA REQUEST

In accordance with the approach presented in *1. Introduction*, the data request will be presented to companies in a comprehensive data collection format. For companies within the scope, the Well-to-Wheel approach (WTW) shall be preferred in any case when assessing direct emissions (scope 1), but also indirect emissions (scopes 2 & 3), to account particularly for emissions released due to the use of subcontracting.

The indicators have been designed in collaboration with transport operators, in order to ensure that necessary data would be mostly available. When no data was available, indicators were designed to encourage companies to set-up a collection process of the information. Companies are encouraged to use existing standards and references to build their reporting/collection process, such as the CDP Climate Change Questionnaire [28] or the GLEC Declaration [29], to make data processing easier.

5.3. PERFORMANCE INDICATORS

TRANSPORT MODES:

The choice is made to gather all transport sub-sectors into one single ACT methodology. Two aspects justify this choice: (i) many companies have multi-modal activities, and (ii) several assessment modules cover aspects common to all subsectors. Specificities of each sub-sector will be dealt with details of indicators, with for example specific definitions of decarbonization pathways, time horizons, low-carbon vehicles, business models etc.

THE CASE OF SUBCONTRACTING:

The module 2 “Direct operations” deals with investment of the company in new vehicles for its fleet. The module applies only in the case where the company operates its own fleet. If the transport service is subcontracted to another company, this module does not apply, and the analyst shall refer to module 4 “Indirect operations” instead. Module 4 stands as a mirror of the “Direct operations” module. The transport service performance is a proxy for the Direct operations of the subcontractors of the company. It assesses the carbon performance of the transport service that is being subcontracted.

In the case the company is operating its own fleet and also subcontracting part of the transport service, both modules 2 and 4 should be evaluated. The final score is the aggregation of the score of each module, weighted by the emissions of each: % of total emissions by the company’s own fleet vs. % subcontracted.

No threshold is used to trigger the assessment on either module 2 or module 4 or both.

MATURITY MATRIX:

Some modules are scored using a maturity matrix, as the assessment is qualitative. The maturity matrix contains five levels of evaluation, that are associated to scores given to the company for each indicator. For some indicators, all 5 levels of the matrix are used to score the company, while for other indicators only some levels are used, in a simpler and less granular approach (ex: level 1, 3 and 5 only). Some of the indicators might be divided into sub-dimension that are evaluated individually before the score is aggregated to obtain the indicator score.

Evaluation level	Basic	Standard	Advanced	Next practice	Low-carbon transition aligned
Score	0	0.25	0.5	0.75	1

MODULES AND INDICATORS:

Table 7 illustrates the performance indicators used by the TR sector analysis.

TABLE 7: PERFORMANCE INDICATORS OVERVIEW

		TRANSPORT SECTOR		
		PAST	PRESENT	FUTURE
CORE BUSINESS PERFORMANCE – INVESTMENT	1.TARGETS	TR 1.3 Achievement of past and current targets		TR 1.1 Alignment of transport service emissions reduction targets
				TR 1.2 Time horizon of targets
	2.DIRECT OPERATIONS	TR 2.1 Trend in past emissions intensity		
		TR 2.2 Alignment of past performance with carbon budget		
				TR 2.3 Fleet locked-in emissions
			TR 2.4 Share of low-carbon vehicles and energies	
	3.INTANGIBLE INVESTMENTS		TR 3.1 R&D in low-carbon vehicles and energies	
			TR 3.2 Investments in digital solutions for transport optimization	
			TR 3.3 Investments in human capital - training of employees	
CORE BUSINESS PERFORMANCE	4.INDIRECT OPERATIONS	TR 4.1 Trend in past emissions intensity		
		TR 4.2 Alignment of past performance with carbon budget		
			TR 4.3 Subcontracted service performance	
	5.GOVERNANCE		TR 5.1 Oversight of climate change issues	TR 5.3 Low-carbon transition plan
			TR 5.2 Climate change oversight capability	TR 5.5 Climate change scenario testing
			TR 5.4 Climate change management incentives	
INFLUENCE	6.SUPPLIERS		TR 6.1 Engagement with transport service subcontractors	
			TR 6.2 Engagement with vehicle manufacturers	
			TR 6.3 Engagement with infrastructure operators	
	7.CLIENTS		TR 7.1 Strategy to influence customers behaviour to reduce their GHG emissions	
			TR 7.2 Activities to influence customers behaviour to reduce their GHG emissions	

	8.POLICY ENGAGEMENT		TR 8.1 Company policy on engagement with trade associations TR 8.2 Position on significant climate policies TR 8.3 Interaction with local public authorities	
	9.BUSINESS MODEL		TR 9.1 Business activities shifting demand for highly emissive to low-carbon modes TR 9.2 Business activities promoting technical and operational low-carbon innovations TR 9.3 Business activities engaging clients	

MODULE 1: TARGETS (WEIGHTING: 15%)

• TR 1.1 ALIGNMENT OF TRANSPORT SERVICE EMISSIONS REDUCTION TARGETS (WEIGHTING: 10%)

DESCRIPTION & REQUIREMENTS	TR 1.1 ALIGNMENT OF TRANSPORT SERVICE EMISSIONS REDUCTION TARGETS
SHORT DESCRIPTION OF INDICATOR	A measure of the alignment of the company's emissions reduction targets with its decarbonization pathway. The indicator will identify the gap between the company's target and the decarbonization pathway as a percentage, which is expressed as the company's commitment gap.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 1.A – from [CDP C4.1a] For each target: • Base year • Start year • Target year • Percentage of reduction target from base year in absolute emissions • Percentage of reduction target achieved in absolute emissions ♦ TR 1.B – from [CDP C4.1b] For each target: • Base year • Start year • Target year • Percentage of reduction target from base year in emissions intensity • Percentage of reduction target achieved in absolute emissions intensity External sources of data used for the analysis of this indicator are: ♦ IEA ETP 2017 background scenario data [4] ♦ SDA Transport tool – sectoral benchmark pathway definition [30] ♦ ITF Transport Outlook OECD [3]

- ICCT CO_2 emissions from commercial aviation, 2018 [31]
- IATA Economic performance of the airline industry, mid-year report, 2017 [32]

TARGET TYPE	PARAMETER	INTENSITY METRIC	BENCHMARK
Scope 1+2+3 emissions intensity	$CB_{Scopes123}$	$kgCO_2e$/tonne.km or $kgCO_2e$/passenger.km	See section 6.1 (SDA MoMo, OECD)

HOW THE ANALYSIS WILL BE DONE

The analysis has two dimensions.

- Dimension 1 assesses the alignment of the company's near-term targets. Any target where the target year ≤ reporting year + 10 can be included in this dimension.
- Dimension 2 assesses the alignment of a company's long-term targets. Any target for which the target year > reporting year + 10 can be included in this dimension.
- The scoring rationale and calculation are the same for both dimensions.

The analysis is based on the difference between the company's target ($T_{Scopes\{1,2,3\}}$) and the company benchmark ($CB_{Scopes\{1,2,3\}}$) on the target year. For each sub-sector where the company has an activity, the company's target pathway ($T_{Scopes\{1,2,3\}}$) is the decarbonization over time, defined by the company's emissions reduction target. To compute T, a straight line is drawn between the base year and the company's target endpoint.

The company benchmark pathway ($CB_{Scopes\{1,2,3\}}$ is the 'company specific Scope 1+2+3 decarbonization pathway'. See *section 6.1* for details on the computation of this pathway.

The analysis compares $T_{Scopes\{1,2,3\}}$ to $CB_{Scopes\{1,2,3\}}$,, by assessing the difference between these pathways on the target year. The pathways are expressed in grams of CO_2 per unit of activity (intensity measure). The unit of activity for the transport sector Scope 1+2+3 emissions is $\mathrm{Passenger.km}$ or $\mathrm{Tonne.km}$. Where necessary, targets are normalized to this activity unit to enable the comparison. The result of the comparison is the commitment gap, shown by the blue arrow on Figure 6 below.

To score this indicator, the size of the commitment gap is compared to the maximum commitment gap, which is defined by the business-as-usual pathway ($BAU_{Scopes\{1,2,3\}}$). $BAU_{Scopes\{1,2,3\}}$ is defined as an unchanging (horizontal) intensity pathway, whereby the emissions intensity is constant after the reporting year. It is shown by the purple arrow in Figure 6 below.

Note: As explained in the Boundaries section (cf. section 4), Scope 3 GHG emissions are considered only regarding upstream value chain of energy and subcontracting activities for some companies. [8]

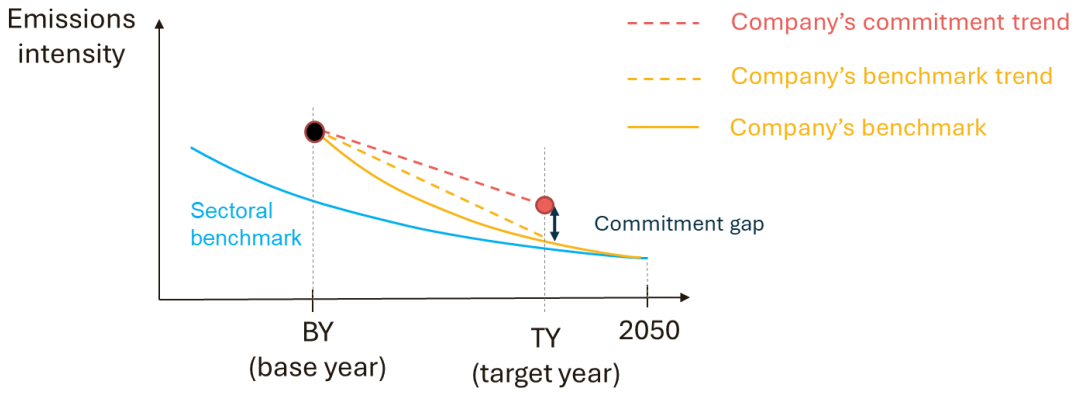


FIGURE 6: TREND RATIO AND COMMITMENT GAP

CALCULATION OF SCORE:

The score is a percentage of the maximum commitment gap. It is calculated by dividing the company's commitment gap by the maximum commitment gap (taking all values until the target year):

$$Commitment\ Gap\ \{Scopes\ 1+2+3\} = \frac{T_{Scopes\{1,2,3\}} - CB_{Scopes\{1,2,3\}}}{BAU_{Scopes\{1,2,3\}} - CB_{Scopes\{1,2,3\}}}$$

$$Score = 1 - Commitment\ Gap$$

The score assigned to the indicator is equal to 1 minus the commitment gap and is expressed as a percentage (1 = 100%). Therefore, if $T_{Scopes\{1,2,3\}} - CB_{Scopes\{1,2,3\}}$ is equal to zero, and hence the company's target is aligned with the sectoral benchmark, the maximum score is achieved.

For multimodal companies, scores obtained for each target will be aggregated by weighting proportionally to emissions that are covered by each target.

AGGREGATE SCORE: DIMENSION 1: 50%, DIMENSION 2: 50%

RATIONALE	TR 1.1 ALIGNMENT OF TRANSPORT SERVICE EMISSIONS REDUCTION TARGETS

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Scope 1+2+3 Targets are included in the ACT Transport assessment for the following reasons:

- Targets are an indicator of corporate commitment to reduce emissions and are a meaningful metric of the company's internal planning towards low-carbon transition.
- Most emissions of the transport sector lie within the responsibility boundaries of the sector. Target setting is therefore a very powerful tool to increase control over these emissions and drive their reduction.
- Targets are one of the few metrics that can predict a company's long-term plan beyond what can be projected in the short-term, satisfying ACT's need for indicators that can provide information over the long-term.

SCORING RATIONALE:

Targets for each sub-sector are quantitatively interpreted and directly compared to the low-carbon benchmarks for the sector, using the company's benchmark, build from the company's current level of emissions at base year and converging toward the 2050 value of the sectoral benchmark relevant for this company, which is further explained in section 6.1.

Targets are compared to the benchmark directly, and the relative gap is calculated compared to the business-as-usual pathway. The gap method was chosen for its relative simplicity in interpretation and powerful message, which aligns with the UNEP's narrative of the global commitment gap of the UNFCCC Climate Agreements [13]. The simple percentage score also needs no further computation to become meaningful on its own, as well as be useable for aggregation in the performance score.

To ensure comparability of the scores and replicability of the measurement, targets are compared to the benchmark at a fixed point in time, similar to all companies. This is necessary, because the method interprets linear decarbonization pathways from the targets, while the

decarbonization pathways are nonlinear. Therefore, the measurement gaps would vary over time if the time of measurement was not constant, and an undesired precedent would be set for reporting only targets with short-time horizons.

The target year was chosen in order to be aligned with SBT.

The targets and the benchmarks are specific to each sub-sector because companies define targets by sub-sector of activity.

• TR 1.2 TIME HORIZON OF TARGETS (WEIGHTING: 3%)

DESCRIPTION & REQUIREMENTS	TR 1.2 TIME HORIZON OF TARGETS
SHORT DESCRIPTION OF INDICATOR	A measure of the time horizons of company targets by sub-sectors. The ideal set of targets is forward looking enough to include a long-term horizon that includes the majority of a company's vehicles lifetimes, but also includes short and mid-term targets that incentivise action in the present.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 1.A – from [CDP C4.1a] ♦ TR 1.B – from [CDP C4.1b] For each target: • Base year • Start year • Target year The benchmark indicators involved are:

TARGET TYPE	PARAMETER	INTENSITY METRIC	BENCHMARK
Average lifetime of vehicles	L_f	Years	The Geography of Transport systems [33]

HOW THE ANALYSIS WILL BE DONE

The analysis has two dimensions:

1. A comparison of: (a) the longest time horizon of the company's targets, and (b) a default value of lifetime of vehicles composing the fleet of the company.

2. The company has interval targets that ensure both short and long-term targets are in place to incentivise short-term action and communicate long-term commitments.

DIMENSION 1 - TARGET ENDPOINT (50% OF THE SCORE):

The company's target endpoint (T_e) is compared to a default value of lifetime L_f for each type of vehicle composing the fleet of the company.

The company's target endpoint (T_e) is equal to the longest time horizon among the company's targets, minus the reporting year:

$$T_e = Longest\ target\ time\ horizon - reporting\ year$$

Default values L_f are defined as follows [33]:

VEHICLE	LIFETIME L_f
Truck	10 years
Train	30 years
Ship	30 years
Aircraft	30 years

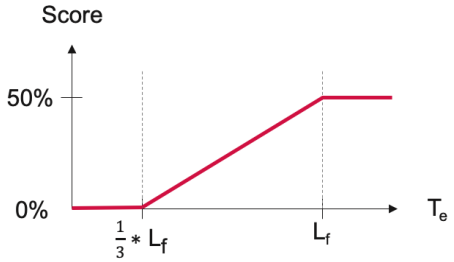
If the company operates several modes, it can either:

- Set targets by modes, and so a separate analysis is done for each mode: the target endpoint T_e of the targets the company has set for the given mode is compared to the lifetime L_f of this mode.
- Set aggregated targets and so T_e is compared to the longest lifetime L_f. The horizon gap is used to rate the company on the time horizon relevance of its most long-term target.

$$Horizon\ gap = L_f - T_e$$

The company's target endpoint is scored according to the following scoring table:

HORIZON GAP	SCORE
$T_e > L_f$	50%
$33\% * L_f < T_e < L_f$	$75\% * \frac{T_e}{L_f} - 25\%$
$T_e \leq 33\% * L_f$	0%



Note: In case of subcontracting, the company is free to change subcontractors easily, therefore the company is more flexible. However, a change in subcontractors, while remaining in the same transport mode does not change the time scales the company should be considering when setting targets. Therefore, the definition of this indicator is valid for companies subcontracting the transport service. A modal shift has possibly larger impacts on the business model and translates into a new situation of the company, for which a new assessment may be more relevant.

DIMENSION 2 - INTERMEDIATE HORIZONS (50% OF THE SCORE):

For each sub-sector, all company targets and their endpoints are calculated and plotted. To get full score, the company must not have time gaps larger than 5 years between targets horizons, starting from the reporting year as baseline.

The company's targets are compared according the following scoring table:

INTERMEDIATE TARGET GAPS	SCORE
All the gaps during T_e are equal or less than 5 years	50%

All the gaps during 80% of T_e are equal or less than 5 years	40%
All the gaps during 60 % of T_e are equal or less than 5 years	30%
All the gaps during 40 % of T_e are equal or less than 5 years	20%
All the gaps during 20 % of T_e are equal or less than 5 years	10%
All the gaps of 5 years or less do not reach 20 % of T_e or there is no such gaps disclosed by the company	0%

An example is illustrated in Figure 7.

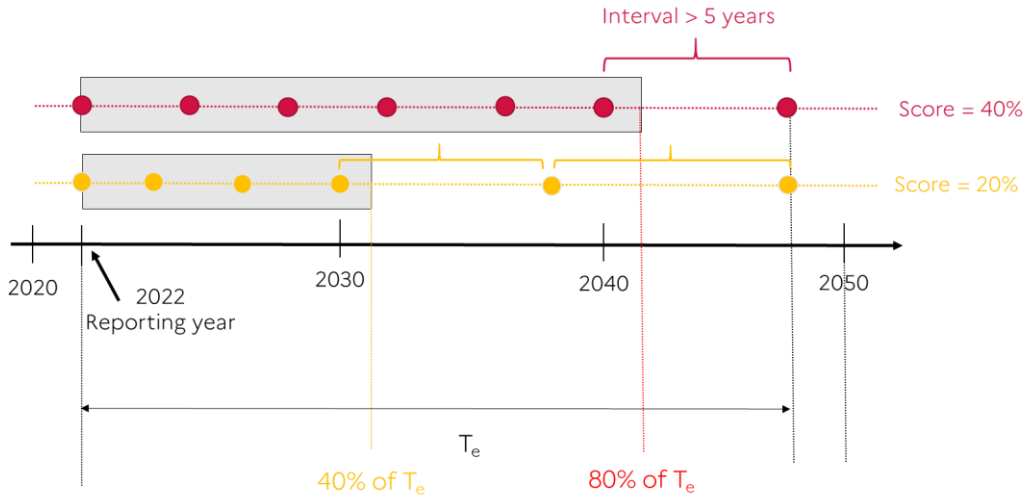


FIGURE 7 : EXAMPLES OF HORIZONS OF INTERMEDIATE TARGETS SET BY THE COMPANY AND CORRESPONDING SCORES ON DIMENSION 2 OF THE INDICATOR 1.2

FOR ALL CALCULATIONS:

- Targets that do not cover > 95% of the company's sub-sector activity-related emissions are not preferred in the calculations. If these types of targets only are available, then the score is adjusted downwards equal to the % coverage that is missing. Figure 8 graphically illustrates emissions covered by the targets:

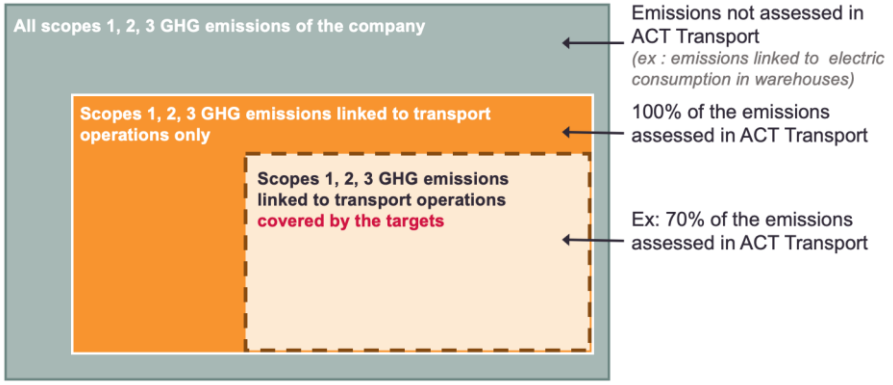


FIGURE 8 : ILLUSTRATION OF EMISSIONS COVERED BY TARGETS THAT ARE CONSIDERED FOR CALCULATION

AGGREGATE SCORE - DIMENSION 1: 50%, DIMENSION 2: 50%

RATIONALE	TR 1.2 TIME HORIZON OF TARGETS
RATIONALE OF THE INDICATOR	**RELEVANCE OF THE INDICATOR:** The time horizon of targets is included in the ACT TR assessment for the following reasons: ♦ The target endpoint is an indicator of how forward looking the company's transition strategy is. ♦ Depending on the transport sub-sector, fleet vehicles can have a long average lifetime, which implies large amounts of CO_2 emissions in the future. Therefore, emissions targets are to be set with time horizons long-term enough to cover the lifetime of the fleet vehicles. ♦ Aside from communicating long-term commitments, short-term action needs to be incentivised. This is why short-time intervals between targets are needed.

SCORING RATIONALE:

The score of this indicator is tied to how the target timeline compares to the lifetimes of the company's vehicles portfolio (or the vehicles on which its transport services depend when subcontracting to transport companies). The company has a 'horizon gap' if its targets do not include a significant part of its fleet portfolio or do not go up to this lifetime.

• TR 1.3 ACHIEVEMENT OF PAST AND CURRENT TARGETS (WEIGHTING: 2%)

DESCRIPTION & REQUIREMENTS	TR 1.3 ACHIEVEMENT OF PAST AND CURRENT TARGETS
SHORT DESCRIPTION OF INDICATOR	A measure of the company's historical target achievements and current progress towards active emissions reduction targets. The ambition of the target is not assessed here with this indicator.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 1.A – from [CDP C4.1a] For each target: • Base year • Start year • Target year • Percentage of reduction target from base year in absolute emissions • Percentage of reduction target achieved in absolute emissions ♦ TR 1.B – from [CDP C4.1b] For each target: • Base year • Start year • Target year • Percentage of reduction target from base year in emissions intensity • Percentage of reduction target achieved in absolute emissions intensity

HOW THE ANALYSIS WILL BE DONE

For the performance score, this indicator is assessed on two dimensions, whereby companies achieve the maximum score if:

DIMENSION 1: The company has achieved all previous emissions reduction targets with a target year in the past 10 years. If all past targets are indeed achieved, the highest score is obtained. If not, the achievement ratio a is computed as follows:

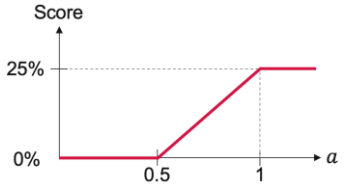
$$a = \frac{E(t_{ref}) - E(t_{horizon})}{E(t_{ref}) - T(t_{horizon})} \geq 0.5$$

where $E(t_{ref})$ is the level of emissions of the company on the year the target was set, $T(t_{horizon})$ is the target the company set (a given level of emission at a given horizon year, now past), and $E(t_{horizon})$ is the effective level of emission reached by the company on the year of horizon of the target.

A threshold is set for scoring at 0.5: if the company has achieved less than 50% of its own past target, it shall receive a zero score.

If the company has several past targets over the last 10 years, the ratio a shall be computed for each target, and the average of all a ratio shall be kept for scoring.

Achievement ratio	Score
$a \geq 1$	25%
0.5 < a< 1	25%*(2*a-1)
$a \leq 0.5$	0%

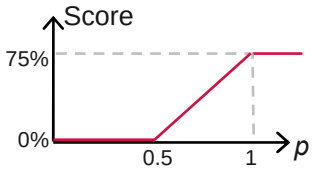


DIMENSION 2: The company is currently on track to meet an existing emissions reduction target, whereby the ratio between the remaining time period and the level remaining to target achievement (Progress Ratio p) is not lower than 0.5:

$$p = \frac{1 - \%\ time}{1 - \%\ complete} \geq 0.5$$

The highest score is attained if p is 1 or higher. A percentage score is assigned for any value between 0.5 and 1.

Progress ratio	Score
$p \geq 1$	75%
$0.5 < p < 1$	75%*(2*p-1)
$p \leq 0.5$	0%



AGGREGATE SCORE - DIMENSION 1: 25%, DIMENSION 2: 75%

FOR ALL CALCULATIONS:

- Companies which do not have targets with target years in the past but only with target years in the future are not assessed on dimension 1, but only on dimension 2.
- Targets that do not cover >95% of (i) 'Scope 1+2 emissions for propulsion energy' or (ii) 'Scope 3 upstream value chain of energy, or subcontracted activity' are not preferred in the calculation of dimension 2, but are not penalized, as other indicators already penalize for not having a large coverage in the target.
- If the company has multiple targets in different scopes that can be assessed according to the above criteria, then the score is an average score based on the progress ratios of all targets assessed.

The performance score does not assess the ambition level of previous targets, and therefore dimension 1 has only a low weight in the final performance score. This information is also qualitatively assessed in the narrative analysis, which will take another look at the following dimensions:

- Achievement level: To what degree has the company achieved its previously set emissions reduction targets.
- Progress level: To what degree is the company on track to meet its currently active emissions reduction targets.
- Ambition level: What level of ambition do the previously achieved emissions reduction targets represent.

RATIONALE **TR 1.3 ACHIEVEMENT OF PAST AND CURRENT TARGETS**

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

The historical target ambition and company performance is included in the ACT TR assessment for the following reasons:

- The ACT assessment looks to the past only to the extent that it can inform on the future. This indicator is future-relevant by providing information on the organizational capability to set and meet emissions reduction targets. Dimension 1 of this indicator adds credibility to any company claim to commitment to a science-based reduction pathway.
- Indicators 1.1 and 1.2 look at targets into the future, setting a theoretical view of the company. Dimension 2 of this indicator adds value to the analysis by doing a concrete comparison of the company's current performance against their targets in the reporting year.

Besides, we acknowledge a difficulty to assess this indicator properly because of potential changes in perimeter (through M&A and asset sales) over the years. Such hurdles must not prevent companies to measure their progress over time because it is the very first step towards low-carbon transition.

Different approaches do exist to address this issue:

- To ensure **consistent tracking of performance** over time, the SBT Initiative recommends recomputing the targets to reflect significant changes that would otherwise compromise the target's relevance
- Other solutions can be applied to simplify the recomputation of targets, considering for instance the same reduction % for the acquired assets, from the date of acquisition only (the company not being responsible for the past emissions of these assets)

SCORING RATIONALE:

Quantitative interpretation of past and current target achievement is not straightforward. The performance score thus makes no judgement of past and current target ambition and leaves it to the narrative analysis to make a meaningful judgement on the ambition level of past targets.

- Dimension 1 of the performance score will penalize companies who have not met previous targets in the past 10 years, as this means the company has lower credibility when setting ambitious science-based targets.
- Dimension 2 uses a simple ratio sourced from existing CDP data points (CC 3.1e) in order to compare targets. The threshold 0.5 was chosen as it allows companies some flexibility with respect to the implementation of the target, but it does have the ability to flag companies that are definitely not on track towards achievement. When p is lower than 0.5, the company needs to achieve more than twice the reduction per unit of time than the target originally envisioned.

MODULE 2: DIRECT OPERATIONS (WEIGHTING: OWN FLEET = 30% OR SUBCONTRACTING = 0%)

NOTE

This module is relevant only when all or part of the transport service is performed by the company's own fleet (even in the case of a leased fleet).

In case of the activity is subcontracted, this indicator is not applicable (see module "Indirect operations" in the latter case).

• TR 2.1 TREND IN PAST EMISSIONS INTENSITY (WEIGHTING: OWN FLEET = 4% OR SUBCONTRACTING = 0%)

DESCRIPTION & REQUIREMENTS	TR 2.1 TREND IN PAST EMISSIONS INTENSITY
SHORT DESCRIPTION OF INDICATOR	This metric assesses the alignment of the company's recent emission intensity trend for scopes 1+2+3* emissions with the trend of its decarbonization pathway. The recent emission intensity trend is computed over a 5-year period to the reporting year (reporting year minus 5 years). * Scopes 1+2+3 here cover only emissions from energy usage, from the upstream value chain of energy.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 2.A – Variation of [CDP C5.1, C6.1, C6.3, C6.5, C-TS6.15, C-TS8.5] • Annual emissions (Scope 1+2+3) (metric tonne CO2e) [Past and present] • Annual past activity (tonne.km) [Past and present] • Year of past and current data External sources of data used for the analysis of this indicator are: ♦ IEA ETP 2017 background scenario data [4] ♦ SDA Transport tool – sectoral benchmark pathway definition [30] ♦ ITF Transport Outlook OECD [3] ♦ ICCT CO_2 emissions from commercial aviation, 2018 [31] ♦ IATA Economic performance of the airline industry, mid-year report, 2017 [32]

The benchmark indicators involved are:

TARGET TYPE	PARAMETER	INTENSITY METRIC	BENCHMARK
Scope 1+2+3 emissions intensity	$CB_{Scopes123}$	$kgCO_2e$/tonne.km or $kgCO_2e$/passenger.km	See section 6.1 (SDA MoMo, OECD)

HOW THE ANALYSIS WILL BE DONE

The analysis is based on the difference between the company's recent (reporting year minus 5 years) emissions intensity trend gradient ($CR'_{Scopes123}$) and the company's decarbonization pathway trend gradient ($CB'_{Scopes123}$) in the short-term (reporting year plus 5 years). The emissions intensity of the company at the reporting year (CEI_Y) and the sectoral benchmark value of emissions intensity in 2050 (SB_{2050}) are also considered to calculate the company's score.

$CR'_{Scopes123}$ is the gradient of the linear trendline of the company's recent Scope 1+2+3 emissions intensity ($CR_{Scopes123}$).

$CB'_{Scopes123}$ is the gradient of the linear trendline of the company benchmark pathway for emissions intensity ($CB_{Scopes123}$). The company's benchmark is defined from the company's current emissions on reporting year, and from the sectoral benchmark presented in section 6.1

Figure 9 illustrates the various curves and trends used in this indicator.

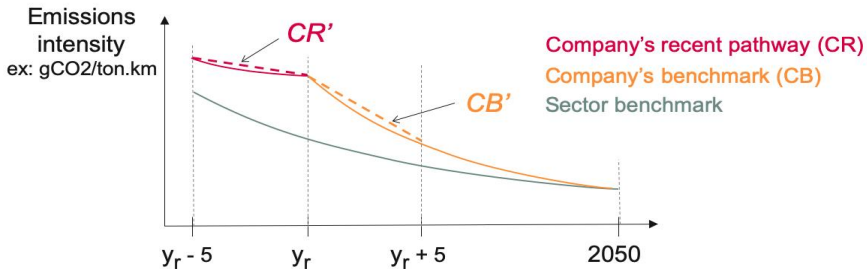


FIGURE 9: COMPARISON OF TREND IN PAST EMISSIONS AND TREND IN COMPANY'S BENCHMARK

The difference between $CR'_{Scopes123}$ and $CB'_{Scopes123}$ will be measured by their ratio (r_T). This is the 'Scope 1+2+3* Transition ratio' which is calculated by the following equation, with the symbol ' used to denote gradients:

$$r_T = \frac{CR'_{Scopes123}}{CB'_{Scopes123}}$$

If the transition ratio is a negative number, it means the company's recent emissions intensity has increased (positive $\mathrm{CR'_{Scopes123}}$) and a zero score is awarded by default. If the company's recent emissions intensity has decreased, the transition ratio will be a positive number. The value of the ratio is capped at 1, which represents the maximum score. A score is assigned as a percentage value equal to the value of $\mathrm{r_T}$ (1 = 100%).

Four different cases are to be taken into consideration:

- Case #1: $CR'_{\text{Scopes123}}$ is positive → Score = 0 (whatever the r_T and CEI_Y values)
- Case #2: $CR'_{\text{Scopes123}}$ is negative and r_T and $\in]0; 1[$ and CEI_Y is higher than SB_{2050} → Score = r_T (expressed as a percentage)
- Case #3: $CR'_{\text{Scopes123}}$ is negative and $r_T \geq 1$ and CEI_Y is higher than SB_{2050} → Score = 100 %
- Case #4: $CR'_{\text{Scopes123}}$ is negative and CEI_Y is lower than SB_{2050} → Score = 100 % (whatever the r_T value)

RATIONALE	TR 2.1 TREND IN PAST EMISSIONS INTENSITY
RATIONALE OF THE INDICATOR	**RELEVANCE OF THE INDICATOR:** Trend in past emissions intensity is included in the ACT TR assessment for the following reasons: ♦ The trend shows the speed at which the company has been reducing its emissions intensity over the recent past. Comparing this to the decarbonization pathway gives an indication of the scale of the change that needs to be made within the company to bring it onto a low-carbon pathway. ♦ While ACT aims to be future-oriented, ACT does not want to solely rely on projections in a way that would make the analysis too vulnerable to uncertainty. Therefore, this particular indicator, along with projected emissions intensity and absolute emissions, forms part of a holistic view of company emissions performance in the past, present, and future. **SCORING RATIONALE:** While 'gap' type scoring is preferred for any indicator where possible, this indicator only looks at past emissions, and would therefore require a different baseline in order to generate a gap analysis. Thus, instead of a gap analysis, a trend analysis is conducted. An advantage of the

trend analysis is that it does not require the use of a business-as-usual pathway to anchor the data points and aid interpretation, as trends can be compared directly, and a score can be directly correlated to the resulting ratio.

In this indicator the two trends compared are not measured over the same period: the actual performance of the company is measured over the past 5 years before the reporting year, while the trend of the company benchmark is measured over the future 5 years after the reporting year. The rationale of comparing two different periods of time is the following:

- The benchmark trend shows the path the company should direct itself quickly, while the close-past trend shows what the company has been able to achieve lately. Because of inertia to change, the company future performance is likely to be similar to its past/current performance. Comparing the two periods of time highlight the credibility of the company's ambitions, assessing whether the changes needed can be smooth, or have to be radical.
- The choice of minus 5 years / plus 5 years is motivated by the fact that 5 years is long enough to build a trend and smooth possible annual variations, while also remaining short enough to capture the current dynamic of the company and the short-term actions needed. It is a relevant time scale comparing to companies' business projections.

TR 2.2 ALIGNMENT OF PAST PERFORMANCE WITH CARBON BUDGET (WEIGHTING: OWN FLEET = 4% OR SUBCONTRACTING = 0%)

DESCRIPTION & REQUIREMENTS	TR 2.2 ALIGNMENT OF PAST PERFORMANCE WITH CARBON BUDGET
SHORT DESCRIPTION OF INDICATOR	This metric assesses the alignment of the company's recent absolute emissions for scopes 1+2+3* with the past carbon budget. The recent emissions and carbon budget are measured over a 5-year period to the reporting year (reporting year minus 5 years). * Scopes 1+2+3 here cover only emissions from energy usage, from the upstream value chain of energy.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 2.A – Variation of [CDP C5.1, C6.1, C6.3, C6.5, C-TS6.15, C-TS8.5] • Annual emissions (Scope 1+2+3) (metric tonne CO2e) [Past and present] • Annual past activity (tonne.km) [Past and present] • Years of past and current data External sources of data used for the analysis of this indicator are: ♦ IEA ETP 2017 background scenario data [4]

- SDA Transport tool – sectoral benchmark pathway definition [30]
- ITF Transport Outlook OECD [3]
- ICCT CO_2 emissions from commercial aviation, 2018 [31]
- IATA Economic performance of the airline industry, mid-year report, 2017 [32]

The benchmark indicators involved are:

TARGET TYPE	PARAMETER	INTENSITY METRIC	BENCHMARK
Scope 1+2+3 emissions intensity	Sectoral benchmark $SB_{Scopes\{1,2,3\}}$	$kgCO_2e$/tonne.km or $kgCO_2e$/passenger.km	See section 6.1 (SDA MoMo, OECD)

HOW THE ANALYSIS WILL BE DONE

Use past data on emissions for the assessed company and compare it to the sector benchmark. Basically, one should calculate the blue area of the graph in Figure 10, multiplied by the company's activity during the corresponding years. Then, compare this area to the carbon budget during the same period.

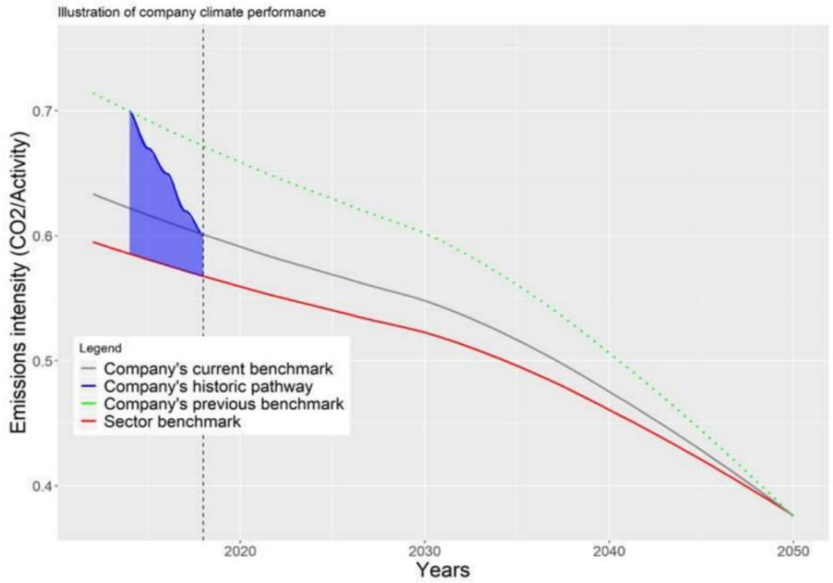


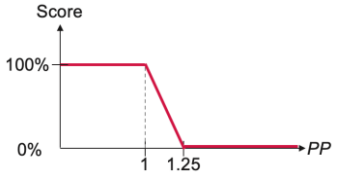
FIGURE 10: COMPARISON OF PAST PERFORMANCE AND CARBON BUDGET DEFINED BY SECTOR BENCHMARK

The ratio PP is computed:

$$PP = \frac{\int_{y_r-5}^{y_r}(CR_{Scopes123} \times A)}{\int_{y_r-5}^{y_r}(SB_{Scopes\{1,2,3\}} \times A)}$$

Where $CR_{Scopes123}$ is the past carbon intensity of the company, $SB_{Scopes\{1,2,3\}}$ is the sector benchmark intensity, and A is the transport activity.

Past performance ratio	Score
$PP \leq 1$	100%
$1 < PP \leq 1.25$	$(-4 * PP + 5) * 100\%$
$PP > 1.25$	0%



RATIONALE	TR 2.2 ALIGNMENT OF PAST PERFORMANCE WITH CARBON BUDGET
RATIONALE OF THE INDICATOR	**RELEVANCE OF THE INDICATOR:** Assessing the level of past emissions as opposed to the benchmark (for the past years where the benchmark is available) helps the company having an overview of its emissions exceedance in the recent past. This indicator also intends to remind that the carbon budget is set for the global economy and that each sector and each company has a defined carbon budget that cannot be exceeded to reach the overall long-term objective of limiting global warming. The sector benchmark is defined for the next years, assuming it was respected for the past years where it was already defined. The emissions overshooting the benchmark in the past correspond to accumulated CO_2 that will remain in the atmosphere for decades. Hence, a company having already exceeded the benchmark should further its efforts to decrease its emissions in the near and remote future. This indicator is a ratio of the values of the emissions over a period of time in the past, as companies are very unlikely to provide data for the same period. What is considered here is the emission excess compared to the carbon budget, proportionally to the period of time.

- **TR 2.3 FLEET LOCKED-IN EMISSIONS (WEIGHTING: OWN FLEET = 15% OR SUBCONTRACTING = 0%)**

DESCRIPTION & REQUIREMENTS	TR 2.3 FLEET LOCKED-IN EMISSIONS

SHORT DESCRIPTION OF INDICATOR

A measure of the company's cumulative GHG emissions from the reporting year to reporting year + 15 years from existing and planned fleet. The indicator will compare this to the emissions budget entailed by the company's decarbonization pathway. The vehicles to be considered for the calculation of this indicator are the same as the ones defined by the scope (section 3.2) and limited to the boundaries defined in section 4.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- TR 2.B - Variation of [CDP C-TS9.3]

  For each year of the investment plan:
  - Year described
  - Number of new vehicles deployed/planned to be deployed in the year [Present and future]
  - Number of vehicles decommissioned/planned to be decommissioned in the year [Present and future]
  - Number of net total vehicles in operation in the fleet in the year [Present and future]
  - Annual secured/planned activity of Fleet (tonne.km) [Future]
  - Planned activity (tonne.km) [Future]
  - Emissions from present and planned assets (metric tonne CO2e) [Present and future]

External sources of data used for the analysis of this indicator are:

- IEA ETP 2017 background scenario data
- SDA Transport tool – sectoral benchmark pathway definition
- ITF Transport Outlook OECD
- IPCC CO_2 emissions from commercial aviation, 2018
- IATA Economic performance of the airline industry, mid-year report, 2017

The benchmark indicators involved are:

TARGET TYPE	PARAMETER	INTENSITY METRIC	BENCHMARK

Scope 1+2+3 emissions intensity	$CB_{Scopes123}$	$kgCO_2e$/tonne.km or $kgCO_2e$/passenger.km	See section 6.1 (SDA MoMo, OECD)
Transport activity	A_P	tonne.km or passenger.km	See section 6.1 (SDA MoMo, OECD)

HOW THE ANALYSIS WILL BE DONE

The analysis is based on the ratio between the company's emissions from existing and planned fleet for the 15 forthcoming years after the reporting year (Locked-in Emissions from fleet $LE_F(y_r + 15)$) and the emissions budget entailed by the company's carbon budget ($B(y_r + 15)$) over the same period of time. It does not matter if the investment plans cover the whole period of $y_r + 15$, or is shorter or exceeds it. The horizon of the investment plans usually depends on the mode and the lifespan of vehicles. Typically, a truck put into service in 2025 will still operate in 2035-40, an aircraft delivered in 2025 will still fly in 2050, etc.

$LE_F(y_r + 15)$ represents the total cumulative emissions implied on the period of operation of currently active and confirmed planned fleet vehicles that are going to be commissioned in the near future. If unknown, the commissioning year of vehicles is estimated from investment plans.

$LE_F(y_r + 15)$ is calculated by calculating the area under the company's future locked-in emissions curve. This curve is derived from the company's intensity pathway for its transport services CI, multiplied by the secured transport activity that is performed by the currently active and confirmed planned fleet A_S:

$$LE_F(y_r + 15) = \int_{the\ reporting\ year}^{y_r+15} A_S * CI$$

Figure 11 illustrates locked-in emissions of one vehicle and of the whole fleet.

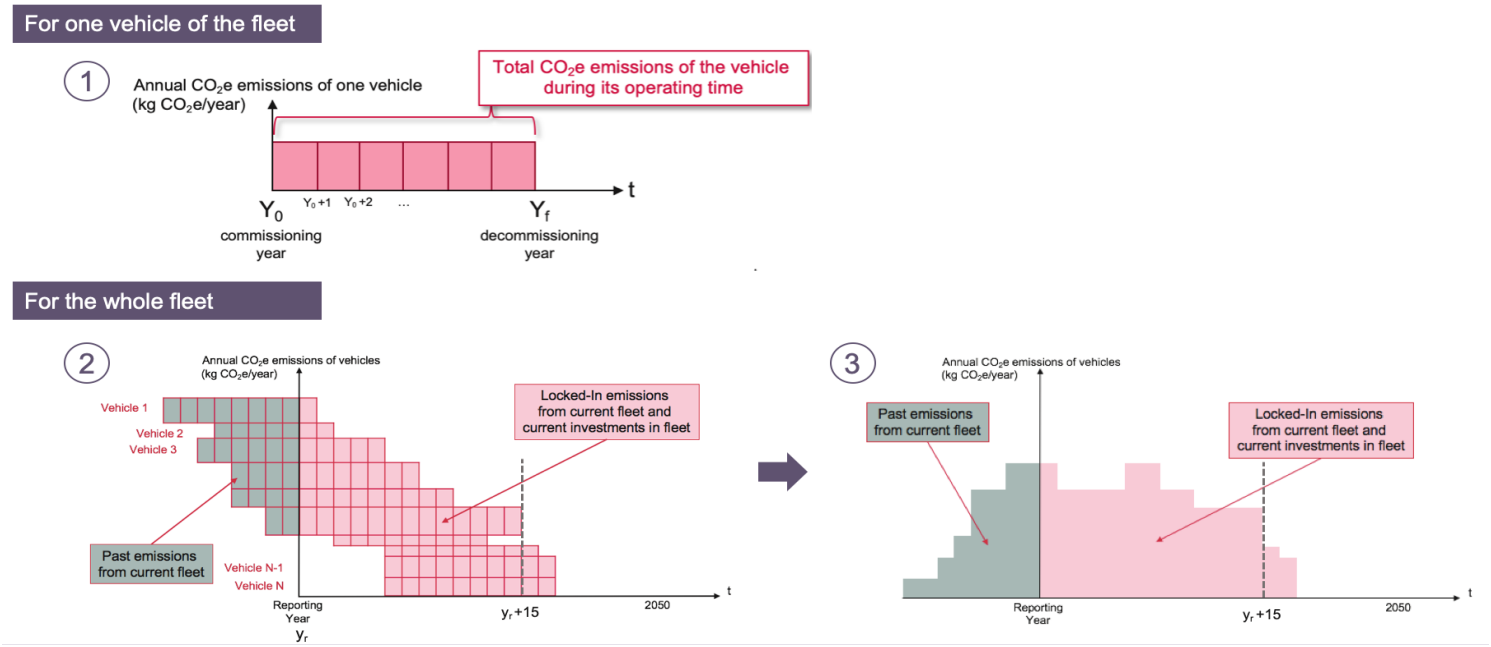


FIGURE 11 : COMPUTING LOCKED-IN EMISSIONS FROM FLEET

$B(y_r + 15)$ is calculated as the company's carbon budget up to reporting year + 15 years, which is derived by taking the area under the absolute emissions reduction curve. This curve is derived from the company benchmark pathway ($CB_{Scopes123}$) by multiplying it by the projected transport activity A_P for the company:

$$B(y_r + 15) = \int_{the\ reporting\ year}^{y_r+15} A_P * CB_{Scopes123}$$

The company's benchmark is computed from the company's current emissions at reporting year and the level of carbon intensity defined by the sectoral benchmark presented in section 6.1. The carbon budget is illustrated in Figure 12 below.

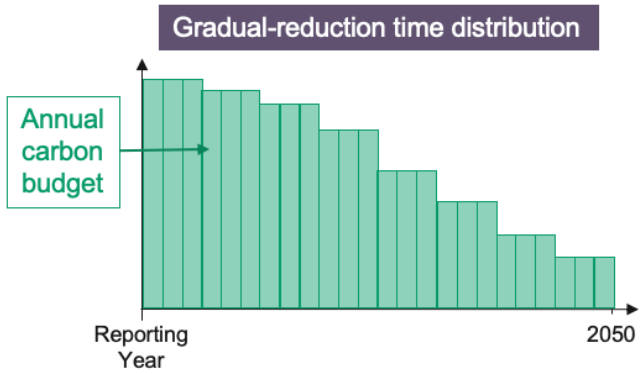


FIGURE 12 : CARBON BUDGET DERIVED FROM THE COMPANY'S BENCHMARK

Depending on the data availability, the computation of these areas may not be as straightforward as the equations shown and will be done by approximation, but the principles will hold.

The locked-in ratio (r_{LB}) is illustrated in Figure 13, and calculated as follows:

$$r_{LB}(y_r + 15) = \frac{LE_F(y_r + 15)}{B(y_r + 15)}$$

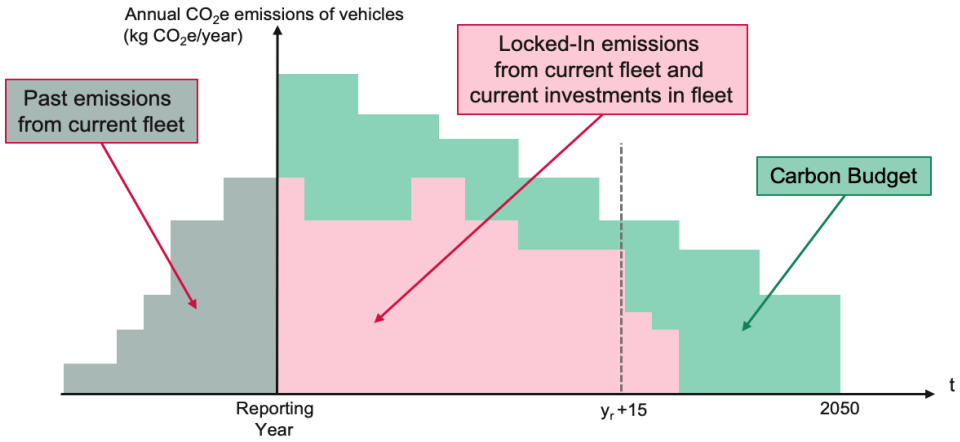


FIGURE 13 : ILLUSTRATION OF THE LOCKED-IN RATIO

To be able to give a score regarding the amount of carbon budget consumed, the level of activity performed with the fleet needs to be taken into account. Therefore, in a similar way to locked-in emissions, the level of activity that the company is able to perform thanks to the vehicles in its current and planned fleet, per year. It is called the secured activity and is illustrated in Figure 14.

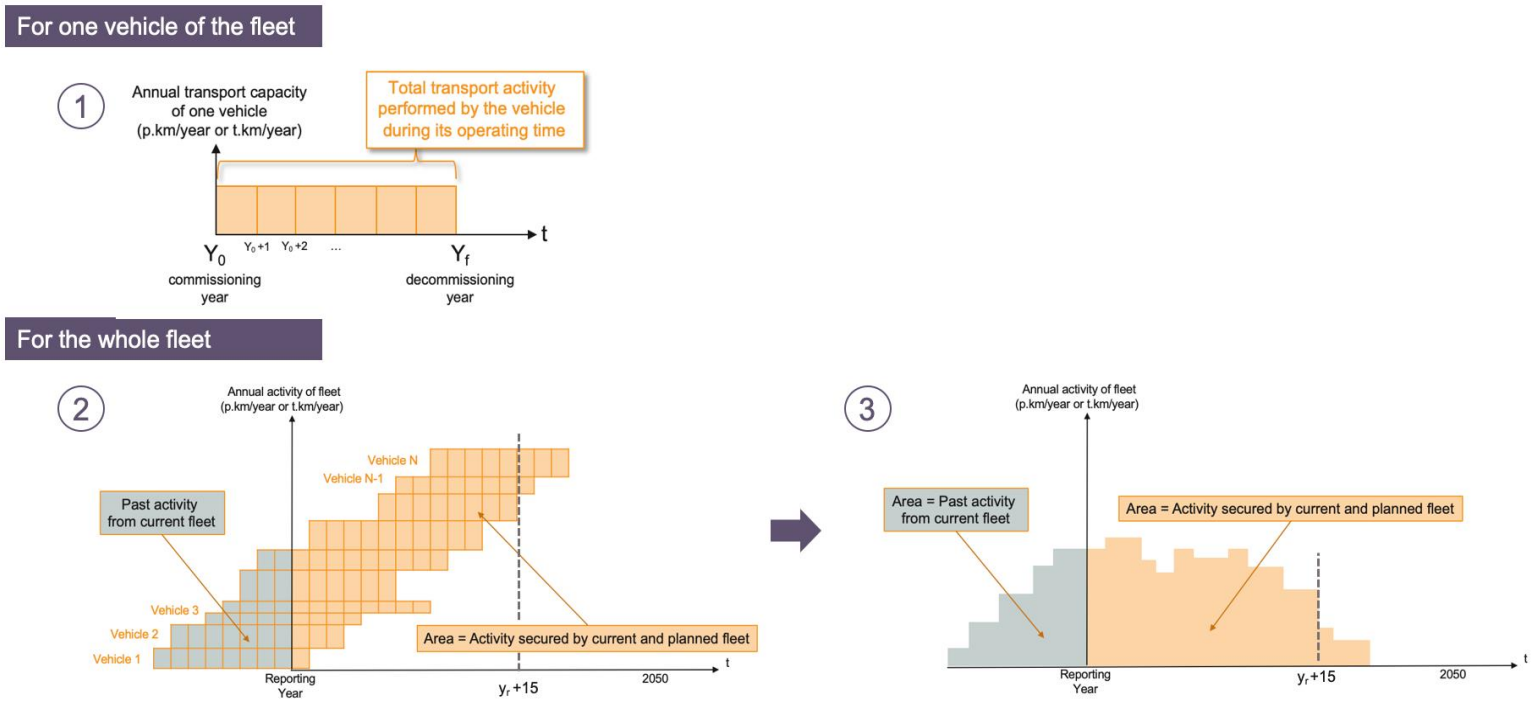


FIGURE 14 : SECURED ACTIVITY BY THE FLEET

The secured activity is compared to the level of activity projected by the company up to reporting year + 15 years. If the company does not have any projections or not up to reporting year + 15 years, it will be considered that its market share will remain constant and its activity will evolve at the same rate as the sector and sectoral projection of activity are used *(see section 6.1)*. The company's projected activity is illustrated in Figure 15.

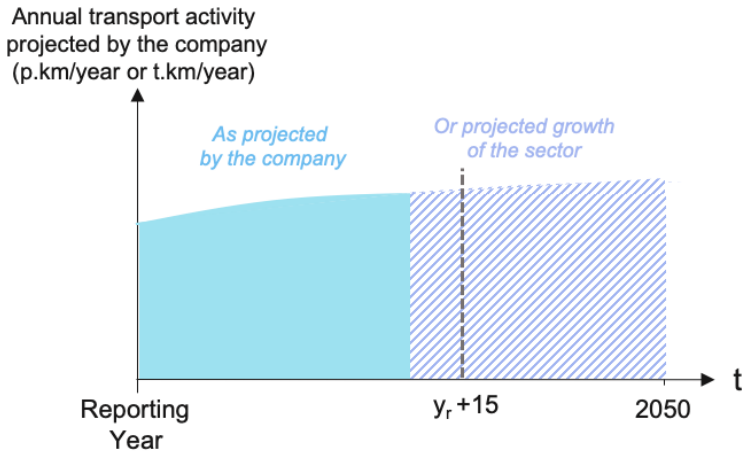


FIGURE 15 : PROJECTED ACTIVITY

The secured activity ratio $r_{SA}(y_r + 15)$ compares the secured activity up to 2050 $A_S(y_r + 15)$ with the projected activity up to 2050 $A_p(y_r + 15)$. It is illustrated in Figure 16.

$$r_{SA}(y_r + 15) = \frac{A_S(y_r + 15)}{A_P(y_r + 15)}$$

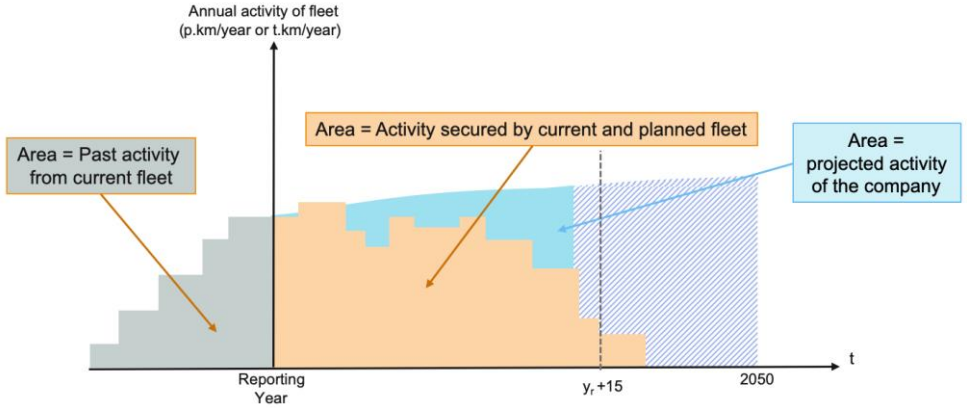
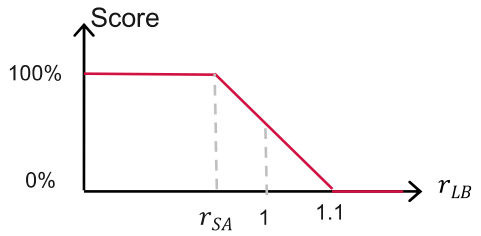


FIGURE 16 : SECURED ACTIVITY RATIO

CALCULATION OF THE SCORE:

r_{SA} is used as a threshold value for the scoring:

$r_{SA} < 1$: More investments will be needed	
Value of r_{LB}	**Score**
$r_{LB} \leq r_{SA}$	100%
$r_{SA} < r_{LB} < 1.1$	$\frac{r_{LB}-1.1}{r_{SA}-1.1}$
$r_{LB} \geq 1.1$	0%



CASE OF FLEET COMPOSED OF LEASED VEHICLES

If the company operates leased vehicles the locked-in emissions are calculated up to the end of the longest leasing contract instead of to reporting year + 15 years, as illustrated in Figure 17 below. More generally, if the company has a specific policy of operating its own vehicles only a limited number of years before selling them on to another operator on a second-hand vehicle market, the locked-in emissions shall be calculated on the duration of operation of the company's vehicle. However, if this is the kind of practices done by the company but without any clear planning, the locked-in emissions shall be computed on the full lifetime of vehicles, as the company is not able to provide a duration of operation for each of its vehicles.

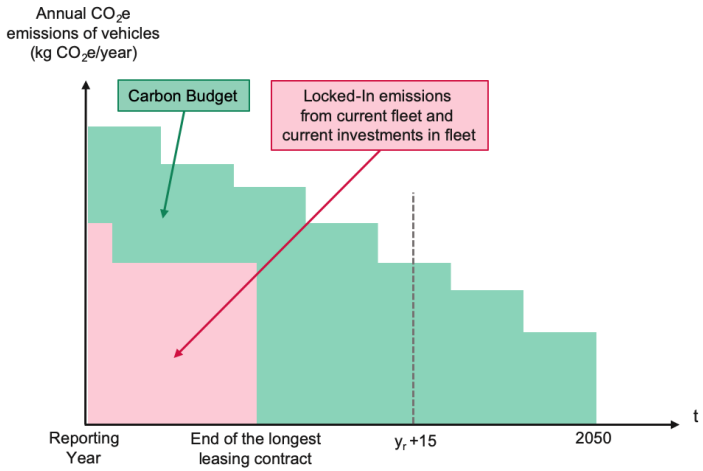


FIGURE 17 : LOCKED-IN RATIO IN CASE OF LEASED VEHICLES

RATIONALE	TR 2.3 FLEET LOCKED-IN EMISSIONS
RATIONALE OF THE INDICATOR	**RELEVANCE OF THE INDICATOR:** Locked-in emissions are included in the ACT TR assessment for the following reasons: ♦ Absolute GHG emissions over time are the most relevant measure of emissions performance for assessing a company's contribution to global warming. Furthermore, the concept of Locked-in emissions allows a judgement to be made about the company's outlook in more distant time periods than ones of the investment plans. ♦ Analysing a company's locked-in emissions alongside science-based budgets also introduces the means to scrutinise the potential cost of inaction, including the possibility of stranded assets. ♦ Examining absolute emissions, along with recent and short-term emissions intensity trends, forms part of a holistic view of a company's emissions performance in the past, present, and future. **SCORING RATIONALE:** When a vehicle (aircraft, ship, train, truck or other vehicle) reaches the end of its estimated lifespan, no replacement is assumed because those decisions have not been made yet. Our methodological choice is that the locked-in emissions calculated are the locked-in emissions

of committed (existing and planned for the near future) fleet vehicles only. Therefore, the indicator describes the proportion of the company's carbon budget that will be used up by committed activity.

Unlike the 'gap' and 'trend' comparisons done in all other quantitative indicators, this indicator compares two areas: that of the carbon budget until reporting year + 15 years and the locked-in emissions until reporting year + 15 years. It is expected that companies will save a reasonable amount of their up-to-reporting year + 15 years carbon budget, especially if the end-of-life date of the fleet vehicles considered for the computation of the locked-in emissions is before reporting year + 15 years. Indeed, new investments in fleet will be made in the future to replace decommissioned vehicles and engage additional GHG emissions.

When the company exceeds its full carbon budget up to reporting year + 15 years with only vehicles considered for the computation of locked-in emissions on the reporting year, the situation is highly problematic: hence, the resulting score is zero.

When the company uses a high amount of its up- to-reporting year + 15 years carbon budget with current and planned vehicles, compared to the activity that these vehicles enable to perform, it will have to compensate in later periods by strongly improving its carbon intensity to remain within its carbon budget. This is called carbon budget displacement, which makes the company's actual decarbonization pathway steeper than the original benchmark. There is a dimension of risk from inaction here. The company will then have less flexibility in its future strategy of investments. Therefore, there is a rationale for intermediate scoring levels that magnify this level of risk due to lack of flexibility in the future.

Two cases are observed for the scoring:

1) $r_{SA} \geq 1$:This is the case when the fleet enables to perform more activity than what the company projects. This is a situation of overcapacity. This situation should be extremely rare.
2) $r_{SA} < 1$: The current and planned fleet up to 2050 does not cover all the activity projected up to 2050, so further investment will be needed. Therefore, part of the carbon budget should be kept for further investments. If $r_{LB} \leq r_{SA}$ the company consumes its carbon budget at lower rate than the level of activity it will be able to perform so it gets the maximum score of 100%. A leeway of 10% is allowed before the score drops to 0% when $r_{LB} \geq 1.1$. In between these two values, a linear decrease of the score is applied.

• TR 2.4 SHARE OF LOW-CARBON VEHICLES AND ENERGIES (WEIGHTING: OWN FLEET = 7% OR SUBCONTRACTING = 0%)

DESCRIPTION & REQUIREMENTS	TR 2.4 SHARE OF LOW-CARBON VEHICLES
SHORT DESCRIPTION OF INDICATOR	A measure of the company's investment share in low-carbon vehicles as compared with the operating share required in the sector under a low-carbon scenario. The definition of low-carbon vehicles is given in the glossary.

Low-carbon energy purchase strategies for ICE vehicles are also taken into account (e.g. biogas for NG vehicles, sustainable biodiesel for trucks, green hydrogen for ships or airplanes, etc.) under conditions.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- TR 2.B - Variation of [CDP C-TS9.3]
  For each year of the investment plan:
  - Year described
  - Number of net total vehicles in operation in the fleet in the year [Present and future]
  - Number of vehicles in fleet that are 'low-carbon' [Present and future]

The benchmark indicators involved are:

TARGET TYPE	PARAMETER	INTENSITY METRIC	BENCHMARK
Share of low carbon vehicles and energies required in a low-carbon scenario	$SB_{LCV}(t)$	%	♦ For shipping: DNV-GL [34], IEA ETP [4], ETC [8] ♦ For road freight: IEA ETP [4], IEA Future of Trucks [17] ♦ For aviation: IEA [35] ♦ For rail: IEA [23]

HOW THE ANALYSIS WILL BE DONE

The analysis is based on the ratio $\mathrm{F_{LCV}(t)}$ between the number of low-carbon vehicles in the company's fleet (including the number of conventional vehicles that are operated with low-carbon propulsion energy) and the total number of vehicles, as described in the investment plan, for year t.

Conventional ICE vehicles operated with low-carbon energy are accounted for, proportionally to the share of low-carbon energy used in those vehicles (ex: if the company plans to purchase 20% of sustainable biodiesel for its diesel-fuelled vehicles in 2025, then we will consider 20% of these diesel-fuelled vehicles to be low-carbon, and considered as such in the calculation below). However, in this case, the company has to bring strong evidence that it will use such quantities of biofuels / bioNGV to operate its fleet, **through both contractual agreements with energy suppliers and the implementation of a verification process. (see EU Taxonomy** [36]**)**

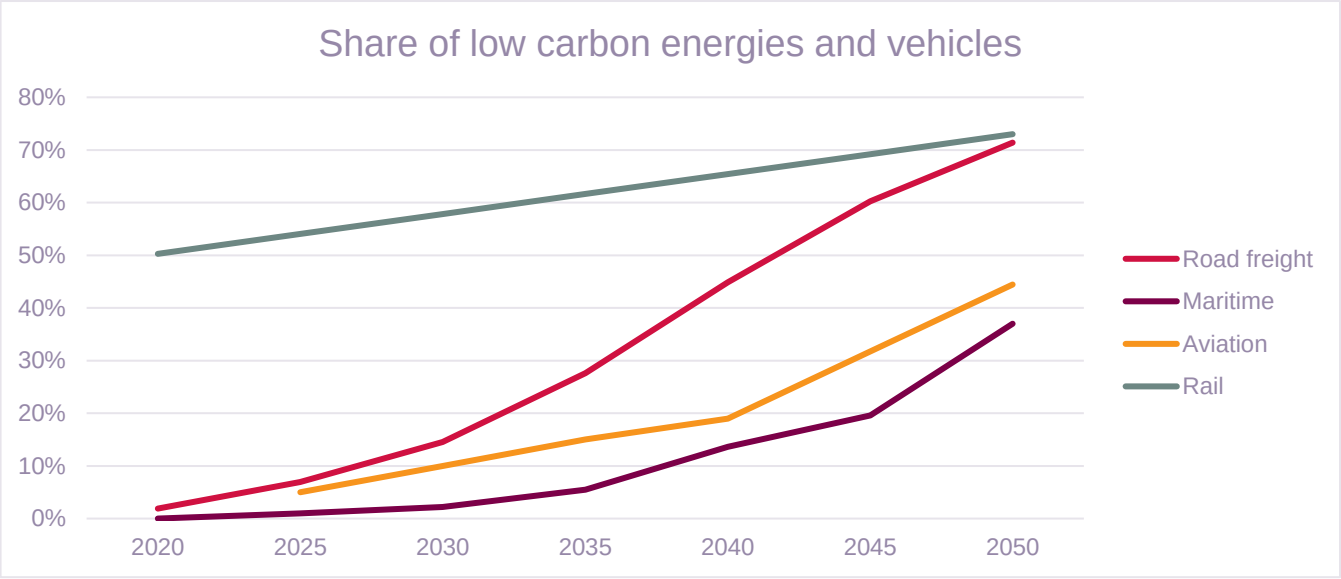
The fleet ratio is calculated as follows:

$$F_{LCV}(t) = \frac{NB_{low-carbon\ vehicles}(t)}{NB_{all\ vehicles}(t)}$$

This ratio is then compared to the sub-sector low-carbon vehicles and energies operating share in a low-carbon scenario $SB_{LCV}(t)$.

$$r_{LCV}(t) = \frac{F_{LCV}(t)}{SB_{LCV}(t)}$$

$SB_{LCV}(t)$ is represented in the graph:



CALCULATION OF THE SCORE:

The ratio $r_{LCV}(t)$ is computed for each year of the investment plan, and the simple average of all yearly ratio values for the whole investment plan is kept.

If r_{LCV} is 1 or higher, then the company invests at the desired rate into low carbon vehicles and will be assigned the maximum score (100%).
If r_{LCV} is lower than 1, it gives the score for the indicator.

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Share of low-carbon vehicles is included in the ACT TR assessment for the following reasons:

- Emissions intensity pathways in the transport sector cannot be met without a change in engine technology, and Direct operations in such vehicles are a straightforward measure of how this change is incorporated in the business model. All low-carbon scenarios found in the literature (see section 10. Sources) include a significant share of annual sales in 2050 coming from low-carbon vehicles. A company's commitment to new technologies is therefore a strong indication of its commitment to a low-carbon future.
- A change to low-carbon propulsion energy significantly decreases GHG emissions. Conventional thermal vehicles can still be operated by the company using low-carbon fuels. The effort to switch to a different fuel supply needs to be accounted for.

Refer to the *Glossary* for a definition of '*low-carbon vehicle*'.

NB: For companies claiming the use of biofuels / bioNGV today and in the future, they have to disclose very clearly their strategy in terms of energy supply, not just their vehicles investment plan.

As found in the EU taxonomy (March 2020) [36], *"an operator may seek to operate a fleet solely using an eligible fuel. To meet the Taxonomy criteria, the operator would need to demonstrate through ongoing verification that the fleet was solely using biofuels as specified in the criteria. A financier may be able to claim its investment (e.g. in a new fleet) was Taxonomy eligible through a contractual agreement with an operator to solely use biofuels, also establishing a verification system to enable ongoing monitoring."*

Therefore, in ACT TR, the company has to bring strong evidence that it intends to use a certain quantity of biofuels / bioNGV to operate its fleet in the future, **through both contractual agreements with energy suppliers and the implementation of a verification process.**

SCORING RATIONALE:

The scoring measures the gap between levels of penetration of low-carbon vehicles among the fleet, as recommended for a low-carbon scenario, and the levels planned by the company through its investments. If the share of low-carbon vehicles for each year of the company's investment plan is not available, an average value provided by the company shall be considered and compared to the sector benchmark for low-carbon vehicle share at the average horizon of the investment plan.

MODULE 3: INTANGIBLE INVESTMENTS (WEIGHTING: 5%)

• TR 3.1 R&D SPENDING ON LOW-CARBON TECHNOLOGIES (WEIGHTING: 2%)

DESCRIPTION & REQUIREMENTS	TR 3.1 R&D SPENDING ON LOW-CARBON TECHNOLOGIES
SHORT DESCRIPTION OF INDICATOR	A measure of the ratio of R&D investments in technologies for low-carbon transition. The indicator identifies the ratio between the company's R&D investment in low-carbon vehicles and energies, and total R&D investments. Technologies for low-carbon transition include alternative powertrain vehicles, systems of production and/or distribution of low-carbon energies *(to detail in the Glossary)*
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 3.A - variation of [CDP TS9.6-low carbon investments] • Total R&D costs/investments • R&D costs/investments related to climate change mitigation technologies
HOW THE ANALYSIS WILL BE DONE	The analysis is based on the ratio of the company's 'annual R&D expenditure on vehicles and energies for low carbon transition' ($\text{CAPEX R\&D low carbon}$) to the company's 'total annual capital expenditure in R&D' ($\text{CAPEX R\&D}$). Two different thresholds will be used: for companies with very little activity operated with an owned fleet (less than 20% of reported emissions) the thresholds for this indicator will be lower than those for a company with a more important owned fleet. Indeed, investment in R&D in low carbon vehicles tends to be lower in a company that has subcontracted most of its transport service, these companies tend to invest mainly in the levers of action they fully control like digital solution for logistics optimization or warehousing. <u>Formula for companies with less than 20% emissions related to owned fleet operations:</u> $$Score = Share\ of\ low\ carbon\ CAPEX\ \times \frac{1}{80\%}$$

In this case, a company whose share of low-carbon CAPEX exceeds 80% of its total CAPEX will receive the highest score.

Formula for companies with less than 20% emissions related to owned fleet operations:

$$Score = Share\ of\ low\ carbon\ CAPEX \times \frac{1}{50\%}$$

In this case, a company whose share of low-carbon CAPEX exceeds 50% of its total CAPEX will receive the highest score.

RATIONALE	TR 3.1 R&D SPENDING ON LOW-CARBON TECHNOLOGIES

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

R&D in low carbon vehicles and energies is included in the ACT TR assessment for the following reasons:

- To enable the transition, the transport sector relies heavily on the development of low-carbon technologies to replace its currently high-emitting propulsion systems. R&D is the principal proactive action to develop these technologies. Transport operators can participate to pilot projects with vehicles manufacturers.
- R&D is also one of the principal tools to reduce the costs of a technology in order to increase its market penetration.
- Aside from technology, transport operators can also invest into R&D on operational practices to optimize the carbon impact where they have direct responsibility.
- Lastly, the R&D investment of a company into non-mature technologies and practices allows for direct insight in the company's commitment to alternative technologies that may not currently be part of its main business model.

DEFINITION OF R&D:

The term R&D covers three activities:

- Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view.
- Applied research is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective.
- Experimental development is systematic work, drawing on existing knowledge gained from research and/or practical experience, which is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed.

R&D covers both formal R&D in R&D units and informal or occasional R&D in other units.

SCORING RATIONALE:

Thresholds are used for the rating of this indicator. To obtain the best score, a company should use a majority of its R&D investment for low carbon developments.

• TR 3.2 INVESTMENTS IN DIGITAL SOLUTIONS FOR TRANSPORT OPTIMIZATION (WEIGHTING: 1%)

DESCRIPTION & REQUIREMENTS	TR 3.2 INVESTMENTS IN DIGITAL SOLUTIONS FOR TRANSPORT OPTIMIZATION
SHORT DESCRIPTION OF INDICATOR	An evaluation of the level of equipment of the company in digital solutions optimizing the transport service, leading to GHG emissions reduction.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 3.B • The reporter shall provide details about its investments in digital solutions helping the reduction of its activity carbon footprint.
HOW THE ANALYSIS WILL BE DONE	The company will describe the software and other digital solutions that it is equipped with. It will also provide proofs of GHG emissions reductions associated if any and explain its participation in projects with developers of digital solutions, if any. A maturity matrix will be used to score the company.

RATIONALE	TR 3.2 INVESTMENTS IN DIGITAL SOLUTIONS FOR TRANSPORT OPTIMIZATION
RATIONALE OF THE INDICATOR	**RELEVANCE OF THE INDICATOR:** Investments in digital solutions are included in the ACT TR assessment for the following reasons: ♦ In addition to investments in vehicles, companies can optimize the transport service investing in digital solution.

- The development of such services is encouraged, and companies can collaborate with software developers to improve existing solution and quantify the GHG emission reduction associated

SCORING RATIONALE:

The following maturity matrix is used to assess investments in digital solutions.

BASIC	STANDARD	ADVANCED	NEXT PRACTICE	LOW-CARBON ALIGNED
The company does not invest in digital solutions	The company is equipped with digital solutions that are optimizing the transport service but have not proven to reduce the GHG emissions intensity of its transport service.		The company is equipped with digital solutions that have proven to reduce the GHG emissions intensity of its transport service.	The company is equipped with digital solutions that have proven to reduce the GHG emissions intensity of its transport service. The company also participates to pilot programs with software developers to improve the quality of digital solutions."

• TR 3.3 INVESTMENTS IN HUMAN CAPITAL – TRAINING OF EMPLOYEES (WEIGHTING: 2%)

DESCRIPTION & REQUIREMENTS	TR 3.3 INVESTMENTS IN HUMAN CAPITAL – TRAINING OF EMPLOYEES
SHORT DESCRIPTION OF INDICATOR	An evaluation of the level of training of employees about climate related issues.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 3.C • Total number of employees • Number of employees receiving climate-related trainings

- Total costs of employees' trainings
- Costs of climate-related trainings

HOW THE ANALYSIS WILL BE DONE

Two dimensions will be assessed

- The share of employees receiving a climate-related specific training
- The share of training costs relative to climate-related trainings

Some examples of climate related trainings are given in the following list:

- Training on eco-driving
- Training on maintenance of low-carbon vehicle
- Training on maintenance to improve carbon efficiency
- Training on transport planning, routing and optimization for GHG emissions reduction
- Training on climate-change general issues

The best score is obtained if climate related specific trainings are available broadly in the company for the majority of its employees.

Best score is also obtained if the training is significant, that is to say if the costs of such trainings are significant enough. A period of 5 years before the reporting year is considered to evaluate the share of employees receiving climate related trainings, and the share of training costs associated.

The following maturity matrix is used to assess investments in digital solutions.

SUBDIMENSION	BASIC	STANDARD	ADVANCED	NEXT PRACTICE	LOW-CARBON ALIGNED
Share of employees receiving climate related specific training	Below 10% of employees	Between 10% and 20% of employees	Between 20% and 30% of employees	Between 30% and 50% of employees	Above 50% of employees
Share of training costs for specific climate-related trainings, compared to total training costs	Below 5% of training costs	Between 5% and 10% of training costs	Between 10% and 15% of training costs	Between 15% and 20% of training costs	Above 25% of training costs

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Investments in human capital are included in the ACT TR assessment for the following reasons:

- The transition of the transport sector is facilitated if all actors are engaged in it. Companies need to take their teams onboard, rather than leave their employees behind.
- GHG reductions can be obtained through better operational practices, and training is needed to change practices
- Training teams on climate related subject can empower them to initiate GHG emissions reduction projects
- Training should be available broadly in the company to engage everyone and build a common purpose within the company

MODULE 4: INDIRECT OPERATIONS (WEIGHTING: OWN FLEET = 0% OR SUBCONTRACTING = 30%)

NOTE

This module is relevant only when all or part of the transport service is subcontracted. This module is also used for the specific case of public service delegation and the differences concern specifically the indicator 4.3.

In case of the activity is performed with the company's own vehicles, this indicator is not applicable (see module "Direct operations" in the latter case).

• TR 4.1 TREND IN PAST EMISSIONS INTENSITY (WEIGHTING: OWN FLEET = 0% OR SUBCONTRACTING = 4%)

DESCRIPTION & REQUIREMENTS	TR 4.1 TREND IN PAST EMISSIONS INTENSITY
SHORT DESCRIPTION OF INDICATOR	This metric assesses the alignment of the company's recent emission intensity trend for scope 1+2+3* emissions with the trend of its decarbonization pathway. The recent emission intensity trend is computed over a 5-year period to the reporting year (reporting year minus 5 years). * Scopes 1+2+3 here cover emissions linked to the transport service that is being sub-contracted (only emissions from energy usage, and from the upstream value chain of energy.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 4.A - Variation of [CDP C5.1, C6.1, C6.3, C6.5, C-TS6.15, C-TS8.5] • Annual emissions (metric tonne CO2e) [Past and current] • Annual activity of Fleet (tonne.km) [Past and current] • Years of past and current data External sources of data used for the analysis of this indicator are: ♦ IEA ETP 2017 background scenario data [4] ♦ SDA Transport tool – sectoral benchmark pathway definition [30] ♦ ITF Transport Outlook OECD [3]

- ICCT CO_2 emissions from commercial aviation, 2018 [31]
- IATA Economic performance of the airline industry, mid-year report, 2017 [32]

The benchmark indicators involved are:

TARGET TYPE	PARAMETER	INTENSITY METRIC	BENCHMARK
Scope 1+2+3 emissions intensity	$CB_{Scopes123}$	$kgCO_2e$/tonne.km or $kgCO_2e$/passenger.km	See section 6.1 (SDA MoMo, OECD)

HOW THE ANALYSIS WILL BE DONE

The analysis is based on the difference between the company's recent (reporting year minus 5 years) emissions intensity trend gradient ($CR'_{Scopes123}$) and the company's decarbonization pathway trend gradient ($CB'_{Scopes123}$) in the short-term (reporting year plus 5 years). The emissions intensity of the company at the reporting year (CEI_Y) and the sectoral benchmark value of emissions intensity in 2050 (SB_{2050}) are also considered to calculate the company's score.

$CR'_{Scopes123}$ is the gradient of the linear trendline of the company's recent Scope 1+2+3 emissions intensity ($CR_{Scopes123}$).

$CB'_{Scopes123}$ is the gradient of the linear trendline of the company benchmark pathway for emissions intensity ($CB_{Scopes123}$). The company's benchmark is defined from the company's current emissions on reporting year, and from the sectoral benchmark presented in section 6.1

Figure 18 illustrates the various curves and trends used in this indicator.

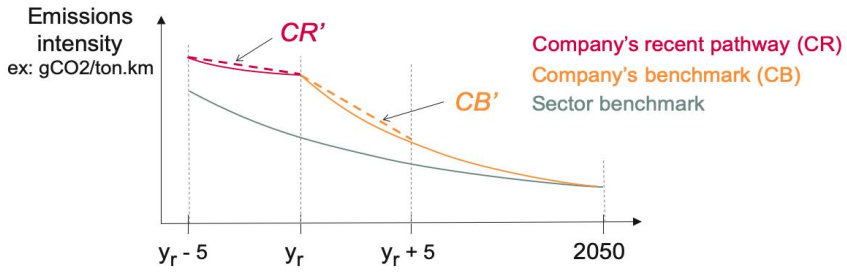


FIGURE 18 : TREND IN PAST EMISSION AND COMPANY BENCHMARK

The difference between $CR'_{Scopes123}$ and $CB'_{Scopes123}$ will be measured by their ratio (r_T). This is the 'Scope 1+2+3* Transition ratio' which is calculated by the following equation, with the symbol $'$ used to denote gradients:

$$r_T = \frac{CR'_{Scopes123}}{CB'_{Scopes123}}$$

If the transition ratio is a negative number, it means the company's recent emissions intensity has increased (positive $CR'_{Scopes123}$) and a zero score is awarded by default. If the company's recent emissions intensity has decreased, the transition ratio will be a positive number. The value of the ratio is capped at 1, which represents the maximum score. A score is assigned as a percentage value equal to the value of r_T (1 = 100%).

Four different cases are to be taken into consideration:

- Case #1: $CR'_{Scopes123}$ is positive → Score = 0 (whatever the r_T and CEI_Y values)
- Case #2: $CR'_{Scopes123}$ is negative and r_T and $\in]0; 1[$ and CEI_Y is higher than SB_{2050} → Score = r_T (expressed as a percentage)
- Case #3: $CR'_{Scopes123}$ is negative and $r_T \geq 1$ and CEI_Y is higher than SB_{2050} → Score = 100 %
- Case #4: $CR'_{Scopes123}$ is negative and CEI_Y is lower than SB_{2050} → Score = 100 % (whatever the r_T value)

RATIONALE	TR 4.1 TREND IN PAST EMISSIONS INTENSITY
RATIONALE OF THE INDICATOR	**RELEVANCE OF THE INDICATOR:** Trend in past emissions intensity is included in the ACT TR assessment for the following reasons: ♦ The trend shows the speed at which the company has been reducing its emissions intensity over the recent past. Comparing this to the decarbonization pathway gives an indication of the scale of the change that needs to be made within the company to bring it onto a low-carbon pathway. ♦ While ACT aims to be future-oriented, ACT does not want to solely rely on projections in a way that would make the analysis too vulnerable to uncertainty. Therefore, this particular indicator, along with projected emissions intensity and absolute emissions, forms part of a holistic view of company emissions performance in the past, present, and future. **SCORING RATIONALE:**

While ‘gap’ type scoring is preferred for any indicator where possible, this indicator only looks at past emissions, and would therefore require a different baseline in order to generate a gap analysis. Thus, instead of a gap analysis, a trend analysis is conducted. An advantage of the trend analysis is that it does not require the use of a business-as-usual pathway to anchor the data points and aid interpretation, as trends can be compared directly, and a score can be directly correlated to the resulting ratio.

• TR 4.2 ALIGNMENT OF PAST PERFORMANCE WITH CARBON BUDGET (WEIGHTING: OWN FLEET = 0% OR SUBCONTRACTING = 4%)

DESCRIPTION & REQUIREMENTS	TR 4.2 ALIGNMENT OF PAST PERFORMANCE WITH CARBON BUDGET
SHORT DESCRIPTION OF INDICATOR	This metric assesses the alignment of the company’s recent absolute emissions for scopes 1+2+3* with the past carbon budget. The recent emissions and carbon budget are measured over a 5-year period to the reporting year (reporting year minus 5 years). * Scopes 1+2+3 here cover only emissions from energy usage, from the upstream value chain of energy.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 4.A - Variation of [CDP C5.1, C6.1, C6.3, C6.5, C-TS6.15, C-TS8.5] • Annual emissions (metric tonne CO2e) [Past and current] • Annual activity of Fleet (tonne.km) [Past and current] • Years of past and current data External sources of data used for the analysis of this indicator are: ♦ IEA ETP 2017 background scenario data [4] ♦ SDA Transport tool – sectoral benchmark pathway definition [30] ♦ ITF Transport Outlook OECD [3] ♦ ICCT CO_2 emissions from commercial aviation, 2018 [31] ♦ IATA Economic performance of the airline industry, mid-year report, 2017 [32] The benchmark indicators involved are:

TARGET TYPE	PARAMETER	INTENSITY METRIC	BENCHMARK
Scope 1+2+3 emissions	Sectoral benchmark $SB_{Scopes\{1,2,3\}}$	$kgCO_2e$/tonne.km or $kgCO_2e$/passenger.km	See section 6.1 (SDA MoMo, OECD)

HOW THE ANALYSIS WILL BE DONE

Use past data on emissions for the assessed company and compare it to the sector benchmark. Basically, one should calculate the blue area of the graph in Figure 10, multiplied by the company's activity during the corresponding years. Then, compare this area to the carbon budget during the same period. This indicator would absolutely need to be a ratio as company are very unlikely to provide data for the same period.

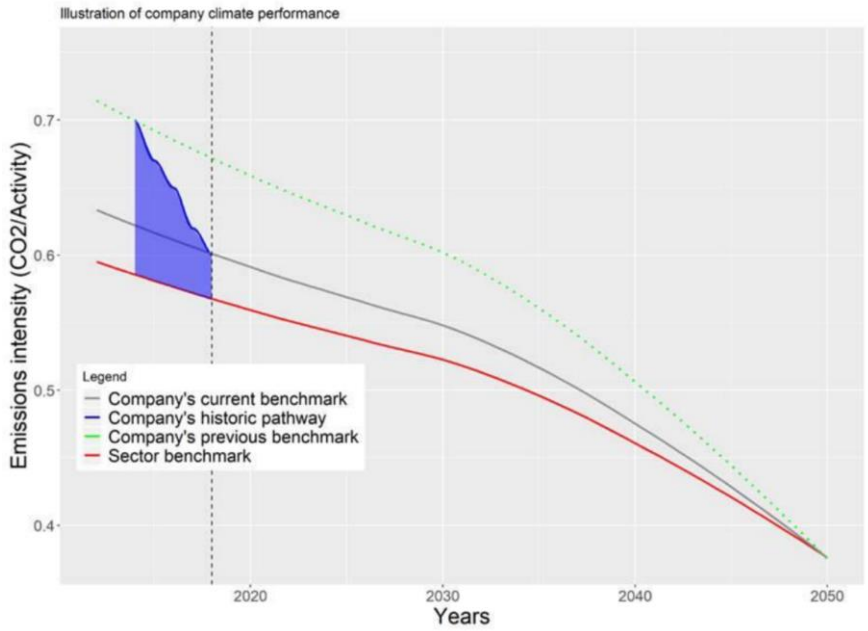


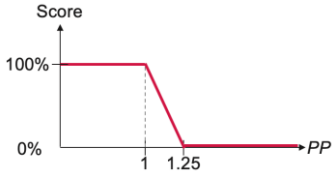
FIGURE 19: COMPARISON OF PAST PERFORMANCE AND CARBON BUDGET DEFINED BY SECTOR BENCHMARK

The ratio PP is computed:

$$PP = \frac{\int_{y_r-5}^{y_r}(CR_{Scopes123} \times A)}{\int_{y_r-5}^{y_r}(SB_{Scopes\{1,2,3\}} \times A)}$$

Where $CR_{Scopes123}$ is the past carbon intensity of the company, $SB_{Scopes\{1,2,3\}}$ is the sector benchmark intensity, and A is the transport activity.

Past performance ratio	Score
$PP \leq 1$	100%
$1 < PP \leq 1.25$	$(-4 * PP + 5) * 100\%$
$PP > 1.25$	0%



RATIONALE	TR 4.2 ALIGNMENT OF PAST PERFORMANCE WITH CARBON BUDGET

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Assessing the level of past emissions as opposed to the benchmark (for the past years where the benchmark is available) helps the company having an overview of its emissions exceedance in the recent past. This indicator also intends to remind that the carbon budget is set for the global economy and that each sector and each company has a defined carbon budget that cannot be exceeded to reach the overall long-term objective of limiting global warming. The sector benchmark is defined for the next years, assuming it was respected for the past years where it was already defined. The emissions overshooting the benchmark in the past correspond to accumulated CO2 that will remain in the atmosphere for decades. Hence, a company having already exceeded the benchmark should further its efforts to decrease its emissions in the near and remote future.

This indicator is a ratio of the values of the emissions over a period of time in the past, as companies are very unlikely to provide data for the same period. What is considered here is the emission excess compared to the carbon budget, proportionally to the period of time.

- **TR 4.3 SUBCONTRACTED TRANSPORT SERVICE PERFORMANCE (WEIGHTING: OWN FLEET = 0% OR SUBCONTRACTING = 22%)**

DESCRIPTION & REQUIREMENTS	TR 4.3 SUBCONTRACTED TRANSPORT SERVICE PERFORMANCE

SHORT DESCRIPTION OF INDICATOR

This indicator is a qualitative assessment of the degree of knowledge the company has about its subcontractors' performance, and about the subcontractors' performance itself.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- TR 4. B - Variation of [CDP C-TS9.3]
  - The reporter shall provide details on its knowledge of its sub-contractors' projected emissions (metric tonne CO2e) [Future]
- TR 4.C - Variation of [CDP C-TS9.3]
  - The reporter shall provide details on its knowledge of its future activity sub-contracted (tonne.km) [Future]
- TR 4.D
  - The reporter shall provide details on its knowledge of its sub-contractors' time horizon investments [Future]
- TR 4.E
  - The reporter shall provide details on its knowledge of its sub-contractors low-carbon vehicles [Future]
- TR 4.F
  - The reporter shall provide details on its knowledge of its sub-contractors' actions for emissions reduction [Future]

For the freight transport subsector, companies are encouraged to use for themselves and to promote the GLEC Framework [11] among their subcontractors since the data reported through this referential can also be used to answer part of this indicator TR 4.3. However additional information is needed here for the ACT TR methodology.

HOW THE ANALYSIS WILL BE DONE

The analysis will look at the following dimensions:

- If the company has a good forecast on the subcontracted activity
- If the company is able to determine future emissions from its subcontractors, and if the intensity follows the decarbonization pathway
- If the company knows the investment strategy of its subcontractors
- If the subcontractors fleet include low-carbon vehicles
- If the subcontractors carry out actions of GHG emissions reduction on its vehicles (other than purchasing new ones) and on operations

The analysis uses the following matrix:

Subdimension	BASIC	STANDARD	ADVANCED	NEXT PRACTICE	LOW-CARBON ALIGNED

Future emissions assessment: Are you able to determine with certainty (verified) future CO_2 emissions intensity linked to subcontracting ?	No knowledge of subcontractor's fleet carbon intensity	The company requires its subcontractors to report their GHG emissions linked to their activity on the reporting year	Robust CO_2 data on subcontracted current activity (reporting year) is certified by third party	Robust CO_2 data on subcontracted current activity (reporting year) is certified by third party Future CO_2 emissions intensity of subcontractors is forecast but the intensity is not 2°C aligned	Robust CO_2 data on subcontracted current activity (reporting year) is certified by third party Future CO_2 emissions intensity of subcontractors is forecast, and the intensity is 2°C aligned
Future activity assessment: Are you able to forecast the level of your activity performed by subcontractors in the future ?	No knowledge of future subcontracted activity.	Future subcontracted activity known for the next 3 years (subcontractors) or until ¼ of the duration of the contract (public service delegation)	Future subcontracted activity known for the next 5 years (subcontractors) or until half of the duration of the contract (public service delegation)	-	Future subcontracted activity known for the next 10 years (subcontractors) or for the entire duration of the contract (public service delegation)
Investment plan: Do you know the investment/leasing strategy of your subcontractors ?	The investment/leasing strategy of the subcontractors is not known.	Investment/leasing strategy is known for up to 20% of the subcontracted activity	Investment/leasing strategy is known for up to 50% of the subcontracted activity	Investment/leasing strategy is known for up to 80% of the subcontracted activity	Investment/leasing strategy is known for up to 80% of the subcontracted activity, for the next 5 years (subcontractors) or until half of the duration of the contract (public service delegation)
Low-carbon vehicles: Does the projected fleet include low-carbon vehicles and energies? (100% elec, hybrid, H_2, BioGNV...)	No knowledge of the share of low-carbon vehicles in the subcontractors' fleets	The share of low carbon vehicles in the sub-contracted fleet is **at least 20% of the low carbon benchmark value** over the next **3 years** after reporting year (subcontractors) or until ¼ of the duration of	The share of low carbon vehicles in the sub-contracted fleet is **at least 60% of the low carbon benchmark value** over the next **3 years** after reporting year (subcontractors) or until ¼ of the duration of	The share of low carbon vehicles in the sub-contracted fleet is **at least 80% of the low carbon benchmark value** over **5 years** after reporting year (subcontractors) or until half of the duration of the	The share of low carbon vehicles in the sub-contracted fleet is **equal to the low carbon benchmark value** over **10 years** after reporting year (subcontractors) or for the entire duration of

		the contract (public service delegation)	the contract (public service delegation)	contract (public service delegation)	the contract (public service delegation)
GHG emissions reduction on material: Are your subcontractors implementing significant actions for GHG emissions reduction of the material other than purchase of new vehicles?	No action of reduction planned	2 actions at most are currently implemented by subcontractors that aggregate into at least 20% of GHG emissions from subcontracted activity	3 to 4 actions are currently implemented or planned in near future by subcontractors that aggregate into at least 40% of GHG emissions from subcontracted activity	5 actions are currently implemented or planned in near future by subcontractors that aggregate into at least 50% of GHG emissions from subcontracted activity	At least 5 actions are currently implemented or planned in near future by subcontractors that aggregate into at least 80% of GHG emissions from subcontracted activity
GHG emissions reduction on operation: Are your subcontractors implementing significant actions for GHG emissions reduction of operations?	No action of reduction planned	2 actions at most are currently implemented by subcontractors that aggregate into at least 20% of GHG emissions from subcontracted activity	3 to 4 actions are currently implemented or planned in near future by subcontractors that aggregate into at least 40% of GHG emissions from subcontracted activity	5 actions are currently implemented or planned in near future by subcontractors that aggregate into at least 50% of GHG emissions from subcontracted activity	At least 5 actions are currently implemented or planned in near future by subcontractors that aggregate into at least 80% of GHG emissions from subcontracted activity

Actions eligible for the dimension “GHG emissions reduction on material” are the following [5] [17] [18] [37] [38]:

- Fuel efficiency devices
- Preventive maintenance
- Speed limitation devices
- Predictive cruise control devices
- Real-time fuel economy monitors (linked to driving methods)
- Tire pressure monitoring systems
- Low rolling resistance tires
- Improvement of ship hull surface / hull cleaning
- Air lubrification of the hull
- Waste heat recovery from ship engine or exhaust gas
- Reduce weight of internal equipment and interior design in aircrafts

Actions eligible for the dimension “GHG emissions reduction on operation” are the following [5] [17] [18] [37] [38]:

- Eco-driving
- Routing optimization
- Load factor optimization
- Reduction of empty runs
- Improve backhauling
- Speed regulation with Intelligent Speed Adaptation
- Platooning
- Re-timing urban deliveries to off-hours
- Co-loading
- Speed limitation in shipping
- Participate in smoother ship-port interface to reduce waiting time of ship and optimize berths planning
- Onshore power supply for ships in ports

Other actions than the ones listed above may be eligible, if judged relevant by the analysts.

For each action reported, the company shall describe:

- The type of action
- The goals
- The implementation process
- The monitoring of the action
- The results obtained for the reporting year

RATIONALE	TR 4.3 SUBCONTRACTED TRANSPORT SERVICE PERFORMANCE
RATIONALE OF THE INDICATOR	**RELEVANCE OF THE INDICATOR:** This indicator stands as a mirror of indicators 2.3 and 2.4 assessing Direct operations of the company about its fleet, but here it assesses the performance of the subcontractors. It is necessary that the company investigates about its subcontractors’ performance, especially if a

large part of the activity is subcontracted, because its own performance depends on it. Through this indicator, the actions carried out by the subcontractors to reduce their GHG emissions are assessed, along with investments made that will shape future levels of emissions. Some focus is made on the capacity of the company to collect data from its subcontractors, because it is the first necessary step toward a full picture of its carbon impact, and it shows commitment for a low-carbon transition.

SCORING RATIONALE:

This indicator is assessed by a maturity matrix, because companies subcontracting their transport service face a lack of data from their subcontractors. None the less, this indicator encourages companies to dialogue with their subcontractors and to set up a data collection process. Therefore, high levels of the matrix correspond to the ability to collect data that would be necessary to compute indicator from module 2. The aim of this indictor is to value companies that have subcontractors with good carbon performance, so the highest level of the matrix corresponds to subcontractor's performance aligned with the decarbonization pathway. Different weightings are designed for the specific case of public service delegation. Indeed, the companies concerned have fewer levers of action regarding the emissions reduction on material and operation.

The various dimensions of the maturity matrix are weighted as follows:

DIMENSION	WEIGHT FOR SUBCONTRACTORS	WEIGHT FOR PUBLIC SERVICE DELEGATION
Future emissions assessment	15%	20%
Future activity assessment	15%	20%
Time horizon of investment	15%	20%
Low-carbon vehicles	25%	30%
GHG emissions reduction on material	15%	5%
GHG emissions reduction on operation	15%	5%

Spot contract is a common subcontracting practice in the transport sector, and it makes data collection very difficult for companies. Therefore, the maturity matrix of this indicator shall be used only to score subcontractors under “long-term” contract. The score obtained is then adjusted with the share of GHG emissions represented by spot contracts. The final score is computed as follows:

SHARE OF GHG EMISSIONS FROM SPOT CONTRACTS	FINALE SCORE
0% - 24%	100% * matrix score
25% - 49%	80% * matrix score
50% - 74 %	60% * matrix score
75 % - 100%	40% * matrix score

It was decided to exclude spot contracts from the assessment with this maturity matrix, as it seemed hardly feasible to collect relevant data from such subcontractors, or to design adequate but nonetheless as ambitious maturity levels as for long-term contract. Having few or poor-quality data should not be an excuse for bad carbon performance.

MODULE 5: GOVERNANCE (WEIGHTING: 10%)

• TR 5.1 OVERSIGHT OF CLIMATE CHANGE ISSUES (WEIGHTING: 2%)

DESCRIPTION & REQUIREMENTS	TR 5.1 OVERSIGHT OF CLIMATE CHANGE ISSUES
SHORT DESCRIPTION OF INDICATOR	The company discloses that responsibility for climate change within the company lies at the highest level of decision-making within the company structure.
DATA REQUIREMENTS	The relevant data for this indicator are: ♦ Environmental policy and details regarding governance ♦ The reporter shall provide details on where the highest level of direct responsibility for climate change is within the organization. CDP Questionnaire 2023 mapping to this indicator: ♦ C1.1 ♦ C1.1a ♦ C1.2 External sources of data may also be used for the analysis of this indicator.
HOW THE ANALYSIS WILL BE DONE	The benchmark case is that climate change is managed within the highest decision-making structure within the company. The position at which climate change is managed within the company structure is determined from the company data submission and accompanying evidence. For small companies, or for cases in which the corporate structure does not match the structure of the maturity matrix, the analyst should assign a score based on the company's specific hierarchy (i.e., if responsibility for climate change mitigation lies at the highest level of decision-making within the organization, award "Low-carbon aligned". If responsibility lies one level below the highest level, award "Next practice", etc.). The maturity matrix used for the assessment is the following:

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Associated score	*0%*	*25%*	*50%*	*75%*	*100%*	

What is the position of the employee/ committee with highest responsibility for climate change mitigation issues?	No one in charge of climate change issues	Level 4 (see guidance)*	Level 3 (see guidance)*	Level 2 (see guidance)*	Level 1 (see guidance)*	***100%***

* Further guidance for each level of seniority is given below:
    - Level 1
        - Highest level of accountability or decision-making within the organization, with responsibility for overall organizational or corporate strategic direction.
        - Examples: Board, sub-set of the Board, Chief Executive Officer (CEO)
    - Level 2
        - Person/committee that is one step in the corporate structure from the highest level of decision-making of the organization (i.e. reports to or is accountable to Level 1). Inputs into organizational strategy but does not make decisions on it. May have responsibility and accountability for business unit strategy formation and implementation of one or more business units.
        - Examples: Vice President, Director, other C-Suite officer (e.g., Chief Financial Officer (CFO), Chief Procurement Officer (CPO), Chief Risk Officer (CRO), Chief Operating Officer (COO), Chief Sustainability Officer (CSO), etc.), other committee appointed by the Board
    - Level 3
        - Person/committee that is two steps in the corporate structure from the highest level of decision-making of the organization. May have responsibility and accountability for business unit strategy formation and implementation for one business unit.
        - Examples: Manager, Senior Manager
    - Level 4
        - Person/committee that is three or more steps in the corporate structure from the highest level of decision-making of the organization. No responsibility or accountability for business unit strategy development.
        - Examples: Officer, Senior Officer

RATIONALE	TR 5.1 OVERSIGHT OF CLIMATE CHANGE ISSUES
RATIONALE OF THE INDICATOR	Successful change within companies, such as the transition to a low-carbon economy, requires strategic oversight and buy-in from the highest levels of decision-making within the company. For the Transport sector, a change in strategy and potentially business model will be required and this cannot be achieved at lower levels within an organisation. Evidence of how climate change is addressed within the top decision-making structures is a proxy for how seriously the company takes climate change, and how well integrated it is at a strategic level. High-level ownership also increases the likelihood of effective action to address the low-carbon transition. Changes in strategic direction are necessarily future-oriented, which fits with this principle of the ACT project. Managing oversight of climate change is considered as a good practice.

• TR 5.2 CLIMATE CHANGE OVERSIGHT CAPABILITY (WEIGHTING: 1%)

DESCRIPTION & REQUIREMENTS	TR 5.2 CLIMATE CHANGE OVERSIGHT CAPABILITY
SHORT DESCRIPTION OF INDICATOR	Company board or executive management has expertise on the science and economics of climate change, including an understanding of policy, technology and consumption drivers that can disrupt current business. This expertise is used by the individual or committee to inform high-level decision-making within the company.
DATA REQUIREMENTS	The relevant data for this indicator are: ♦ Environmental policy and details regarding governance ♦ The reporter shall identify the position of the individual or name of the committee with this responsibility and outline their expertise regarding climate change and the low-carbon transition CDP Questionnaire 2023 mapping to this indicator: ♦ C1.1 ♦ C1.1a ♦ C1.1d ♦ C1.2 External sources of data may also be used for the analysis of this indicator.

HOW THE ANALYSIS WILL BE DONE

The presence of expertise on topics relevant to climate change and the low-carbon transition at the level of the individual or committee with overall responsibility for it within the company is assessed. The presence of expertise is the condition that must be fulfilled for points to be awarded in the scoring.

The analyst determines if the company has expertise as evidenced through a named expert biography outlining capabilities. A cross check is performed against 5.1 on the highest responsibility for climate change, the expertise should exist at the level identified. To be awarded Low-carbon aligned, the company must provide examples of how the individual or committee's expertise has informed strategic investment planning and/or decision-making processes.

The maturity matrix used for the assessment is the following:

Question	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Associated score	***0%***	***25%***	***50%***	***75%***	***100%***	
Does the individual or committee with oversight of climate change issues (as reported in indicator 5.1) have relevant climate change- and low-carbon transition-related expertise*?	The employee/committee does not meet any of the characteristics of climate change- and low-carbon transition-related expertise*.	The employee/committee meets 1 of the characteristics of climate change- and low-carbon transition-related expertise*.	The employee/committee meets 2 of the characteristics of climate change- and low-carbon transition-related expertise*.	The employee/committee meets 3 or more of the characteristics of climate change- and low-carbon transition-related expertise*. Expertise systematically informs strategic investment planning/decision-making processes.	The employee/committee meets 3 or more of the characteristics of climate change- and low-carbon transition-related expertise*.	***100%***

* "Characteristics of climate change- and low-carbon transition-related expertise" include:
    - Academic/professional qualification related to climate change and the low-carbon transition, including an understanding of the impacts and risks, and the solutions to implement (e.g., Bachelors, Masters, Doctorate, professional certification, diploma, etc.)

    - A purely energy-related background with no relationship to climate change and the low-carbon transition is not enough to qualify as expertise.
- Recent (i.e., within the last 10 years) professional experience related to climate change and the low-carbon transition (e.g., previous employment in a climate change/low-carbon transition-related role, or with a climate change/low-carbon transition-related organisation, etc.)
- Recent (i.e., within the last 10 years)/active membership of organization(s) driving corporate knowledge and action on climate change and the low-carbon transition (e.g., World Business Council For Sustainable Development, Solar Energy Industry Association, etc.)
- Technical knowledge related to climate change and the low-carbon transition, evidenced through recently (i.e., within the last 10 years) published outputs written by the individual/committee (e.g., statements, reports, etc.)

RATIONALE	TR 5.2 CLIMATE CHANGE OVERSIGHT CAPABILITY
RATIONALE OF THE INDICATOR	Effective management of the low-carbon transition requires specific expertise related to climate change and its impacts, and their likely direct and indirect effects on the business. Presence of this capability within or closely related to the decision-making bodies that will implement low-carbon transition both indicates company commitment to that transition and increases the chances of success. Even if companies are managing climate change at the Board level or equivalent level, a lack of expertise could be a barrier to successful management of low-carbon transition.

• TR 5.3 LOW-CARBON TRANSITION PLAN (WEIGHTING: 3%)

DESCRIPTION & REQUIREMENTS	TR 5.3 LOW-CARBON TRANSITION PLAN
SHORT DESCRIPTION OF INDICATOR	The company has a plan on how to transition the company to a business model compatible with a low-carbon economy.
DATA REQUIREMENTS	The relevant data for this indicator are: ♦ Environmental policy and details regarding governance ♦ The reporter should provide the following description of the transition plan including the following details: ♦ Whether the transition plan exists in a documented form and whether that document is public

- How the results of scenario testing influenced the transition plan
- Timescale for implementation of the transition plan
- Who has responsibility for its implementation (at the strategic, not operational, level)
- How successful implementation of the plan will be measured and monitored. (Should include details of any linked targets, emissions reduction or energy efficiency targets, or KPIs.)

CDP Questionnaire 2023 mapping to this indicator:

- C3.1
- C3.3
- C3.4

HOW THE ANALYSIS WILL BE DONE

From the 2021 CDP Transition Plans discussion paper: “A climate transition plan is a time-bound action plan that clearly outlines how an organization will achieve its strategy to pivot its existing assets, operations, and entire business model towards a trajectory that aligns with the latest and most ambitious climate science recommendations, i.e., halving greenhouse gas (GHG) emissions by 2030 and reaching net-zero by 2050 at the latest, thereby limiting global warming to 1.5°C.” (20). Other initiatives also develop their own definition, which are quite similar (IFRS - International Financial Reporting Standards, TCFD - Task Force on Climate-Related Financial Disclosures, EFRAG - European Financial Reporting Advisory Group, TPT – UK Transition Plan Task Force, GFANZ – Glasgow Financial Alliance for Net Zero).

The analyst evaluates the description and evidence of the low-carbon transition plan for the presence of best practice elements and consistency with the other reported management indicators. The company description and evidence are compared to the maturity matrix developed to guide the scoring and a greater number of points are allocated for elements indicating a higher level of maturity.

Among the best practice elements identified to date are:

- The plan includes financial projections
- The plan should include cost estimates or other assessments of financial viability as part of its preparation
- The description of the major changes to the business is comprehensive, consistent, aligned with other indicators
- Quantitative estimates of how the business will change in the future are included
- Costs associated with the plan (e.g. write-downs, site remediation, contract penalties, regulatory costs) are included
- Potential “shocks” or stressors (sudden adverse changes) have been taken into consideration
- Relevant region-specific considerations are included
- The plan’s measure of success is SMART – contains targets or commitments with timescales to implement them, is time-constrained or the actions anticipated are time-constrained

- The plan's measure of success is quantitative
- The description of relevant testing/analysis that influenced the transition plan is included
- The plan is consistent with reporting against other ACT indicators
- The scope should cover entire business, and is specific to that business
- The plan should cover the short, medium and long terms. From now or the near future <5 years, until at least 2035 and preferably beyond (2050)
- The plan contains details of actions the company realistically expects to implement (and these actions are relevant and realistic)
- The plan is approved at the strategic level within the organisation
- Discussions about the potential impacts of a low-carbon transition on the current business have been included
- The company has a publicly-acknowledged well-below 2°C (or beyond) science-based target (SBT)
- The company has been carrying out a diagnosis of climate change impacts and identified related physical risks

The maturity matrix used for the assessment is the following:

Subdimension	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Associated score	***0%***	***25%***	***50%***	***75%***	***100%***	
Measure of success	No measure of success		At least one measure of success which is fully SMART* and contains both qualitative and quantitative elements.		More than one measure of success. All measures of success are fully SMART*, contain both qualitative and quantitative elements, and are aligned with a low-carbon scenario.	***10%***
Financial content in plan	No financial content	Financial projections, cost estimates or other estimates of financial viability are described but not quantified.	Financial projections, cost estimates or other estimates of financial viability are quantified in some detail.	Quantitative estimations of how the business will change in the future are included. Costs associated with the plan (e.g., write-downs, site	Description of the major financial changes to the business over all timescales is comprehensive and aligned with other indicators. The transition plan is integrated into the	***10%***

				remediation, contract penalties, regulatory costs) are included.	overall business strategy of the organization and linked to the profit and loss statement.	
Short-term actions (recent past up to reporting year + 5 years)	Contains no discussion of short-term actions.		Contains examples of short-term actions the company expects to implement.		Contains detailed descriptions of relevant and achievable short-term actions the company expects to implement to make the transition a reality.	***10%***
Long-term actions and vision (from reporting year + 5 years onwards)	Contains no discussion of long-term actions or vision.		Contains descriptions of long-term actions the company expects to implement to make the transition a reality.		Contains descriptions of long-term actions the company expects to implement to make the transition a reality. Contains a vision of what the far-future company could look like in terms of physical assets and business model.	***10%***
Scope	Scope of transition plan is not defined.	Transition plan applies only to specific business units/operations (representing less than 50% of company's GHG emissions).	Transition plan applies only to specific business units/operations (representing more than 50% of company's GHG emissions).	Transition plan applies to all business units/operations.	Transition plan applies to all business units/operations and the rest of the value chain (upstream and downstream). Any exclusions from the plan must not be material to the organization in terms of GHG emissions.	***10%***
Implementation of results of scenario testing	The results of the company's scenario testing (as assessed in Indicator 5.5 – Scenario				The results of the company's scenario testing (as assessed in Indicator 5.5 – Scenario testing) have informed the development of the	***10%***

	testing) have not informed the development of the company's transition plan.				company's transition plan.	
Transition plan timescale†	Covers only short term, from reporting year until (RY + 3 years)	Covers only short and medium term, from reporting year until (RY + 4 to 10 years)	Covers short, medium and long term, from reporting year until (RY + 11 to 20 years)	Covers short, medium and long term, from reporting year until (RY + 21 years to 2049)	Covers short, medium and long term, from reporting year until 2050 or beyond	***10%***
Review and update process	No transition plan review and update process is in place.	Commitment to review and update transition plan, but no defined timescale or process.	Commitment to review and update transition plan, with either a defined timescale or process.	Commitment to review and update transition plan less often than every 5 years, with a defined process.	Commitment to review and update transition plan at least every 5 years for continuous relevancy and efficacy, with a defined process.	***10%***
Progress reporting process	No transition plan progress reporting process is in place.	Commitment to report progress against the transition plan and any material changes, but no defined timescale or stakeholder feedback process (e.g., shareholders and AGMs).	Commitment to report progress against the transition plan and any material changes, with either a defined timescale or stakeholder feedback process (e.g., shareholders and AGMs).	Commitment to report progress against the transition plan and any material changes less often than annually, with a defined stakeholder feedback process (e.g., shareholders and AGMs).	Commitment to report progress against the transition plan and any material changes annually, with a defined stakeholder feedback process (e.g., shareholders and AGMs).	***10%***
The role of a carbon price in the plan	No carbon price is considered.	Internal studies have been conducted regarding a carbon price, but this has not been used to guide decisions.	A carbon price is used only qualitatively by the company.	A carbon price is embedded in cost calculations as a financial indicator.	The carbon price value is aligned with a low-carbon scenario‡ and is integrated into the financial scenario used for making key business decisions.	***10%***

* A measure of success is considered “fully SMART” if it meets each of the following SMART elements (21):
    1. Specific: the measure of success is explicit, with no room for misinterpretation.
    2. Measurable: the measure of success is measurable, and it will be clear when it has been achieved.
    3. Achievable: the measure of success is stretching and ambitious, but not so much that it is unachievable.
    4. Relevant: the measure of success contributes to the organisation’s overall objectives and complements other measures of success.
    5. Time-bound: the measure of success has a set deadline.
† Companies aiming to achieve their low-carbon transition (e.g., reach net-zero emissions) any year before 2050 and maintain or improve this low-carbon state beyond this specified year, should score Low-carbon aligned.

Refer for instance to International Energy Agency (IEA), World Energy Outlook 2019, Annex B, p 758 (22). CO_2 prices are displayed by world regions, predicted values in 2030 and 2050.

RATIONALE	TR 5.3 LOW-CARBON TRANSITION PLAN
RATIONALE OF THE INDICATOR	The Transport sector will require substantial changes to its business to align with a low-carbon economy over the short, medium and long term, whether voluntarily following a strategy to do so or if forced to change by regulations and structural changes to the market. It is better for the success of its business and of its transition that these changes occur in a planned and controlled manner.

• TR 5.4 CLIMATE CHANGE MANAGEMENT INCENTIVES (WEIGHTING: 1%)

DESCRIPTION & REQUIREMENTS	TR 5.4 CLIMATE CHANGE MANAGEMENT INCENTIVES
SHORT DESCRIPTION OF INDICATOR	The Board’s compensation committee has included metrics for the reduction of GHG emissions in the annual and/or long-term compensation plans of senior executives; the company provides monetary incentives for the management of climate change issues as defined by a series of relevant indicators.
DATA REQUIREMENTS	The relevant data for this indicator are: ♦ Management incentives

- The reporter shall report whether the company provides incentives for the management of climate change issues, including the attainment of targets
- The reporter shall provide details on the incentives provided for the management of climate change issues
- The reporter shall provide details on the activities that are usually rewarded by incentives in the company

CDP Questionnaire 2023 mapping to this indicator:

- C1.3
- C1.3a

HOW THE ANALYSIS WILL BE DONE

The analyst verifies if the company has compensation incentives set for senior executive compensation and/or bonuses, that directly and routinely reward specific, measurable reductions of tons of carbon emitted by the company in the preceding year and/or the future attainment of emissions reduction targets, or other metrics related to the company's low-carbon transition plan. For small companies, or for cases in which the corporate structure does not match the structure of the maturity matrix, the analyst should assign a score based on the company's specific hierarchy (i.e., if climate change management incentives are awarded to the highest level of decision-making within the organization, award "Low-carbon aligned". If incentives are available one level below the highest level, award "Next practice", etc.).

Note: the wording of the "What is the type of incentive" is based on the Executive Compensation Guidebook for Climate Transition developed by Willis Towers Watson, in partnership with the Climate Management Initiative, a project in collaboration with the World Economic Forum (23).

Question	Subdimension	Basic	Standard	Advanced	Next practice	Low-carbon aligned	Weighting
Associated score		***0%***	***25%***	***50%***	***75%***	***100%***	
Who is entitled to benefit?	*Who is entitled to benefit?*	Any other answer	Level 4 (see guidance)*	Level 3 (see guidance)*	Level 2 (see guidance)*	Level 1 (see guidance)*	***50%***

What is the type of incentive ?	*Type of incentive*	No incentives	The company has introduced climate metrics (key performance indicators (KPIs)), including metrics related to GHG emissions reductions, within annual bonuses (or other short-term incentive plans).		The company has introduced climate metrics (key performance indicators (KPIs)), including metrics related to GHG emissions reductions, within its long-term incentive plan (likely to include equity in the company).	The company has introduced climate metrics, (key performance indicators (KPIs)), including metrics related to GHG emissions reductions, within its long-term incentive plan (likely to include equity in the company). This plan aligns with the timescale and content of the company's transition plan and emissions reduction targets.	***50%***

- Further guidance for each level of seniority is given below:
    - Level 1
        - Highest level of accountability or decision-making within the organization, with responsibility for overall organizational or corporate strategic direction.
        - Examples: Board, sub-set of the Board, Chief Executive Officer (CEO)
    - Level 2
        - Person/committee that is one step in the corporate structure from the highest level of decision-making of the organization (i.e. reports to or is accountable to Level 1). Inputs into organizational strategy but does not make decisions on it. May have responsibility and accountability for business unit strategy formation and implementation of one or more business units.
        - Examples: Vice President, Director, other C-Suite officer (e.g., Chief Financial Officer (CFO), Chief Procurement Officer (CPO), Chief Risk Officer (CRO), Chief Operating Officer (COO), Chief Sustainability Officer (CSO), etc.), other committee appointed by the Board
    - Level 3

- Person/committee that is two steps in the corporate structure from the highest level of decision-making of the organization. May have responsibility and accountability for business unit strategy formation and implementation for one business unit.
- Examples: Manager, Senior Manager

- Level 4
  - Person/committee that is three or more steps in the corporate structure from the highest level of decision-making of the organization. No responsibility or accountability for business unit strategy development.
  - Examples: Officer, Senior Officer

RATIONALE	TR 5.4 CLIMATE CHANGE MANAGEMENT INCENTIVES
RATIONALE OF THE INDICATOR	Executive compensation should be aligned with overall business strategy and priorities. As well as commitments to action the company should ensure that incentives, especially at the executive level, are in place to reward progress towards a low-carbon transition. This will improve the likelihood of a successful low-carbon transition. Monetary incentives at the executive level are an indication of commitment to successful implementation of a low-carbon transition strategy.

• TR 5.5 CLIMATE CHANGE SCENARIO TESTING (WEIGHTING: 3%)

DESCRIPTION & REQUIREMENTS	TR 5.5 CLIMATE CHANGE SCENARIO TESTING
SHORT DESCRIPTION OF INDICATOR	Testing or analysis relevant to determining the impact of the transition to a low-carbon economy on the current and projected business model and/or business strategy has been completed, with the results reported to the Board or C-suite (CEO, CFO, etc.), the business strategy revised where necessary, and the results publicly reported.
DATA REQUIREMENTS	The relevant data for this indicator are: ♦ The reporter shall provide the details and supporting documents on the organization's climate change scenario testing CDP Questionnaire 2023 mapping to this indicator: ♦ C2.2 ♦ C2.3a ♦ C3.2

- C3.2a
- C3.2b

HOW THE ANALYSIS WILL BE DONE

The analyst evaluates the description and evidence of the low-carbon economy scenario testing for the presence of best-practice elements and consistency with the other reported management indicators. The company description and evidence are compared to the maturity matrix developed to guide the scoring and a greater number of points is allocated for elements indicating a higher level of maturity.

Best-practice elements to be identified in the test/analysis include:

- full coverage of the company's boundaries
- timescale from present to long-term (2035-2050)
- results are expressed in value-at-risk or other financial terms
- multivariate: a range of different changes in conditions are considered together
- changes in conditions are specific to a low-carbon climate scenario
- climate change conditions are combined with other likely future changes in operating conditions over the timescale chosen

Question	Subdimension	Basic	Standard	Advanced	Next practice	Low carbon aligned	Weighting
Associated score		***0%***	***25%***	***50%***	***75%***	***100%***	
What is the scope of the scenario testing?	*Scope*	Scope of scenario testing is not defined.	Scenario testing applies only to specific business units / operations (representing less than 50% of company's GHG emissions).	Scenario testing applies only to specific business units / operations (representing more than 50% of company's GHG emissions).	Scenario testing applies to all business units / operations,	Scenario testing applies to all business units / operations and the rest of the value chain (upstream and downstream). Any exclusions from the plan must not be material to the organization in terms of GHG emissions.	***25%***

What is the timescale of the scenario testing?	*Timescale*	Covers only short term, from reporting year until (RY + 3 years).	Covers only short and medium term, from reporting year until (RY + 4 to 10 years).	Covers short, medium and long term, from reporting year until (RY + 11 to 20 years).	Covers short, medium and long term, from reporting year until (RY + 21 years to 2049).	Covers short, medium and long term, from reporting year until 2050 or beyond.	***20%***
Does the company assess the materiality of climate-related risks/opportunities*?	*Climate-related risks/opportunities**	The materiality of climate-related risks/opportunities* is not assessed	The materiality of 1 category of climate-related risks/opportunities* is assessed	The materiality of 2 categories of climate-related risks/opportunities* is assessed	The materiality of 3 categories of climate-related risks/opportunities* is assessed	The materiality of 4 categories of climate-related risks/opportunities* is assessed	***10%***
How many scenarios are considered?	*Scenarios*	No scenarios are considered	Considers 1 scenario	Considers 2 scenarios		Considers 3 or more scenarios, including a low-carbon economy scenario	***10%***
What parameters/ assumptions are considered?	*Parameters/ assumptions considered*	Considers 1-2 different parameters/assumptions		Considers 3-4 parameters/assumptions together (multivariate)		Considers 5 or more parameters/assumptions together, related to changing climate conditions in combination with changes in operating conditions	***15%***

Are the results† expressed in qualitative/ quantitative/ financial terms?	*Results†*	No results available	Expressed only in qualitative terms	Expressed in qualitative and quantitative terms	Expressed in qualitative, quantitative and financial terms	Expressed in qualitative, quantitative and financial terms and results are translated into value-at-risk	***10%***
Is a carbon price considered?	*Carbon price*	No carbon price is considered		A carbon price is used as one of the main parameters/assumptions		The carbon price used is aligned with the parameters/assumptions of a low-carbon economy scenario‡	***10%***

* Climate-related risk categories (24):
    1. Market and Technology shifts
    2. Reputation
    3. Policy and Legal
    4. Physical Risks
† Results of scenario analysis should be presented as business impacts which can include (24):
    - Earnings – what conclusions does the organization draw about impact on earnings and how does it express that impact (e.g., as EBITDA (earnings before interest, taxes, depreciation and amortization), EBITDA margins, EBITDA contribution, dividends)?
    - Costs – what conclusions does the organization draw about the implications for its operating/production costs and their development over time?
    - Revenues – what conclusions does the organization draw about the implications for the revenues from its key commodities/ products/ services and their development over time?
    - Assets – what are the implications for asset values of various scenarios?
    - Capital Allocation/ investments – what are the implications for capex and other investments?

- Timing – what conclusions does the organization draw about development of costs, revenues and earnings across time (e.g., 5/10/20 years)?

Refer for instance to International Energy Agency (IEA), World Energy Outlook 2019, Annex B, p 758 (22). CO_2 prices are displayed by world regions, predicted values in 2030 and 2050.

RATIONALE	AU 5.5 CLIMATE CHANGE SCENARIO TESTING
RATIONALE OF THE INDICATOR	Changes predicted to occur due to climate change could have a number of consequences for the Transport sector, including increased costs, a dramatically changed operating environment and major disruptions to the business. There are a variety of ways of analysing the potential impacts of climate-related changes on the business, whether these are slow and gradual developments or one-off “shocks”. Investors are increasingly calling for techniques such as use of an internal price on carbon, scenario analysis and stress testing to be implemented to enable companies to calculate the value-at-risk that such changes could pose to the business. As this practice is emergent at this time there is currently no comprehensive survey or guidance on specific techniques or tools recommended for the sector. The ACT methodology thus provides a broad definition of types of testing and analysis that can be relevant to this information requirement, to identify both current and best practices and consider them in the analysis. Scenario stress testing is an important management tool for preparing for the low-carbon transition. For businesses likely to be strongly affected by climate change impacts (both direct and indirect), it has even greater importance.

MODULE 6: SUPPLIER ENGAGEMENT (WEIGHTING: 15% IN GENERAL OR 7% FOR PUBLIC SERVICE DELEGATION)

- **TR 6.1 ENGAGEMENT WITH TRANSPORT SERVICE SUBCONTRACTORS (WEIGHTING: 8%*SHARE OF GHG EMISSIONS LINKED TO SUBCONTRACTED ACTIVITIES IN GENERAL OR 0% FOR PUBLIC SERVICE DELEGATION)**

DESCRIPTION & REQUIREMENTS	TR 6.1 ENGAGEMENT WITH TRANSPORT SERVICE SUBCONTRACTORS
SHORT DESCRIPTION OF INDICATOR	This indicator assesses how the company has implemented instruments to influence or enable subcontracting companies to invest in solutions for a low-carbon transition in order to reduce their carbon intensity, or otherwise shift or select subcontracting companies based on their emissions performance.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 6.A - Variation of [CDP C12.1a] • The reporter shall give details of the methods of subcontractors engagement, your strategy for prioritizing subcontractors engagements and measures of success ♦ TR 6.B - Part of [CDP C12.1a] • The reporter shall report the number of subcontractors with whom you are engaging and the proportion of your total subcontracted activity that they represent
HOW THE ANALYSIS WILL BE DONE	The analysis assigns a maturity score based on the company's demonstration of engagement with its sub-contractors, expressed in a maturity matrix. Best actions to be identified include the following: ♦ Carbon intensity of the transport service provided by subcontractors is a criterion for the choice of a sub-contractor by the company. ♦ The company demonstrates that it encourages its subcontractors to reduce their GHG emissions ♦ The company monitors the emissions evolution of the transport service provided by its subcontractors Maximum score is obtained if all of these elements are demonstrated.

BASIC	STANDARD	ADVANCED	NEXT PRACTICE	LOW-CARBON ALIGNED
No engagement with subcontractors with respect to emissions reduction	Company requires subcontractors to disclose carbon footprint of their services. Company has self-reported information by sub-contractors audited.	Company encourages subcontractors to reduce their emissions with communication materials and contract clauses. Company has a criterion on emissions for the choice of new sub-contracting company.	Company monitor emissions reductions of sub-contractors. Company collaborates with sub-contractors to adopt technologies and practices reducing activities emissions.	Company has proven track record of emissions reductions of subcontracted activities, due to the measures implemented.

For the freight transport subsector, the company is encouraged to use internally and to promote reporting though existing referentials such as the GLEC Framework [11] among its subcontractors so that they become standards and widely used in the transport sector, improving knowledge and transparency on carbon performance.

RATIONALE	TR 6.1 ENGAGEMENT WITH TRANSPORT SERVICE SUBCONTRACTORS

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

This indicator is relevant only in the case where part of the transport service is sub-contracted to other transport operators. It evaluates the company's ability to engage its subcontractors in the low-carbon transition, particularly through their Direct operations, operational excellence or modal shift.

SCORING OF THE INDICATOR:

Because of data availability and complexity, a direct measure of the outcome of such engagement is not easy in the current context It is often challenging to quantify the emissions reduction potential and outcome of collaborative activities within the supply chain. Therefore, the approach of a maturity matrix allows the analyst to consider multiple dimensions of sub-contractors' engagement.

The weight of this indicator ranges from 0% in case of transport service 100% operated by own fleet, to 8% in case of transport service 100% subcontracted. It goes only up to 0.5% for the specific case of public service delegation because it is much more difficult for the companies in this case to influence the choices on fleet operation.

$$Weight = 8\% * Share\ of\ GHG\ emissions\ linked\ to\ subcontracted\ activities$$

- **TR 6.2 ENGAGEMENT WITH VEHICLE MANUFACTURERS (WEIGHTING: 2% + 8%*(1-SHARE OF GHG EMISSIONS LINKED TO SUBCONTRACTED ACTIVITIES) IN GENERAL OR 2% FOR PUBLIC SERVICE DELEGATION)**

DESCRIPTION & REQUIREMENTS	TR 6.2 ENGAGEMENT OF VEHICLE MANUFACTURERS
SHORT DESCRIPTION OF INDICATOR	This indicator assesses if the company has a strategy, ideally governed by a clear policy and integrated into business decision making, to influence, enable, or possibly shift vehicle manufacturers' choices and behaviour in order to reduce GHG emissions of their products.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 6.C - Variation of [CDP C12.1a] • The reporter shall give details of the methods of engagement with manufacturers, your strategy for manufacturers selection, engagements and measures of success
HOW THE ANALYSIS WILL BE DONE	The analysis assigns a maturity score based on the company's demonstration of engagement with vehicle manufacturers, expressed in a maturity matrix. Successive levels into this matrix represent a more advanced level of engagement that works towards a collaborative effort to manufacture energy efficient and low carbon vehicles. The performance of the vehicles directly impacts the company's ability to reduce its GHG emissions.

BASIC	STANDARD	ADVANCED	NEXT PRACTICE	LOW-CARBON ALIGNED
No engagement with manufacturers/leasers with respect to GHG emissions.	The company requires manufacturers/leasers to sign a code of conduct.	The company has a criterion on emissions for vehicle choice.	The company collaborates with manufacturers on R&D low carbon vehicles.	The company has a proven track record of emissions reduction due to R&D

	The company expresses its will for low-carbon vehicles.	The company has a track record of reducing emission by choosing vehicles with low carbon footprint.	The company collaborate in R&D with manufacturers to improve the efficiency of vehicles.	collaboration with manufacturers.

This maturity matrix is indicative but does not show all possible options that can result in a particular score. Companies' responses are examined by the analyst and then placed on the level in the matrix where the analyst deems it most appropriate.

RATIONALE	TR 6.2 ENGAGEMENT OF VEHICLE MANUFACTURERS
RATIONALE OF THE INDICATOR	**RELEVANCE OF THE INDICATOR:** The major part of a vehicle GHG emissions are due to technological choices in motorization, aerodynamics, weight etc. Therefore, transport operators' levels of emissions are highly dependent on the choices made by their vehicles' manufacturers. It is thus crucial for the Transport sector to engage with vehicle manufacturers to accelerate a shift toward more carbon efficient vehicles. This indicator assesses the proactiveness of the company towards manufacturers on GHG emissions issues. **SCORING OF THE INDICATOR:** The weight of this indicator ranges from 2% in case of transport service 100% subcontracted, to 10% in case of transport service 100% operated by own fleet. $$Weight = 2\% + 8\% * (1 - Share\ of\ GHG\ emissions\ linked\ to\ subcontracted\ activities)$$

- **TR 6.3 ENGAGEMENT WITH INFRASTRUCTURE OPERATORS (WEIGHTING: 5%)**

DESCRIPTION & REQUIREMENTS	TR 6.3 ENGAGEMENT WITH INFRASTRUCTURE OPERATORS
SHORT DESCRIPTION OF INDICATOR	This indicator assesses if the company has a strategy, ideally governed by a clear policy and integrated into business decision making, to influence, enable, or possibly shift infrastructure operators' choices and behaviour in order to reduce GHG emissions of the transport system.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- TR 6.D - Same as [CDP C12.1d]
  - The reporter shall provide details on collaboration with infrastructure operators

HOW THE ANALYSIS WILL BE DONE

The analysis assigns a maturity score based on the company's demonstration of engagement with infrastructure operators, expressed in a maturity matrix. Successive levels into this matrix represent a more advanced level of engagement that works towards a collaborative effort to move to a low-carbon transport system, encompassing vehicle usage and infrastructure.

BASIC	STANDARD	ADVANCED	NEXT PRACTICE	LOW-CARBON ALIGNED
No engagement with infrastructure operators with respect to GHG emissions reduction		The company can provide one example of a successful action it took to improve the infrastructure and decrease the carbon footprint of its services.		The company can demonstrate it has pushed an infrastructure operator to commit for the development of services enabling the operation of low-carbon vehicles and energies, at the right scale.

This maturity matrix is indicative but does not show all possible options that can result in a particular score. Companies' responses are examined by the analyst and then placed on the level in the matrix where the analyst deems it most appropriate. In particular, the analyst shall be careful to check that the engagement with an infrastructure operator does not have counterproductive effects in binding the operator to a specific type of operation, preventing any shift to a more decarbonized option later on, for example.

RATIONALE — **TR 6.3 ENGAGEMENT WITH INFRASTRUCTURE OPERATORS**

RATIONALE OF THE INDICATOR

RELEVANCE OF THE INDICATOR:

Effort to reduce the use of fossil fuels can also be supported by infrastructure operators. For example, railway electrification, docks electrification in ports to reduce the use of HFO by ships when calling to ports, providing charging stations or biogas supply station for road operators… Companies can engage with infrastructure operators to foster changes needed to move to a low-carbon transport system.

SCORING THE INDICATOR:

The weight of the indicator is 5%. It reflects the importance for transport operators to collaborate with infrastructure operators in order to ensure that they can easily shift their fleet to less emissive options.

MODULE 7: CLIENT ENGAGEMENT (WEIGHTING: 10% IN GENERAL OR 15% FOR PUBLIC SERVICE DELEGATION)

- **TR 7.1 STRATEGY TO INFLUENCE CUSTOMER BEHAVIOUR TO REDUCE THEIR GHG EMISSIONS (WEIGHTING: 3% IN GENERAL OR 4.5% FOR PUBLIC SERVICE DELEGATION)**

DESCRIPTION & REQUIREMENTS	TR 7.1 STRATEGY TO INFLUENCE CUSTOMER BEHAVIOUR TO REDUCE THEIR GHG EMISSIONS
SHORT DESCRIPTION OF INDICATOR	This indicator measures whether the company has a strategy, ideally governed by a clear policy and integrated into business decision making, in order to influence its clients to reduce their GHG emissions.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 7.A - Part of [CDP C12.1b] • The reporter shall disclose whether the company has any strategy to influence clients GHG emissions ♦ TR 7.B - Part of [CDP C12.1b] • To which clients does this strategy apply to? • Description of the strategy: what are the levers employed to make your clients choose low-carbon transport services? • Description of actions for each identified lever (time scale, description of activity, extension plans, success KPI)
HOW THE ANALYSIS WILL BE DONE	The strategy has to mention whether: ♦ GHG emissions reduction is part of the goal in the engagement with clients ♦ Customers are engaged either directly through education, collaboration or compensation, or indirectly through company regulation or customer motivation via marketing and choice architecture. ♦ It is an active rather than a reactive strategy; a reactive strategy responds only to customer demand for more low-carbon transport offers, whereas an active strategy attempts to change the existing customer demand towards low-carbon alternatives. ♦ It is widespread. The strategy has to apply to the majority the activity of the company. **SCORING OF THE INDICATOR:**

Scoring of this indicator is done on a set of narrative data points that do not have a quantitative interpretation. The maturity matrix shown below is used to assess the company strategy. Each sub-dimension has the same weight (50%-50%) in the final score of this indicator.

SUBDIMENSION	BASIC	STANDARD	ADVANCED	NEXT PRACTICE	LOW-CARBON ALIGNED
Extent of the strategy	No engagement with clients		Only main clients are targeted by the strategy		All clients are targeted by the strategy
GHG reduction is targeted	No engagement with customers regarding GHG emissions reduction	GHG emissions reduction is mentioned in the strategy of engagement with clients	GHG emissions reduction is mentioned in the strategy, along with levers identified to influence clients	Quantified GHG emissions reduction for the clients in the strategy Levers to reach the objective are identified	Quantified GHG emissions reduction for the clients is included as a priority in the strategy Levers to reach the objective are identified

RATIONALE	TR 7.1 STRATEGY TO INFLUENCE CUSTOMER BEHAVIOUR TO REDUCE THEIR GHG EMISSIONS
RATIONALE OF THE INDICATOR	**RELEVANCE OF THE INDICATOR:** Along with technological choices, one of the main drivers for transport operators' levels of GHG emissions is the demand for transport. This indicator evaluates the company's strategy to shift transport demand towards lower carbon services, by leveraging modal shift, load optimization, alternative energies use, distance reduction, etc. The companies dealing with public service delegation have public authorities as their clients and thus have a key role to play to influence them to reduce their GHG emissions. For some transport operators, most of their clients are public entities. Therefore, they have two strategy: one for their direct clients (public entities) and one for the final clients. Indicators can be relevant for both types: direct clients and final clients. Therefore, if a company has two distinct strategy, assessor can take into account both strategies and apply a weighting for both (weighting would be more important for direct clients than for final clients).

- **TR 7.2 ACTIVITIES TO INFLUENCE CUSTOMER BEHAVIOUR TO REDUCE THEIR GHG EMISSIONS (WEIGHTING: 7% IN GENERAL OR 10.5% FOR PUBLIC SERVICE DELEGATION)**

DESCRIPTION & REQUIREMENTS	TR 7.2 ACTIVITIES TO INFLUENCE CUSTOMER BEHAVIOUR TO REDUCE THEIR GHG EMISSIONS
SHORT DESCRIPTION OF INDICATOR	This indicator measures whether the company has a strategy, ideally governed by a clear policy and integrated into business decision making, and activities to influence, enable, or otherwise shift customer choices and behaviour in order to reduce GHG emissions.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 7.C - Part of [CDP C12.1b] • The reporter shall disclose whether the company carries out actions (e.g. marketing campaigns, financial incentives, takeback incentives) to influence clients' choice toward low-carbon transport services? ♦ TR 7.D - Part of [CDP C12.1b] • Description of the program (time scale, description of activity, extension plans, success KPI)
HOW THE ANALYSIS WILL BE DONE	The activities have to mention whether: ♦ GHG emissions reduction is part of the goal ♦ Customers are engaged either directly through education, collaboration or compensation, or indirectly through company regulation or customer motivation via marketing and choice architecture. ♦ Activities are such as marketing campaign, carbon content disclosure of transport services provided. Example: Nudge marketing to promote low-carbon transport services, transparency over the carbon impact of the transport services…

SCORING OF THE INDICATOR:

Scoring of this indicator is done on a set of narrative data points that do not have a quantitative interpretation. The maturity matrix shown below is used to assess the company strategy.

BASIC	STANDARD	ADVANCED	NEXT PRACTICE	LOW-CARBON ALIGNED
No actions with customers	The company does market campaigns that specifically aim to highlight low carbon	The company systematically provides passengers or	The company pushes forward alternative modes of transport and has a pricing policy to	The company has proven track of client's emissions reductions regarding

		transport and operational practices	shippers the carbon impact of their travel or shipment.	encourage environmental-friendly transport	transport, due to engagement with the customers

RATIONALE	TR 7.2 ACTIVITIES TO INFLUENCE CUSTOMER BEHAVIOUR TO REDUCE THEIR GHG EMISSIONS
RATIONALE OF THE INDICATOR	**RELEVANCE OF THE INDICATOR:** Along with technological choices, one of the main drivers for transport operators' levels of GHG emissions is the demand for transport. This indicator evaluates the company's actions with clients to shift transport demand towards lower carbon services, by leveraging modal shift, load optimization, alternative energies use, distance reduction, etc. The companies dealing with public service delegation have public authorities as their clients and thus have a key role to play to influence them to reduce their GHG emissions.. For some transport operators, most of their clients are public entities. Therefore, they have two kind of activities: one for their direct clients (public entities) and one for the final clients. Indicators can be relevant for both types: direct clients and final clients. Therefore, if a company has two distinct kind of activities, assessor can take into account both kind of activities and apply a weighting for both (weighting would be more important for direct clients than for final clients).

MODULE 8: POLICY ENGAGEMENT (WEIGHTING: 5% IN GENERAL OR 8% FOR PUBLIC SERVICE DELEGATION)

MODULE RATIONALE

Transport operations are regulated at international, national or local level (e.g. IMO regulations on SO_x for maritime transport, limitation of truck transit on specific days on a territory…). However, regulation affecting the sector is usually developed in a consultative fashion due to the need for technical inputs. This allows significant room for influencing these regulations, potentially in a way that is negative for the climate. Since the transport sector is currently a major source of GHG emissions, timely regulation is necessary to ensure that scientific limits are considered and that there is a "level playing field" for businesses in this sector to approach transition to a low-carbon economy.

• TR 8.1 COMPANY POLICY ON ENGAGEMENT WITH TRADE ASSOCIATIONS (WEIGHTING: 2%)

DESCRIPTION & REQUIREMENTS	TR 8.1 COMPANY POLICY ON ENGAGEMENT WITH TRADE ASSOCIATIONS
SHORT DESCRIPTION OF INDICATOR	The company is not on the Board or providing funding beyond membership of any trade associations that have climate-negative activities or positions. It should also be considered if the company is supporting trade associations with *climate-positive* activities and/or positions. The company has a constructive policy on what action to take when industry and trade organisations to which it has membership are found to be opposing "climate-friendly" policies.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 8.D - Same as [CDP C12.3b] • Are you on the Board of any trade associations or provide funding beyond membership? (Yes or no) ♦ TR 8.E - Same as [CDP C12.3c] • The reporter should provide details of those trade associations that are likely to take a position on climate change legislation ♦ TR 8.F • The company shall disclose if it has a policy to govern action when trade associations supported take positions on legislation that could hinder progress on transition to a low-carbon economy, and if this policy is public.

HOW THE ANALYSIS WILL BE DONE

The list of trade associations declared in the CDP data and other external source entries relating to the company is assessed against a list of associations that have climate-negative activities or positions. If the company is part of trade associations that have climate-positive activities and/or positions, this should be considered for the analysis. The analyst evaluates the description and evidence of the policy on trade associations and climate change for the presence of best practice elements and consistency with the other reported management indicators. The company description and evidence are compared to the maturity matrix developed to guide the scoring and a greater number of points will be allocated for elements indicating a higher level of maturity.

Best practice elements to be identified in the test/analysis include:

- Having a publicly available policy in place
- The scope of the policy covers the entire company and its activities, and all group memberships and associations
- The policy sets out what action is to be taken in the case of inconsistencies
- Action includes the option to terminate membership of the association
- Action includes the option of publicly opposing or actively countering the association's position
- Responsibility for oversight of the policy lies at the top level of the organisation
- There is a process to monitor and review trade association positions

Maximum points are awarded if all these elements are demonstrated.
The following maturity matrix is used to score this indicator:

Subdimension	BASIC	STANDARD	ADVANCED	NEXT-PRACTICE	LOW-CARBON ALIGNED
Transparency and scope	Does not cover entire company or all group memberships. Is not publicly available.	Does not cover entire company or all group memberships. Is publicly available.	Covers the entire company and its activities, and all group memberships and associations, but not publicly available	-	Covers the entire company and its activities, and all group memberships and associations. Public policy is publicly available
Oversight of trade associations' positions	No process to monitor and review trade association positions		A process to monitor and review trade association positions exists		Responsibility for oversight of the policy lies at top level of the organisation

Action plan if trade associations support climate-negative activities	No mention of this element	-	Sets out what action is to be taken in the case of inconsistencies	Option to terminate membership of the association	Option of publicly opposing or actively countering the association position
Membership / funding	Company is on the board or provides funding beyond membership to trade associations that have climate-negative activities or positions.		The company is not on the board or providing funding beyond membership of any trade associations that have climate-negative activities or positions. Company can be member.	-	Company is not a member of any trade associations that have climate negative activities or positions

RATIONALE	TR 8.1 COMPANY POLICY ON ENGAGEMENT WITH TRADE ASSOCIATIONS
RATIONALE OF THE INDICATOR	See also the module rationale. Trade associations are a key instrument by which companies can indirectly influence policy on climate. Thus, when trade associations take positions that are negative for the climate, companies need to take action to ensure that this negative influence is countered or minimised. A policy to govern such interaction is a specific request of the 2015 UNPRI “investor expectations on corporate climate lobbying” document [39].

• TR 8.2 POSITION ON SIGNIFICANT CLIMATE POLICIES (WEIGHTING: 1%)

DESCRIPTION & REQUIREMENTS	TR 8.2 POSITION ON SIGNIFICANT CLIMATE POLICIES
SHORT DESCRIPTION OF INDICATOR	The company is not opposed to any significant climate relevant policy and/or supports climate friendly policies.

DATA REQUIREMENTS

The questions comprising the information request that are relevant to this indicator are:

- TR 8.A
  - The company shall provide details or supporting documents on your organizations public climate change policy positions
- TR 8.B - Include [CDP C12.3f]
  - Description of the policy (scope and boundaries, governance, actions when trade association position is inconsistent with the company's policy, process to monitor and review engagement with trade associations to ensure consistency with the company's policy)
- TR 8.C - Same as [CDP C12.3a]
  - The company shall disclose details of the issues on which it has been directly engaging with policy makers and its proposed legislative solution.

External sources of data shall also be used for the analysis of this indicator (e.g. RepRisk database, press news).

HOW THE ANALYSIS WILL BE DONE

The analyst evaluates the description and evidence on the company's position on relevant climate policies for the presence of best practice elements, negative indicators and consistency with the other reported management indicators. The company description and evidence are compared to the maturity matrix developed to guide the scoring and a greater number of points are allocated for elements indicating a higher level of maturity.

Maturity matrix contents may include (decreasing maturity):

a. The company publicly supports relevant significant climate policies
b. No reports of any opposition to climate policy
c. Reported indirect opposition to climate policy (e.g. via a trade association)
d. Reported direct opposition to climate policy (third-party claims are found)
e. The company publicises direct opposition to climate policy (e.g. direct statement issues or given by a company representative in a speech or interview)

The following maturity matrix is used to score this indicator.

	BASIC	STANDARD	ADVANCED	NEXT PRACTICE	LOW-CARBON ALIGNED
	Reported direct opposition to climate policy (third-party claims are found) Company publicises direct opposition to climate policy (direct statement issues or given by a company representative in e.g. speech or interview)	Reported indirect opposition to climate policy (e.g. via trade association)	No reports of any opposition to climate policy	-	Publicly supports relevant significant climate policies (national or international)

RATIONALE	TR 8.2 POSITION ON SIGNIFICANT CLIMATE POLICIES
RATIONALE OF THE INDICATOR	See also the module rationale. Policy and regulation that act to promote transition to a low-carbon economy are key to the success of the transition. Companies should not oppose effective and well-designed regulation in these areas but should support it.

• TR 8.3 INTERACTION WITH LOCAL PUBLIC AUTHORITIES (WEIGHTING: 2% IN GENERAL OR 5% FOR PUBLIC SERVICE DELEGATION)

DESCRIPTION & REQUIREMENTS	TR 8.3 INTERACTION WITH LOCAL PUBLIC AUTHORITIES
SHORT DESCRIPTION OF INDICATOR	The company has established an effective dialogue with local public authorities to improve low-carbon infrastructures of transport (including active modes), to increase their usage, to optimize freight transport operations, in order to reduce the overall transport emissions of the territory.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 8.G - May include [CDP C12.3e] and [CDP C12.3f] • The company shall disclose any possible collaboration with local public authorities that could reduce GHG emissions on a territory and design climate local public policies (dialogue, funding, policy design, pilot program, transport scheduling … and supporting documents)

HOW THE ANALYSIS WILL BE DONE

The analyst evaluates the description and evidence on the company's interaction with local public authorities. The company description and evidence are compared to the maturity matrix developed to guide the scoring and a greater number of points are allocated for elements indicating a higher level of maturity.

The scoring will be dependent on the type of company. The analyst will evaluate the capacity of influence of the company and adapt the level of indulgence used to assess this indicator.

The following maturity matrix is used to score this indicator.

BASIC	STANDARD	ADVANCED	NEXT PRACTICE	LOW-CARBON ALIGNED
No evidence that the company is collaborating with local authorities on emissions reductions other than respecting its contractual engagement, if any or Third-party claims are found showing that the company is not complying with local climate policies	-	The company is proactive on emissions reduction of the territory through established dialogue with local public authorities to design future climate policies enforcement	The company dialogues with local public authorities to design future climate policies enforcement, and participates in pilot programs to test or develop such policies on the territory	The company implements on a large-scale climate policies previously designed in collaboration with local authorities and tested through pilot programs on the territory. The company also shows willingness to replicate such initiatives in other areas.

RATIONALE **TR 8.3 INTERACTION WITH (LOCAL) PUBLIC AUTHORITIES**

RATIONALE OF THE INDICATOR

Dialogue with local public authorities is key for urban freight and passenger transport. The adaptation of cities to promote low-carbon modes is key in changing modal shares. The companies dealing with public service delegation have public authorities as their clients and thus have an even bigger role to play to influence them to reduce their GHG emissions.

MODULE 9: BUSINESS MODEL (WEIGHTING: 10%)

MODULE RATIONALE:

In addition to using low-carbon vehicles, a company may transition its business model to other areas to remain profitable in a low-carbon economy. The company's future business model should enable it to decouple financial results from GHG emissions, in order to meet the constraints of a low-carbon transition while continuing to generate value. This can be done by developing activities outside the core business of the company, even outside the transport domain. If still in the transport domain, the business model shifts identified must not conflict with the changes that are implied by decarbonizing the company's transport services.

This module aims to identify both relevant current business activities and those still at a burgeoning stage. It is recognised that transition to a low-carbon economy, with the associated change in business models, will take place over a number of years. The analysis will thus seek to identify and reward projects at an early stage as well as more mature business activities, although the latter (i.e. substantially sized, profitable, and/or expanding) business activities will be better rewarded.

Climate scenarios can identify shifts in modes of transport as a component of change in the transportation system that will foster the transition to a low-carbon economy. Companies committed to adapting their business to these predicted changes will be better positioned to take advantage of associated opportunities and successfully transition to a low-carbon economy.

• TR 9.1 BUSINESS ACTIVITIES SHIFTING DEMAND FROM HIGHLY EMISSIVE TO LOW-CARBON MODELS (WEIGHTING: 4%)

DESCRIPTION & REQUIREMENTS	TR 9.1 BUSINESS ACTIVITIES SHIFTING DEMAND FROM HIGHLY EMISSIVE TO LOW-CARBON MODES
SHORT DESCRIPTION OF INDICATOR	The company is actively developing business models for a low-carbon future by engaging activities in other low-carbon transport modes, encouraging its clients to question their mobility needs, and the transport mode to meet these needs.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 9.A • Description of business activity • Stage of development • Activity timeframe • Indicator of business size (over activity timeframe) • Business size • What are your future plans for this activity?

HOW THE ANALYSIS WILL BE DONE

The analysis is based on the company's degree of activity in one of the future business model areas used to benchmark. Relevant business activity areas for this indicator are:

- Introducing of more multi-modal activities in its business on a voluntary basis (with low-carbon alternatives)
- Supporting modal shift to low-carbon alternatives (dedicated offers)

The table below provides some examples for different subsectors.

SUB-SECTOR	EXAMPLES OF RELEVANT BUSINESS MODELS
Passenger rail transport	Reinforce partnerships / cooperation with travel agencies and tour operators
Freight rail transport	Develop offers favoring the rail-road combined transport of goods, improving synchronization
Urban and suburban land transport	Develop intermodality with cycling
Freight transport by road	Develop offers favoring the rail-road or river-road combined transport of goods, improving synchronization
Inland freight water transport	Develop with partners multimodal and synchromodal freight facilities
Passenger air transport	Reduce short-haul flights through arrangements with rail companies
Freight air transport	Reduce short-haul flights through arrangements with rail companies

More examples are provided in the ACT TR tool.

In order for companies to align with a low-carbon future and meet the future mobility needs, it is expected that they pursue at least one of these future business model pathways and integrate them into their strategic plans. The analyst evaluates the description and evidence of the company's degree of activity in one of the future business model areas for the presence of best practice elements and consistency with

the other reported management indicators. The company description and evidence are compared to the maturity matrix developed to guide the scoring and a greater number of points are allocated for elements indicating a higher level of maturity.

The minimum requirement for points to be awarded is that some level of exploration of one or more of these relevant business areas has started. This could include participation in collaborations, pilot projects, or research funding.

Best practice elements to be identified in the test/analysis include:

- the company has developed a mature business model that integrates one or many of the above elements.
- the business activity is profitable.
- the business activity is of a substantial size.
- the company is planning to expand the business activity.
- expansion will occur on a defined timescale.

Maximum points are awarded if all of these elements are demonstrated.

If several business models are developed by the company, the final score will be the one given to the most mature business model (usually the one that Is best scored too). The company should not be penalized if it has built a mature business model, and also explores other tracks (which would be scored with a lower score) compared to another company having only one mature business model.

Subdimension	BASIC	STANDARD	ADVANCED	NEXT PRACTICE	LOW-CARBON ALIGNED
Profitability of business model	Non estimated or in a very early stage of development (research or conception stage)	-	Mature business model but non profitable or in a development stage (prototype / demonstration or test)	-	Mature and profitable business model
Size of business model	Non estimated		Limited size of business for the company (few FTE or time dedicated, small turnover, few revenues expected, etc.)		Substantial size of market for the company (significant number or FTE or dedicated hours, great turnover, great anticipated profitability, etc.)

	Growth potential of business model	Non estimated or exploration of the business model interrupted	-	Scheduling next development steps	-	Scheduling the expansion of the target or size of the business model
	Deployment schedule of business model	Non scheduled		Deployment scheduled with a 2 years horizon or less	-	Deployment scheduled with a 2 years horizon or more

RATIONALE	TR 9.1 BUSINESS ACTIVITIES SHIFTING DEMAND FOR HIGHLY EMISSIVE TO LOW-CARBON MODES
RATIONALE OF THE INDICATOR	See module rationale.

• TR 9.2 BUSINESS ACTIVITIES PROMOTING TECHNICAL AND OPERATIONAL LOW-CARBON INNOVATIONS (WEIGHTING: 2%)

DESCRIPTION & REQUIREMENTS	TR 9.2 BUSINESS ACTIVITIES PROMOTING TECHNICAL AND OPERATIONAL LOW-CARBON INNOVATIONS
SHORT DESCRIPTION OF INDICATOR	The company is actively developing business models for a low-carbon future by activating technological and operational levers to reduce emissions of the company and the transport sector as a whole, but also by acting also for carbon sequestration.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 9.A • Description of business activity • Stage of development • Activity timeframe • Indicator of business size (over activity timeframe) • Business size • What are your future plans for this activity?

HOW THE ANALYSIS WILL BE DONE

The analysis is based on the company's degree of activity in one of the future business model areas used to benchmark. Relevant business activity areas for this indicator are:

- Accelerating the introduction of alternative energy carriers in the energy mix for transport
- Challenging the optimization of the transport system to increase the overall efficiency (ex: adapted schedules for freight)
- Improving the occupancy rate and average load of vehicles
- Cooperating with other transport services and create a better-connected supply & demand, with mobility hubs
- Challenging last-km freight, for instance by coupling it with passenger transport
- Practicing routing optimization (ex: metocean routing for shipping)

The table below provides some examples for different subsectors.

SUB-SECTOR	EXAMPLES OF RELEVANT BUSINESS MODELS
Passenger rail transport	Develop innovative offers through the support to renewable electricity procurement
Urban and suburban land transport	Develop integrated multimodal information systems for travelers
Freight transport by road	Establish collaborations with other shippers, e.g. through joint-contracting, implementing horizontal collaboration models (potentially supported by economic incentives)
Sea & coastal freight transport	Develop offers phasing out HFO-powered ships, based on other types of energies (LNG, methanol, electric, ammonia, hydrogen, biofuels)
Passenger air transport	Develop offers phasing out conventional jet fuel, shifting to Sustainable Aviation Fuels

More examples are provided in the ACT TR tool.

In order for companies to align with a low-carbon future and meet the future mobility needs, it is expected that they pursue at least one of these future business model pathways and integrate them into their strategic plans. The analyst evaluates the description and evidence of the company's degree of activity in one of the future business model areas for the presence of best practice elements and consistency with

the other reported management indicators. The company description and evidence are compared to the maturity matrix developed to guide the scoring and a greater number of points are allocated for elements indicating a higher level of maturity.

The minimum requirement for points to be awarded is that some level of exploration of one or more of these relevant business areas has started. This could include participation in collaborations, pilot projects, or research funding.

Best practice elements to be identified in the test/analysis include:

- the company has developed a mature business model that integrates one or many of the above elements.
- the business activity is profitable.
- the business activity is of a substantial size.
- the company is planning to expand the business activity.
- expansion will occur on a defined timescale.

Maximum points are awarded if all of these elements are demonstrated.

If several business models are developed by the company, the final score will be the one given to the most mature business model (usually the one that Is best scored too). The company should not be penalized if it has built a mature business model, and also explores other tracks (which would be scored with a lower score) compared to another company having only one mature business model.

Subdimension	BASIC	STANDARD	ADVANCED	NEXT PRACTICE	LOW-CARBON ALIGNED
Profitability of business model	Non estimated or in a very early stage of development (research or conception stage)	-	Mature business model but non profitable or in a development stage (prototype / demonstration or test)	-	Mature and profitable business model
Size of business model	Non estimated		Limited size of business for the company (few FTE or time dedicated,		Substantial size of market for the company (significant number or FTE or dedicated hours, great

				small turnover, few revenues expected, etc.)		turnover, great anticipated profitability, etc.)
	Growth potential of business model	Non estimated or exploration of the business model interrupted	-	Scheduling next development steps	-	Scheduling the expansion of the target or size of the business model
	Deployment schedule of business model	Non scheduled		Deployment scheduled with a 2 years horizon or less	-	Deployment scheduled with a 2 years horizon or more

RATIONALE	TR 9.2 BUSINESS ACTIVITIES PROMOTING TECHNICAL AND OPERATIONAL LOW-CARBON INNOVATIONS
RATIONALE OF THE INDICATOR	See module rationale.

• TR 9.3 BUSINESS ACTIVITIES ENGAGING CLIENTS (WEIGHTING: 4%)

DESCRIPTION & REQUIREMENTS	TR 9.3 BUSINESS ACTIVITIES ENGAGING CLIENTS
SHORT DESCRIPTION OF INDICATOR	The company is actively developing business models for a low-carbon future by activating technological and operational levers to reduce emissions of the company and the transport sector as a whole.
DATA REQUIREMENTS	The questions comprising the information request that are relevant to this indicator are: ♦ TR 9.A • Description of business activity • Stage of development • Activity timeframe • Indicator of business size (over activity timeframe) • Business size

- What are your future plans for this activity?

HOW THE ANALYSIS WILL BE DONE

The analysis is based on the company's degree of activity in one of the future business model areas used to benchmark. Relevant business activity areas for this indicator are:

- Proposing innovative contracts to better share costs & benefits with clients on low-carbon services
- Developing offers to encourage the reduction of distance travelled
- Developing offers to encourage the reduction of the demand for transport (like energy utilities with energy consumption)

In order for companies to align with a low-carbon future and meet the future mobility needs, it is expected that they pursue at least one of these future business model pathways and integrate them into their strategic plans. The analyst evaluates the description and evidence of the company's degree of activity in one of the future business model areas for the presence of best practice elements and consistency with the other reported management indicators. The company description and evidence are compared to the maturity matrix developed to guide the scoring and a greater number of points are allocated for elements indicating a higher level of maturity.

The minimum requirement for points to be awarded is that some level of exploration of one or more of these relevant business areas has started. This could include participation in collaborations, pilot projects, or research funding.

Best practice elements to be identified in the test/analysis include:

- the company has developed a mature business model that integrates one or many of the above elements.
- the business activity is profitable.
- the business activity is of a substantial size.
- the company is planning to expand the business activity.
- expansion will occur on a defined timescale.

Maximum points are awarded if all of these elements are demonstrated.

If several business models are developed by the company, the final score will be the one given to the most mature business model (usually the one that Is best scored too). The company should not be penalized if it has built a mature business model, and also explores other tracks (which would be scored with a lower score) compared to another company having only one mature business model.

Subdimension	BASIC	STANDARD	ADVANCED	NEXT PRACTICE	LOW-CARBON ALIGNED
Profitability of business model	Non estimated or in a very early stage of development (research or conception stage)	-	Mature business model but non profitable or in a development stage (prototype / demonstration or test)	-	Mature and profitable business model
Size of business model	Non estimated		Limited size of business for the company (few FTE or time dedicated, small turnover, few revenues expected, etc.)		Substantial size of market for the company (significant number or FTE or dedicated hours, great turnover, great anticipated profitability, etc.)
Growth potential of business model	Non estimated or exploration of the business model interrupted	-	Scheduling next development steps	-	Scheduling the expansion of the target or size of the business model
Deployment schedule of business model	Non scheduled		Deployment scheduled with a 2 years horizon or less	-	Deployment scheduled with a 2 years horizon or more

RATIONALE	TR 9.3 BUSINESS ACTIVITIES ENGAGING CLIENTS
RATIONALE OF THE INDICATOR	See module rationale.

6. Assessment

➔NOTA BENE

- ACT provides guidelines concerning the scope and boundaries of the sector covered by this methodology to determine which type of GHG emissions are included or excluded. However, it does not provide tools and databases to measure and compute these emissions. In particular, the choice of emission factors does not fall under the responsibility of the ACT methodology. ACT recommends using company-specific emission factors, or if unavailable, standard emission factors recognized in the sector.
- Benchmarks used in this methodology are based upon emission factors of fuels, and not from aggregated emission factors in tonne.km or passenger.km for the modes covered by the methodology. Hence, they are less sensitive to changes. Standard emission factors are compatible with the benchmarks.
- Therefore, the evaluator should pay high attention to the way the GHG emissions are assessed by the company and especially if they are aligned with the calculation mode of the benchmarks.

6.1. SECTOR BENCHMARK

The transport sector is composed of multiple subsectors, as presented in Table 2. A decarbonisation pathway is described for each sub sector and shall be used as benchmark by companies. All decarbonization pathways start in 2015 which gives at least the 5 years of past data required to assess past performances.

Two main sources have been used to produce the decarbonisation pathways.

1) The main source is the B2DS pathways from SDA Transport Tool [30]. The SDA – Sectoral Decarbonization Approach is one approach used by SBT Initiative to define a pathway below 2°C. The global carbon budget is divided by sector of the economy. Emission reductions are allocated to individual companies according to the sectoral budget. It is a carbon intensity sectoral method.
   Data in the SDA Transport Tool are based on IEA ETP 2017 scenario and the Mobility Model (MoMo) [4].
   The MoMo is a technical-economic database spreadsheet and simulation model that enables detailed projections of transport activity, vehicle activity, energy demand, and well-to-wheel greenhouse gas (GHG) and pollutant emissions according to user-defined policy scenarios to 2060. MoMo comprises:
   - 27 countries and regions, which are aggregated into four Organisation for Economic Co-operation and Development (OECD) regional clusters and 11 groups of non-OECD economies.
   - Historical data from 1975 to 2014 (or 1990 to 2014 for certain countries).
   - A simulation model in five-year time steps, for creating scenarios to 2060 based on “what if” analysis and backcasting.
   - Disaggregated urban versus non-urban vehicle stock, activity, energy use and emissions.

- All major motorised transport modes (road, rail, shipping and air), providing passenger and freight services.
- A wide range of powertrain technologies: internal combustion engines, including gasoline, diesel, and compressed natural gas (CNG) and LNG; as well as hybrid electric and electric vehicles (including plug-in hybrid electric and battery-electric vehicles) and fuel-cell electric vehicles.

Data from MoMo are not publicly available but are used in SDA transport tool, from which some aggregated results can be obtained publicly (regional results are not available).

2) The second source is the ITF Transport Outlook 2019 report by OECD [3]. The ITF Transport Outlook provides an overview of recent trends and near-term prospects for the transport sector at a global level as well as long-term prospects for transport demand to 2050. The analysis covers freight (maritime, air, surface) and passenger transport (car, rail, air) as well as CO2 emissions.
The scenario selected to build benchmarks for ACT TR is the “High ambition scenario”, with the following hypothesis:
   - Intensified pricing disincentives for private car use
   - Restrictions on car use in some city centres
   - Increase urban density, public transit supply and integration
   - Stringent increase un carbon pricing by 2050
   - Rapid electrification of transport and decarbonisation of the power sector, in line with IEA’s EV30 scenario

The way to compute the company benchmark from the sector decarbonization pathway is described in the following section 6.2. Note in particular that the convergence approach is used, as illustrated in Figure 6. The convergence of carbon intensity is a common approach and is used by SDA, which is the main source of sector benchmarks in this methodology. However, SBT is currently (2020) updating the Transport SBT setting Guidance [40] promoting a different approach for some modes (freight at large, air, maritime transport). ACT TR methodology should be updated in a latter version to follow SBT guidance.

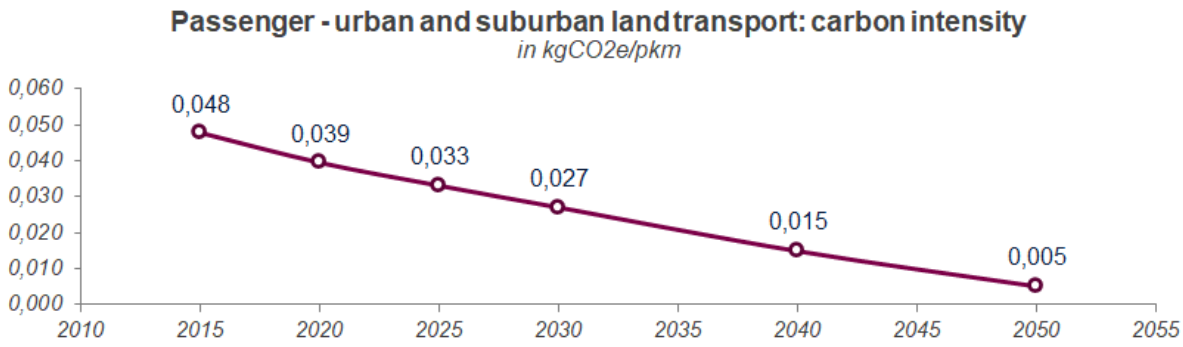
WORLD BENCHMARKS

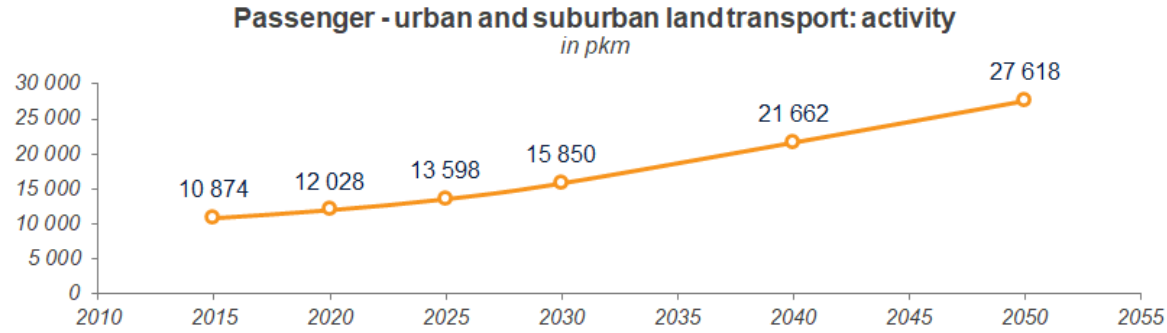
• SECTOR BENCHMARK – URBAN & SUBURBAN PASSENGER LAND TRANSPORT

This benchmark is a combination of 3 B2DS pathways from SDA Transport tool, Science-Based Target Initiative, 2018. (Based on IEA Mobility Model, 2017) [30]:

- “Passenger – buses”,
- “Passenger – mini-buses”
- “Passenger - urban rail”

The combination is made with respect to the projected share of activity of each category.

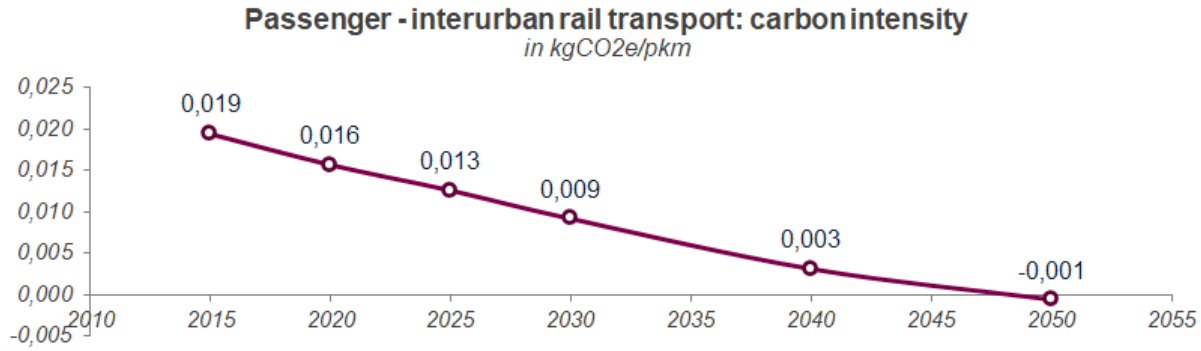


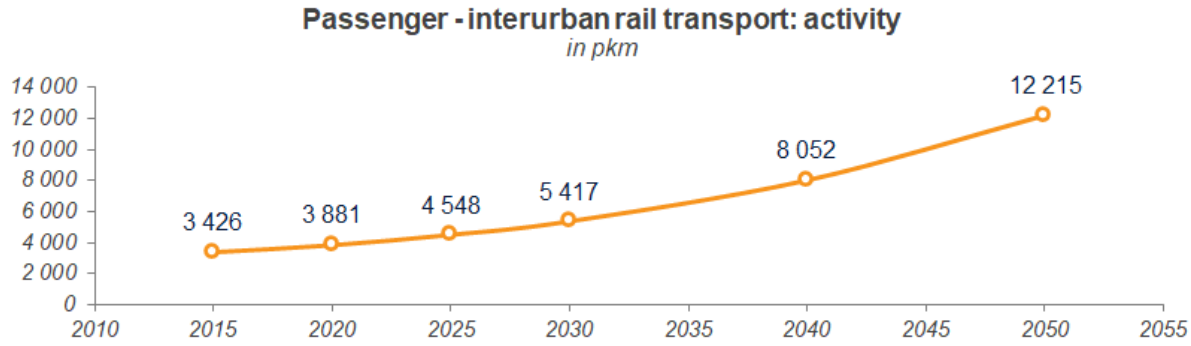


- **SECTOR BENCHMARK – PASSENGER RAIL TRANSPORT, INTERURBAN**

This benchmark comes from the pathway "Passenger – Non-urban rail", SDA Transport tool, Science-Based Target Initiative, 2018. (Based on IEA Mobility Model, 2017) [30]

B2DS pathway : "Passenger – Non-urban rail", SDA Transport tool, Science-Based Target Initiative, 2018. (Based on IEA Mobility Model, 2017) [30]

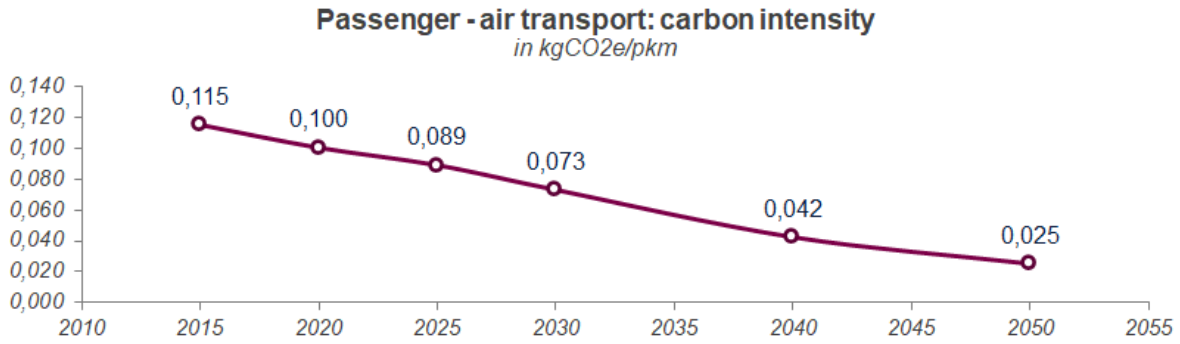


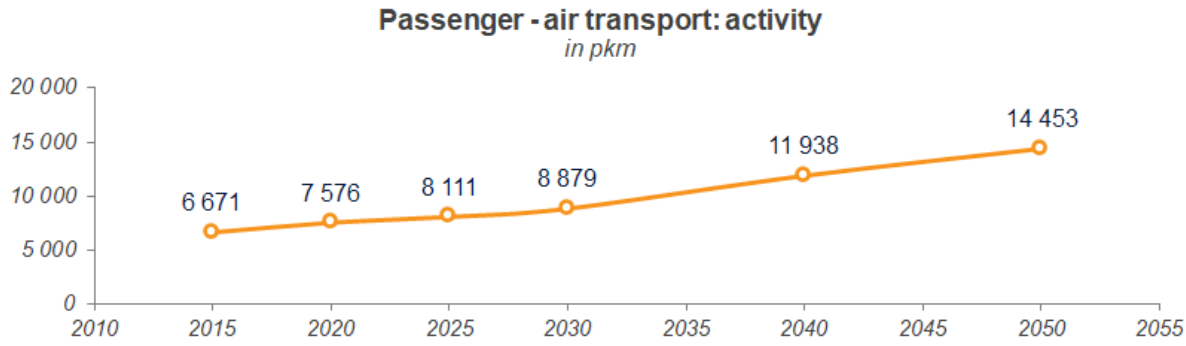


- **SECTOR BENCHMARK – PASSENGER AIR TRANSPORT**

This benchmark comes from the B2DS pathway “Air transport”, SDA Transport tool, Science-Based Target Initiative, 2018. (Based on IEA Mobility Model, 2017). Total emissions are disaggregated into passenger and freight according to “CO_2 emissions from commercial aviation, 2018” (ICCT, 2019 [31]), which takes into account IATA recommended practice for the allocation of GHG emissions between revenue passengers and freight [12].

The starting point from IEA (2015) is corrected because we consider it as overestimated since no such allocation was made and traffic was underestimated. This correction is based upon data provided in the 2017 mid-year report "Economic performance of the airline industry" (IATA, 2017 [32]).





- **SECTOR BENCHMARK – SEA & COASTAL PASSENGER WATER TRANSPORT**

No data available in literature yet

- **SECTOR BENCHMARK – INLAND PASSENGER WATER TRANSPORT**

No data available in literature yet

- **SECTOR BENCHMARK – URBAN FREIGHT TRANSPORT BY ROAD**

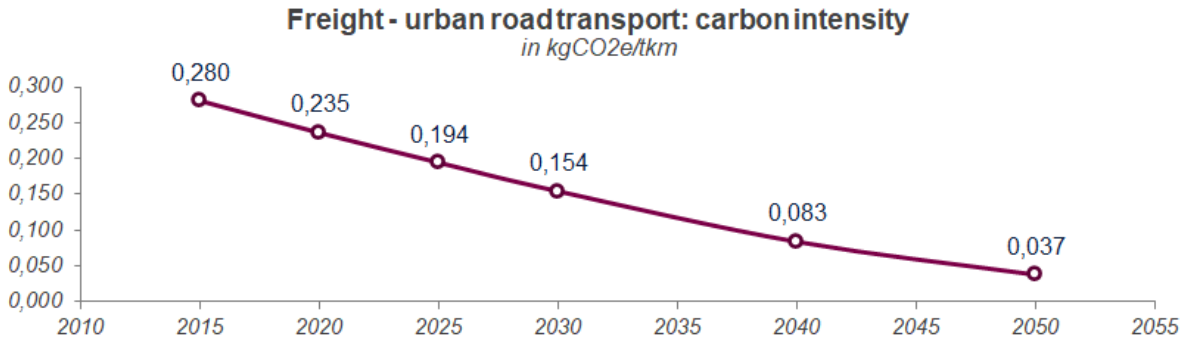
This benchmark is a combination of 4 B2DS pathways from SDA Transport tool, Science-Based Target Initiative, 2018. (Based on IEA Mobility Model, 2017) [30]:

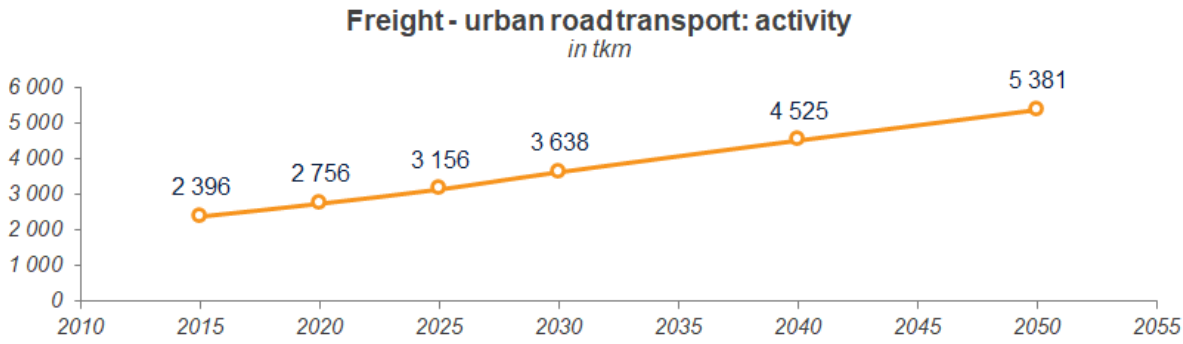
- "Freight - 2-3 Wheelers”,
- “Freight - Light commercial vehicles”,
- “Freight - Medium freight trucks (MFT)”,

- “Freight - Heavy freight trucks (HFT)”

The combination is made with respect to the projected share of activity of each category.

Then, activity and total emissions are disaggregated into urban and non-urban freight road transport according to ITF Transport Outlook 2019. More precisely, ITF provides the breakdown of emissions between urban and non-urban road freight transport, and also the evolution of their carbon intensities. From these data, it is possible to derive the evolution of the relative shares of both urban and non-urban road freight transport in the total activity and total emissions. Eventually, these relative shares are applied to emissions and activity pathways coming from SDA Transport tool.





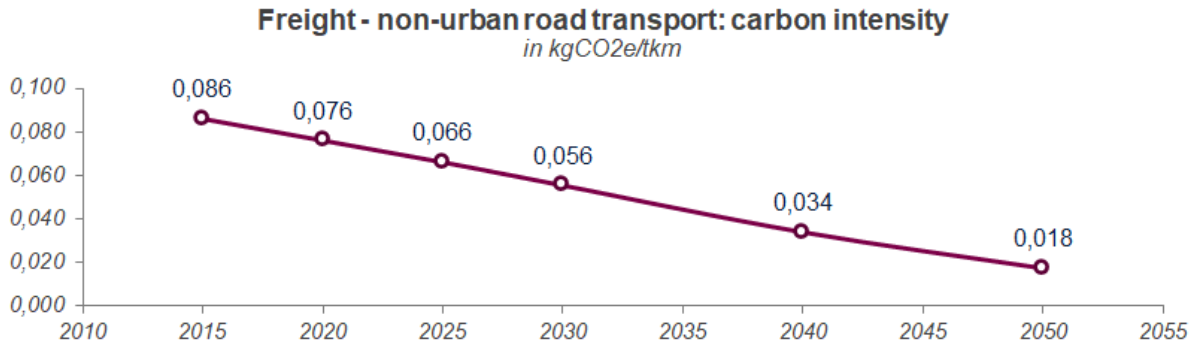
- **SECTOR BENCHMARK – NON-URBAN FREIGHT TRANSPORT BY ROAD**

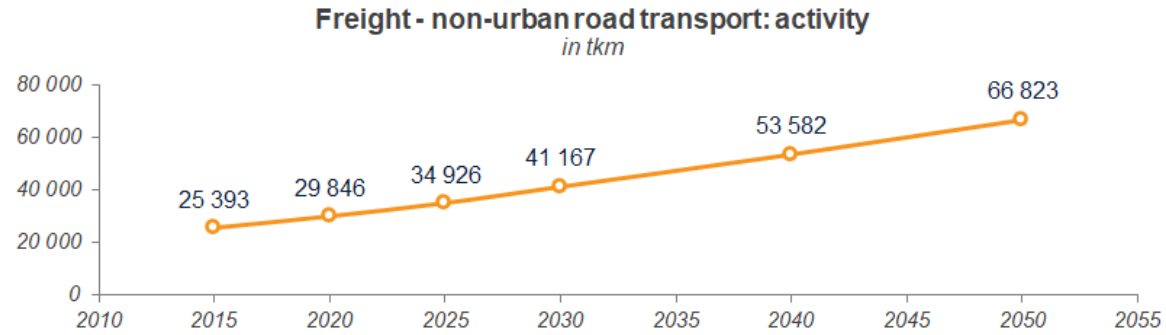
This benchmark is a combination of 4 B2DS pathways from SDA Transport tool, Science-Based Target Initiative, 2018. (Based on IEA Mobility Model, 2017) [30]:

- "Freight - 2-3 Wheelers”,
- “Freight - Light commercial vehicles”,
- “Freight - Medium freight trucks (MFT)”,
- “Freight - Heavy freight trucks (HFT)”

The combination is made with respect to the projected share of activity of each category.

Then, activity and total emissions are disaggregated into urban and non-urban freight road transport according to ITF Transport Outlook 2019 (see previous benchmark for more details).

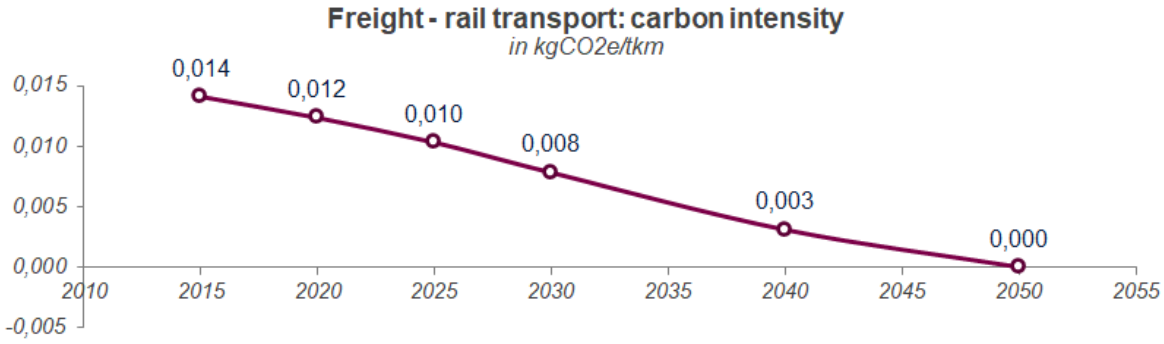


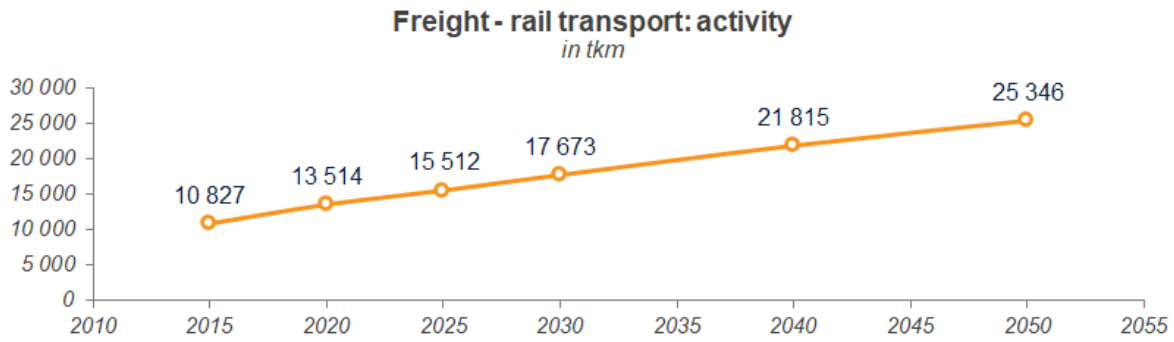


- **SECTOR BENCHMARK – FREIGHT RAIL TRANSPORT**

This benchmark comes from the pathway "Freight – Rail", SDA Transport tool, Science-Based Target Initiative, 2018. (Based on IEA Mobility Model, 2017) [30]

B2DS Freight Rail Carbon intensity from SDA Transport tool, Science-Based Target Initiative, 2018. (Based on IEA Mobility Model, 2017) [30]



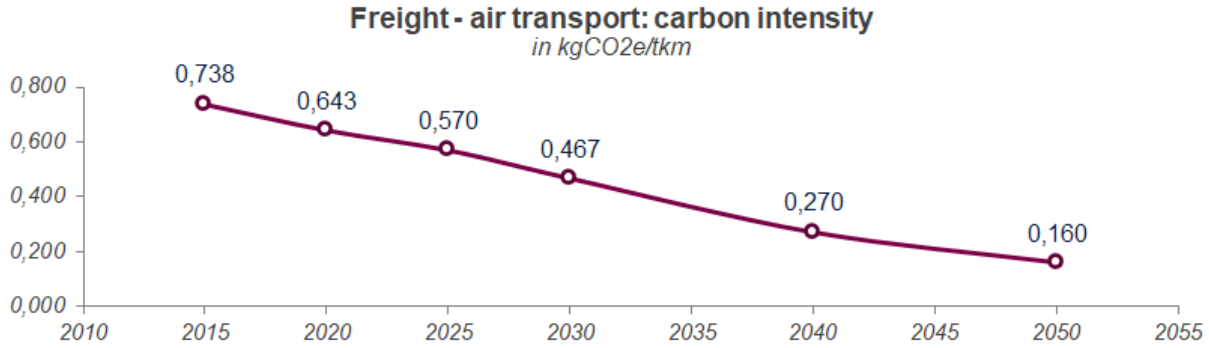


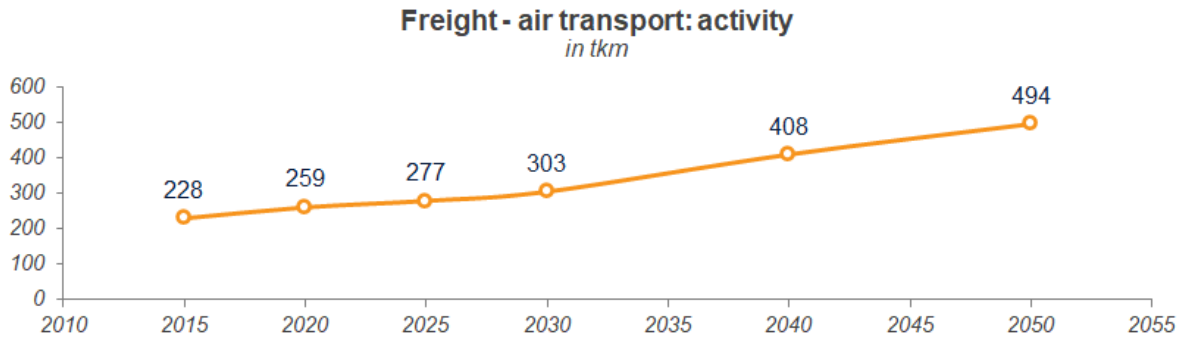
- **SECTOR BENCHMARK – FREIGHT AIR TRANSPORT**

This benchmark comes from the B2DS pathway “Air transport”, SDA Transport tool, Science-Based Target Initiative, 2018. (Based on IEA Mobility Model, 2017). Total emissions are disaggregated into passenger and freight according to “CO_2 emissions from commercial aviation, 2018” (ICCT, 2019 [31]), which takes into account IATA recommended practice for the allocation of GHG emissions between revenue passengers and freight [12].

The starting point from IEA (2015) is corrected because we consider it as overestimated since no such allocation was made and traffic was underestimated. This correction is based upon data provided in the 2017 mid-year report "Economic performance of the airline industry" (IATA, 2017 [32]).

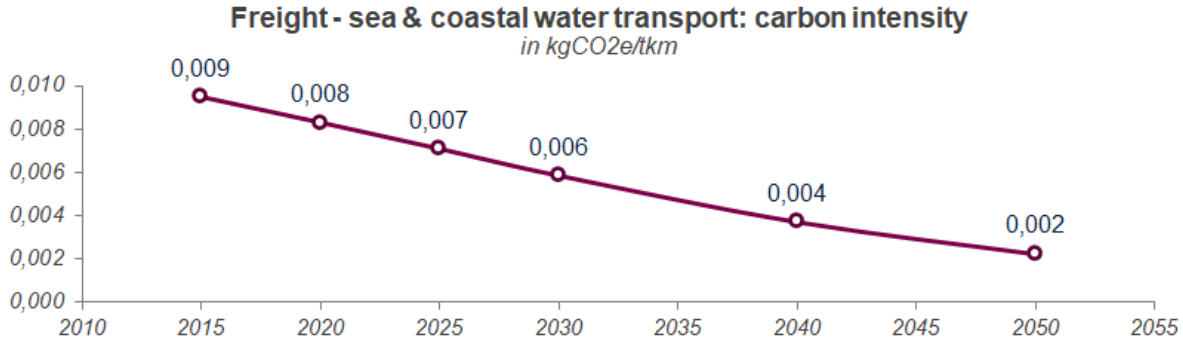
Eventually, air freight transport activity is based on the “ITF Transport Outlook 2019 report” (OECD, 2019) [3] and its forecast is assumed to be in line with that of air passenger transport (same growth rates).

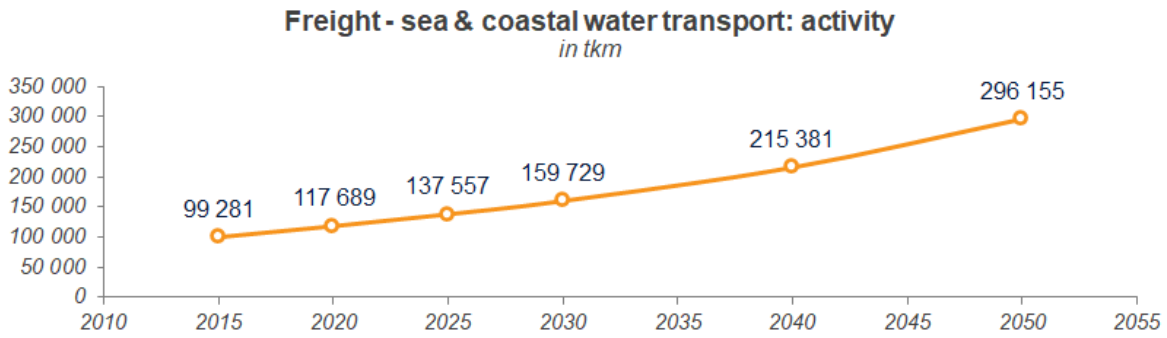




- **SECTOR BENCHMARK – SEA & COASTAL FREIGHT WATER TRANSPORT**

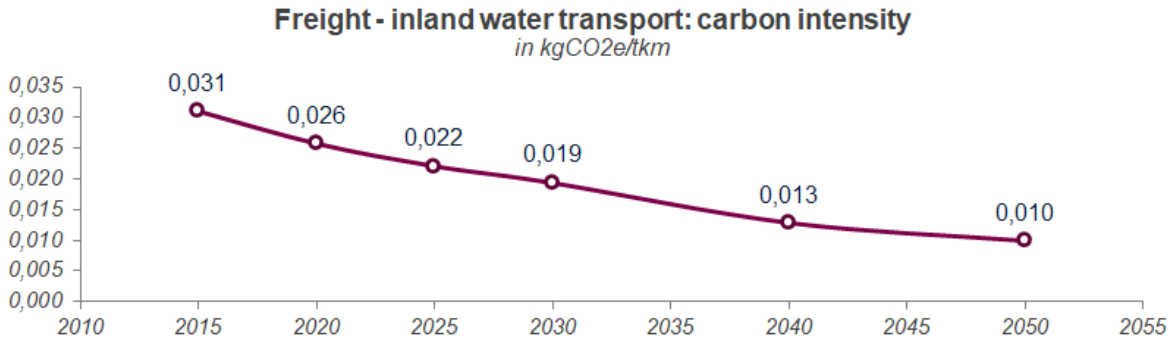
This benchmark comes from the B2DS pathway “Freight – Maritime”, SDA Transport tool, Science-Based Target Initiative, 2018. (Based on IEA Mobility Model, 2017) [30]

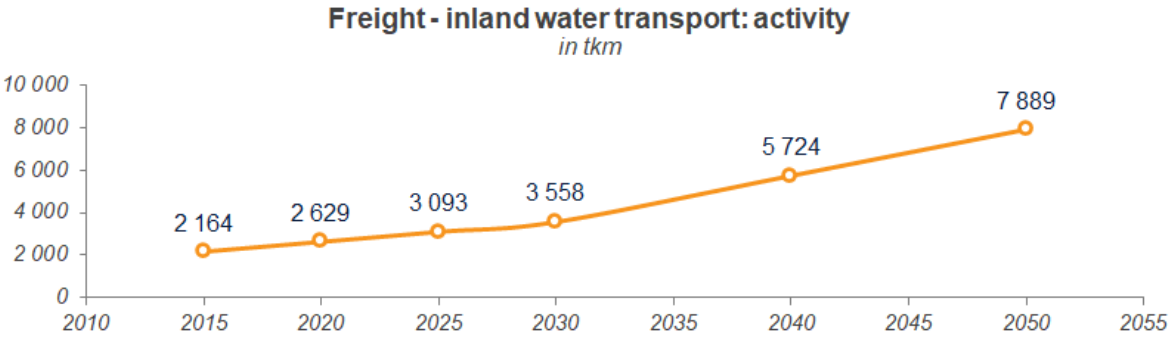




- **SECTOR BENCHMARK – INLAND FREIGHT WATER TRANSPORT**

This benchmark comes from the B2DS pathway "Inland waterways", ITF Transport Outlook 2019, OCDE, 2019 [3]





REGIONAL BENCHMARKS

The previous benchmarks at world level have been regionalized according to the ratios available in ETP B2DS scenarios (IEA, 2017). Eleven different trajectories were computed:

- OECD countries
- Non-OECD countries
- European Union
- United States
- Mexico
- Brazil
- Russia

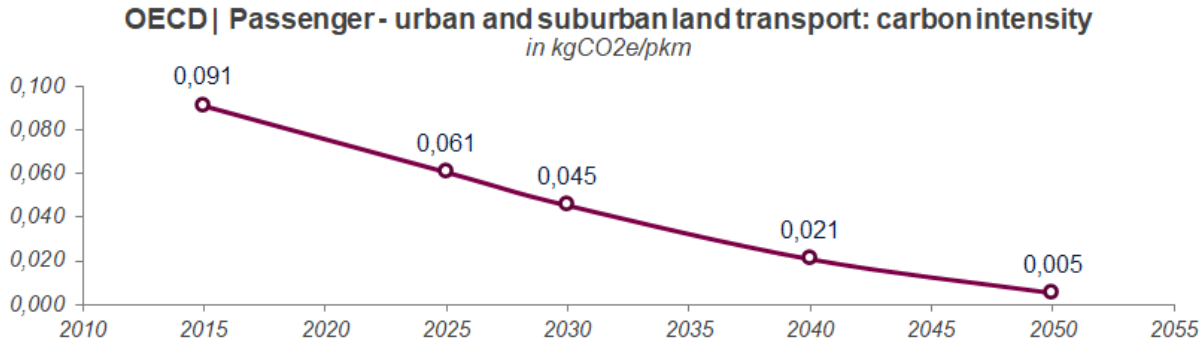
- China
- India
- ASEAN
- South Africa

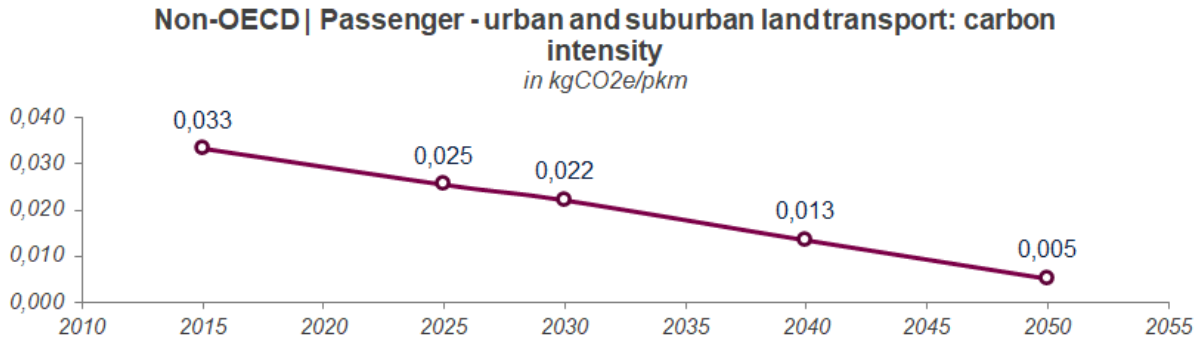
In ACT TR, Companies must select the most specific decarbonization pathways available:

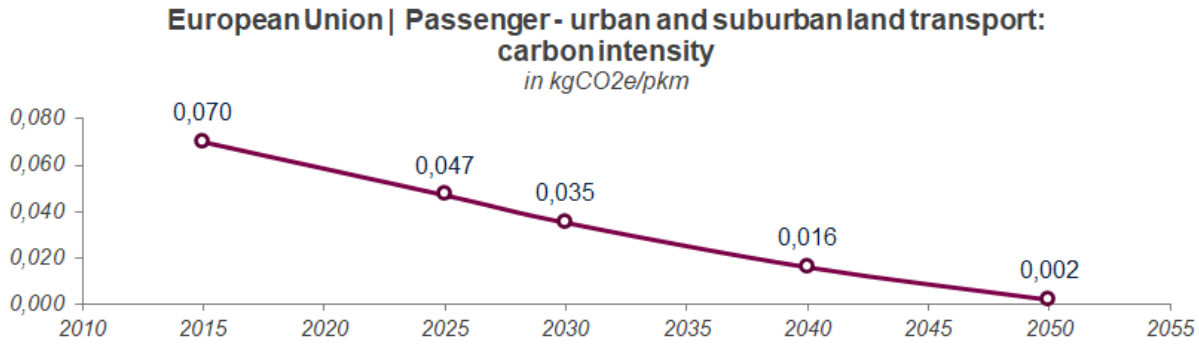
- Local and regional companies must (*in order of priority*):
  - Select the benchmark for the country or region where they operate, if specific benchmark is available.
  - Select OECD or Non-OECD benchmark, if specific benchmark is not available.
- Global companies must (*in order of priority*):
  - Define benchmark pathways based on the **breakdown of activity by region** in which they operate, if data on **activity by region is available**.
  - Define benchmark pathways based on the **breakdown of revenue by region** in which they operate, if data on **revenue by region is available** and data on **activity by region is not available**.
  - Select world benchmark, if data neither on **activity by region** nor on **revenue by region** is **not available**.

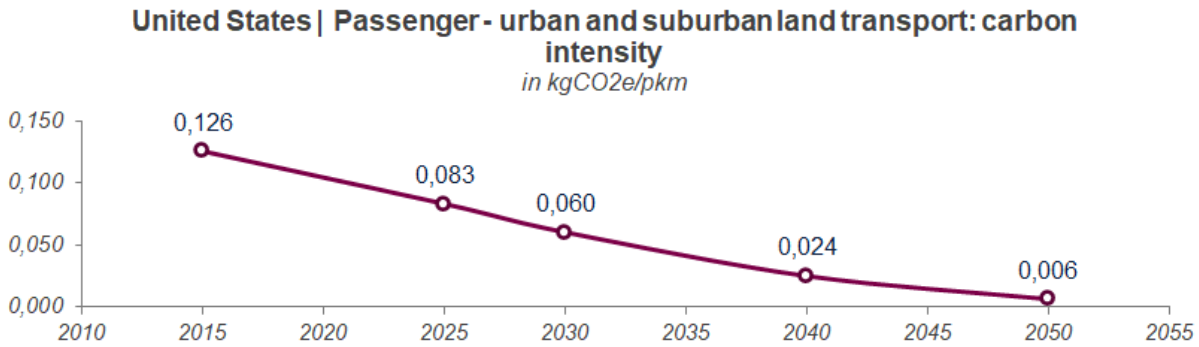
The method used to compute these benchmarks is not highly robust because the ratios considered in it are not as disaggregated as necessary, given the number of sub-sectors covered by the methodology. Anyway, it is a first step to get more representative data than just globalized low-carbon pathways.

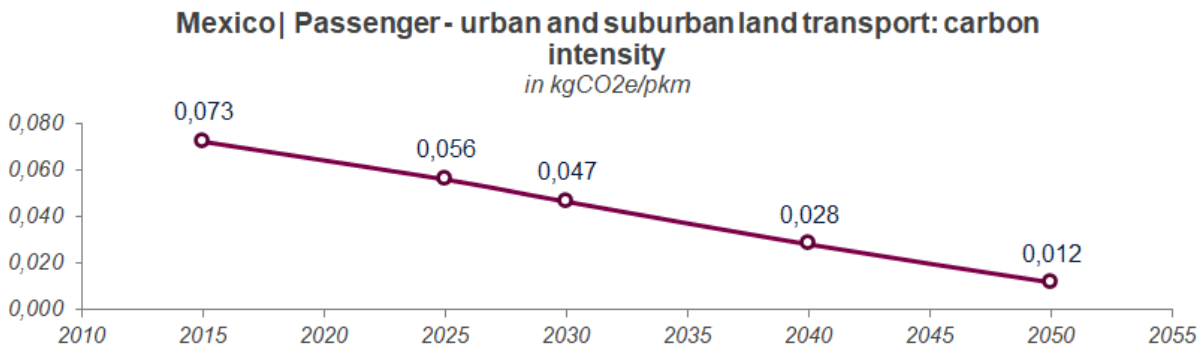
- **REGIONAL BENCHMARKS – URBAN & SUBURBAN PASSENGER LAND TRANSPORT**

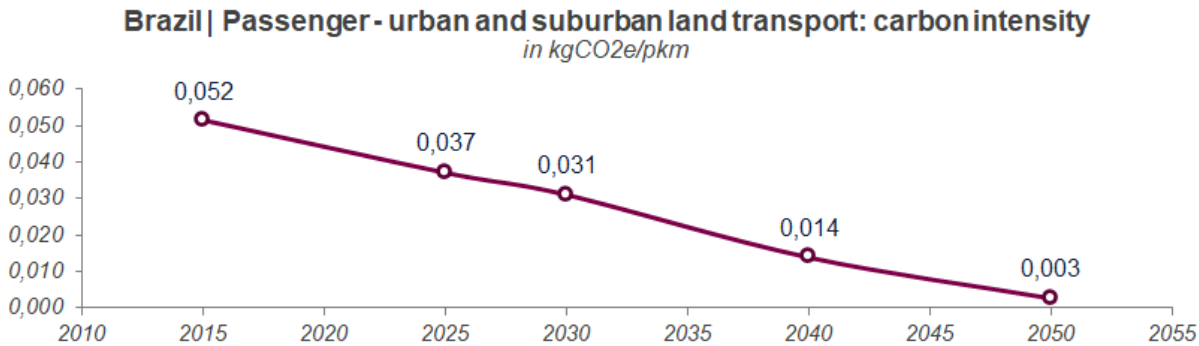


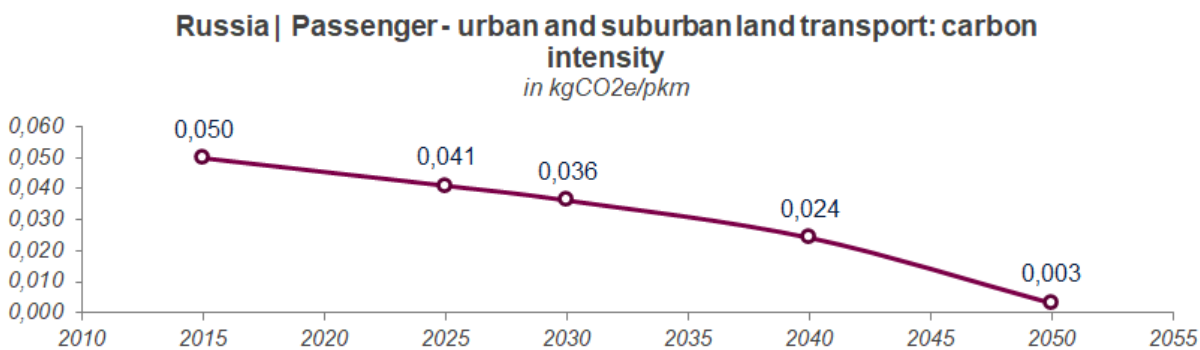



European Union | Passenger - urban and suburban land transport: carbon intensity
in kgCO2e/pkm
0,080
0,060
0,040
0,020
0,000
0,070
0,047
0,035
0,016
0,002
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055


United States | Passenger - urban and suburban land transport: carbon intensity
in kgCO2e/pkm
0,150
0,100
0,050
0,000
0,126
0,083
0,060
0,024
0,006
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055


Mexico | Passenger - urban and suburban land transport: carbon intensity
in kgCO2e/pkm
0,080
0,060
0,040
0,020
0,000
0,073
0,056
0,047
0,028
0,012
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055


Brazil | Passenger - urban and suburban land transport: carbon intensity
in kgCO2e/pkm
0,060
0,050
0,040
0,030
0,020
0,010
0,000
0,052
0,037
0,031
0,014
0,003
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055


Russia | Passenger - urban and suburban land transport: carbon intensity
in kgCO2e/pkm
0,060
0,050
0,040
0,030
0,020
0,010
0,000
0,050
0,041
0,036
0,024
0,003
2010
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2020
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2045
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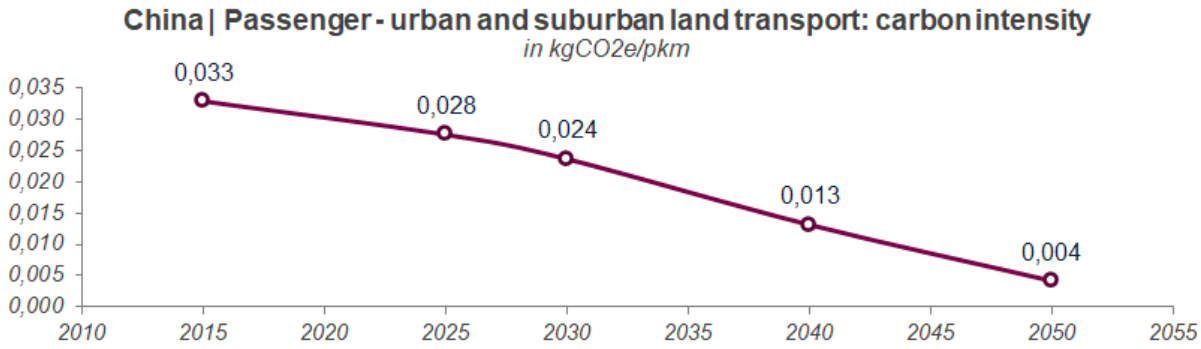
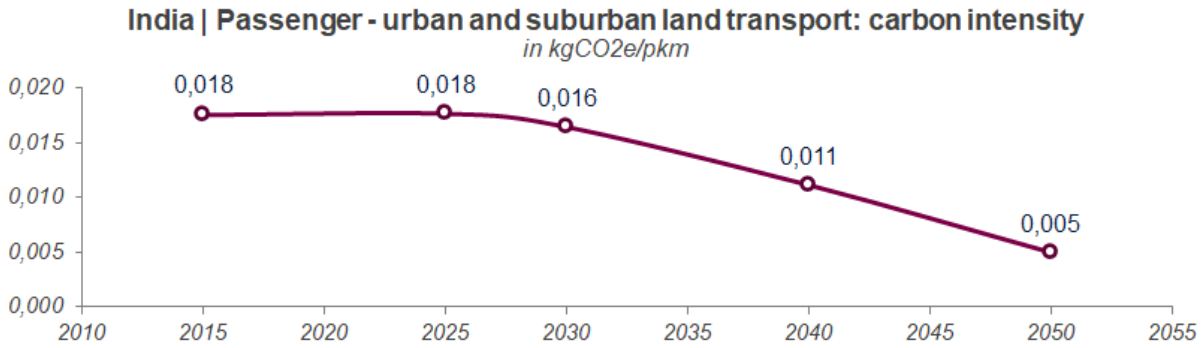
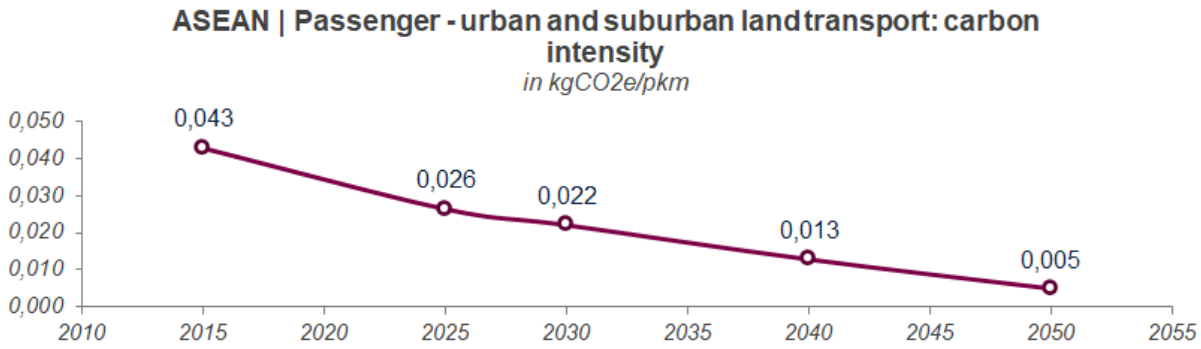
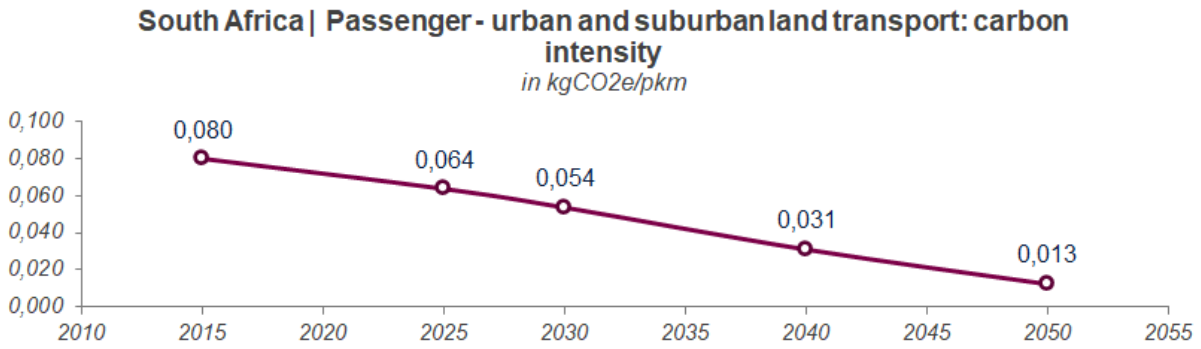
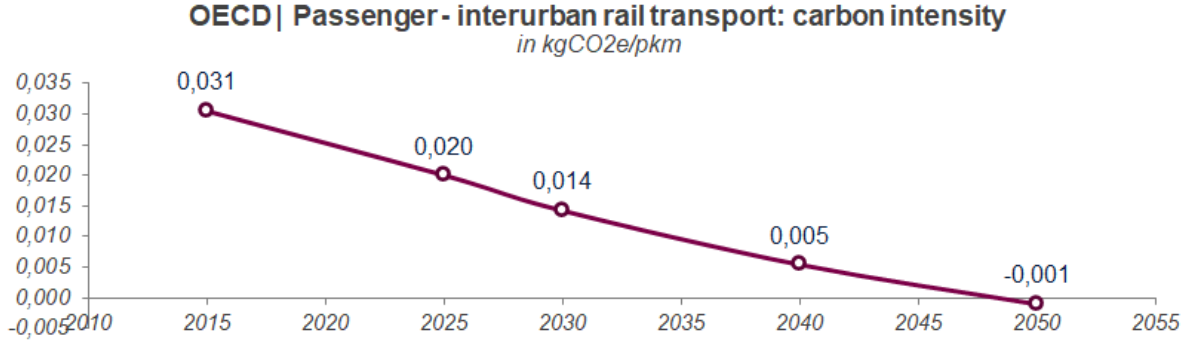






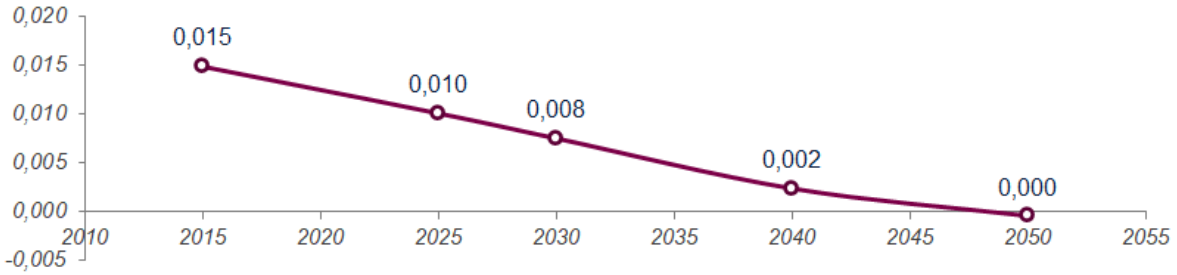


- **REGIONAL BENCHMARKS – PASSENGER RAIL TRANSPORT, INTERURBAN**



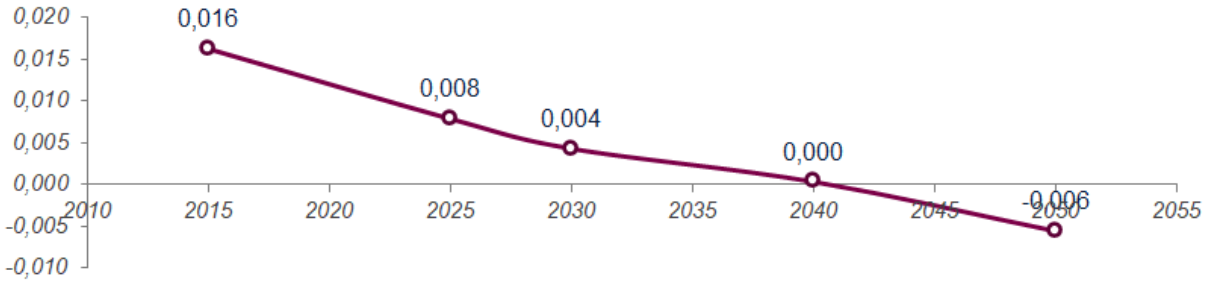
Non-OECD | Passenger - interurban rail transport: carbon intensity

in kgCO2e/pkm



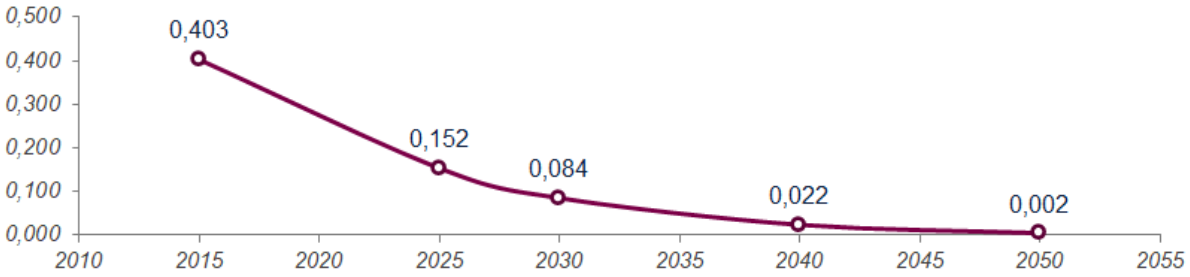
European Union | Passenger - interurban rail transport: carbon intensity

in kgCO2e/pkm



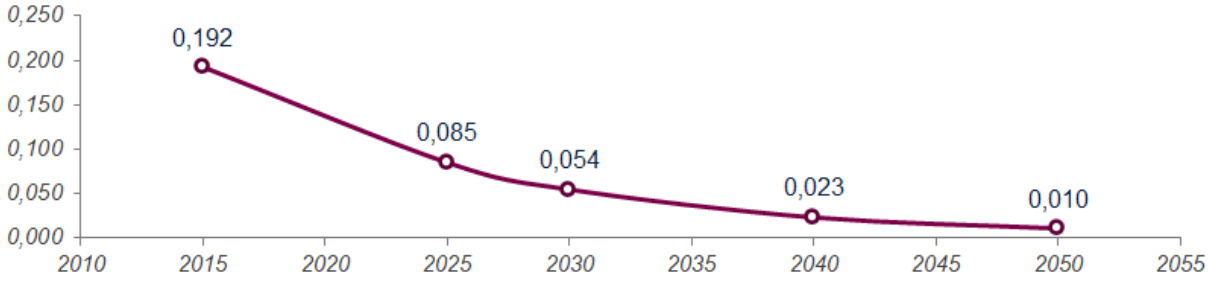
United States | Passenger - interurban rail transport: carbon intensity

in kgCO2e/pkm



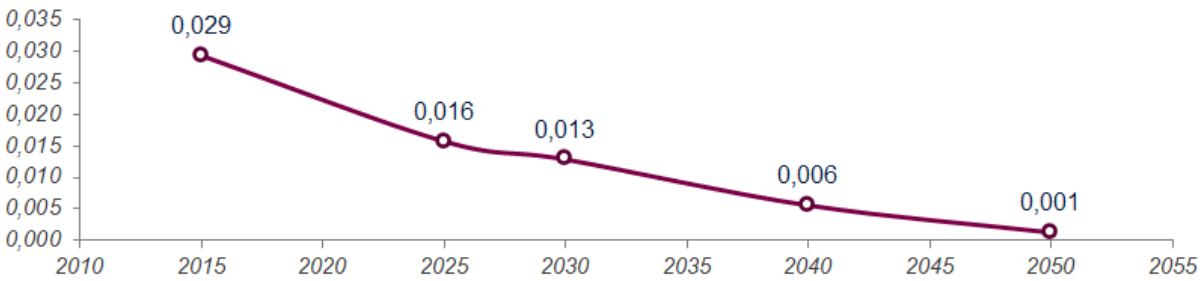
Mexico | Passenger - interurban rail transport: carbon intensity

in kgCO2e/pkm



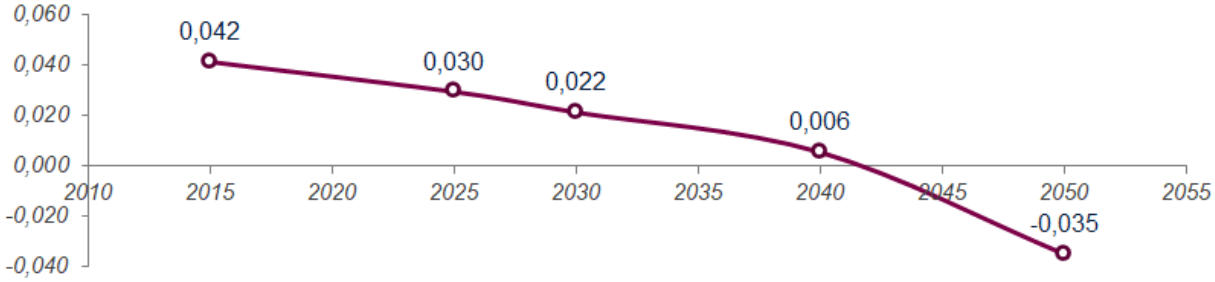
Brazil | Passenger - interurban rail transport: carbon intensity

in kgCO2e/pkm



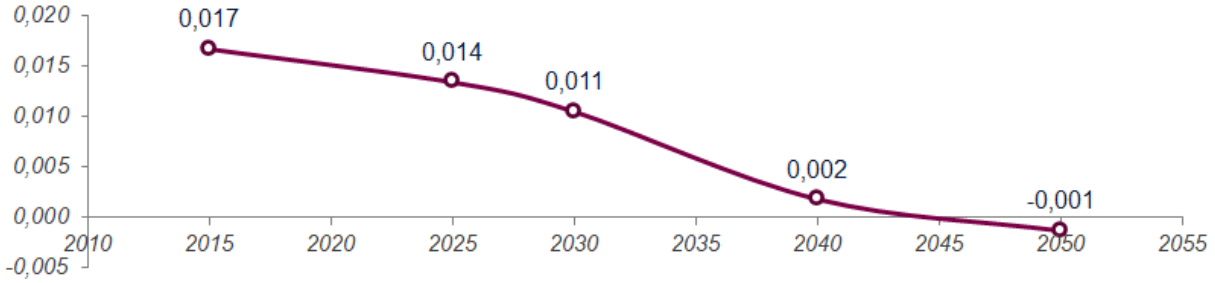
Russia | Passenger - interurban rail transport: carbon intensity

in kgCO2e/pkm



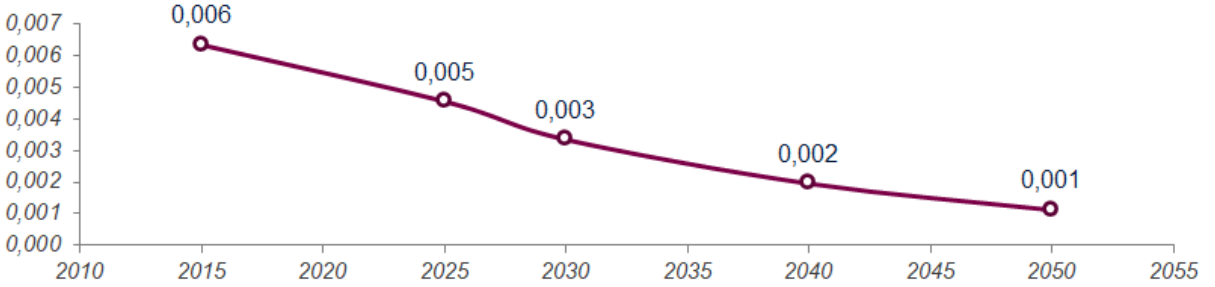
China | Passenger - interurban rail transport: carbon intensity

in kgCO2e/pkm



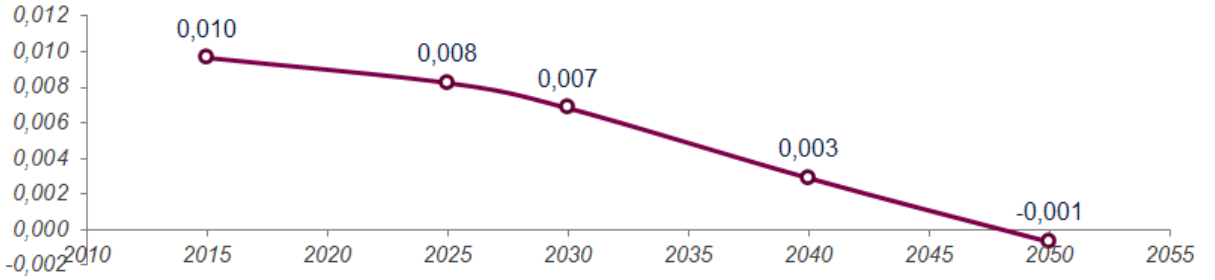
India | Passenger - interurban rail transport: carbon intensity

in kgCO2e/pkm



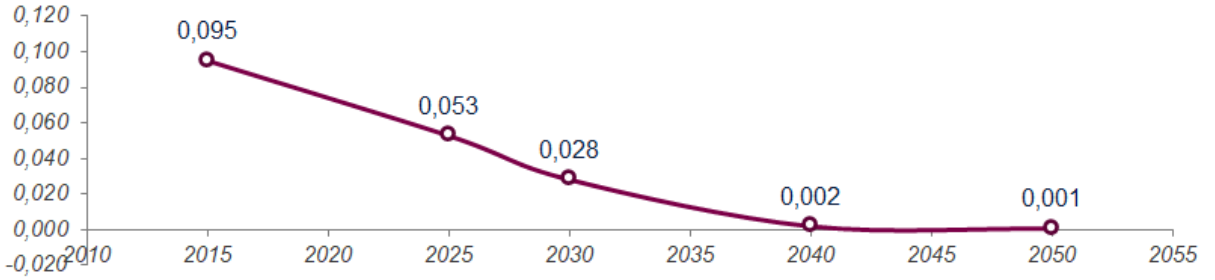
ASEAN | Passenger - interurban rail transport: carbon intensity

in kgCO2e/pkm

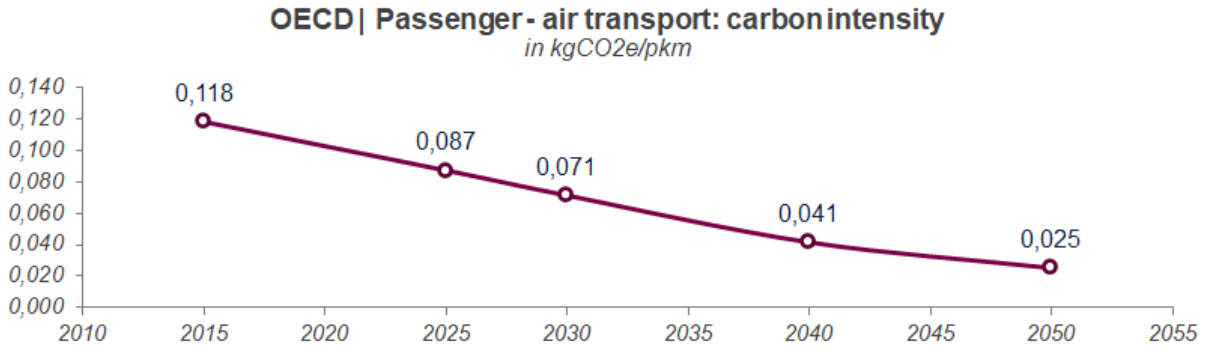


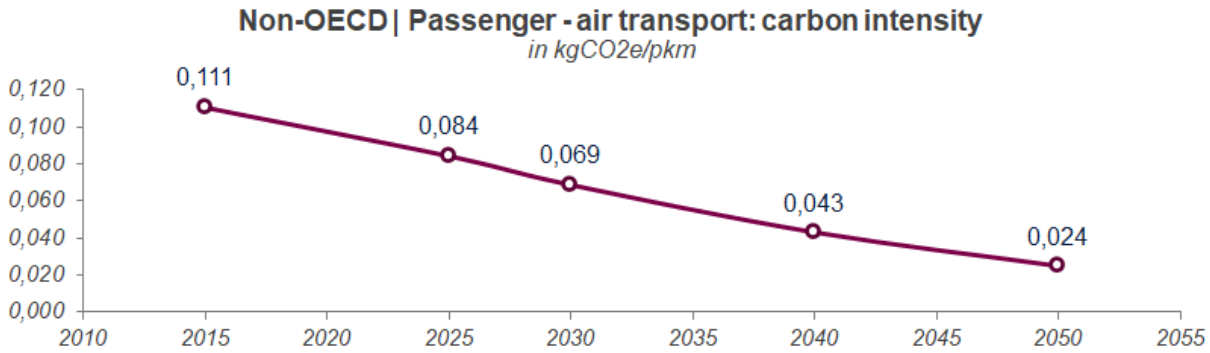
South Africa | Passenger - interurban rail transport: carbon intensity

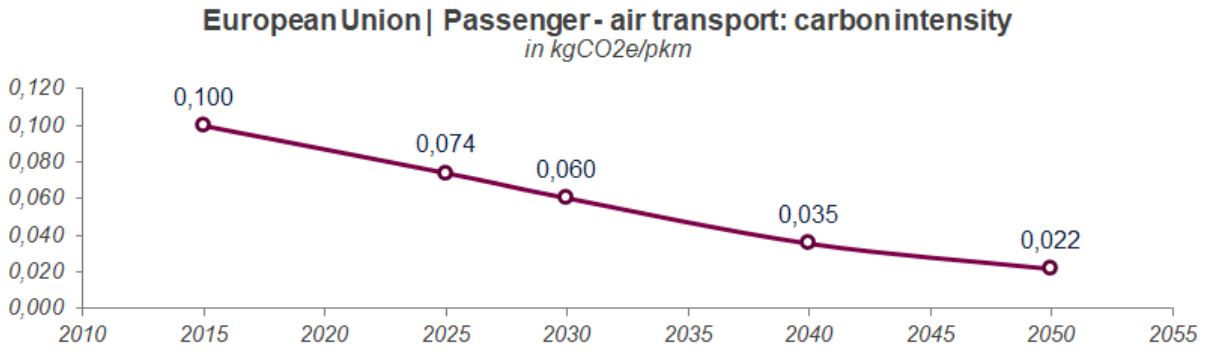
in kgCO2e/pkm

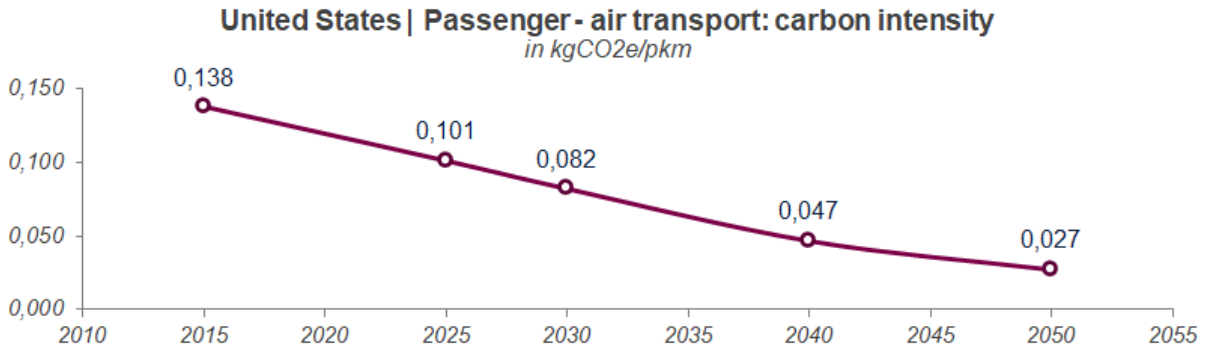


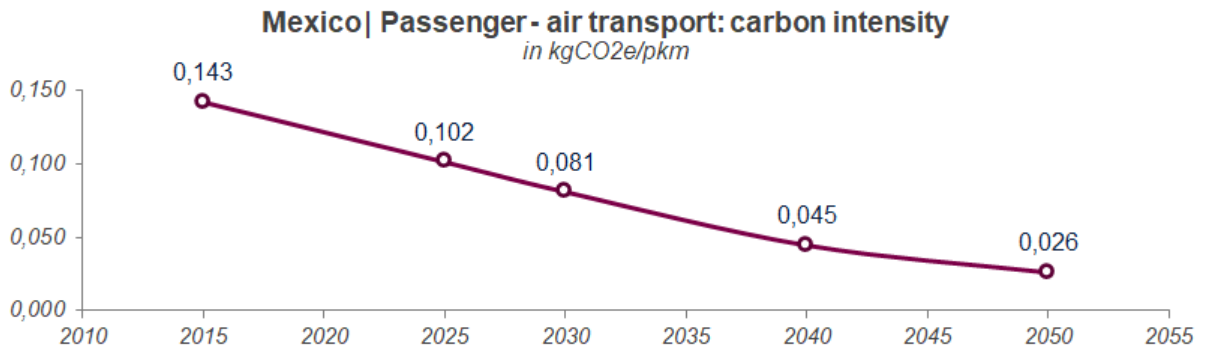
- **REGIONAL BENCHMARKS – PASSENGER AIR TRANSPORT**

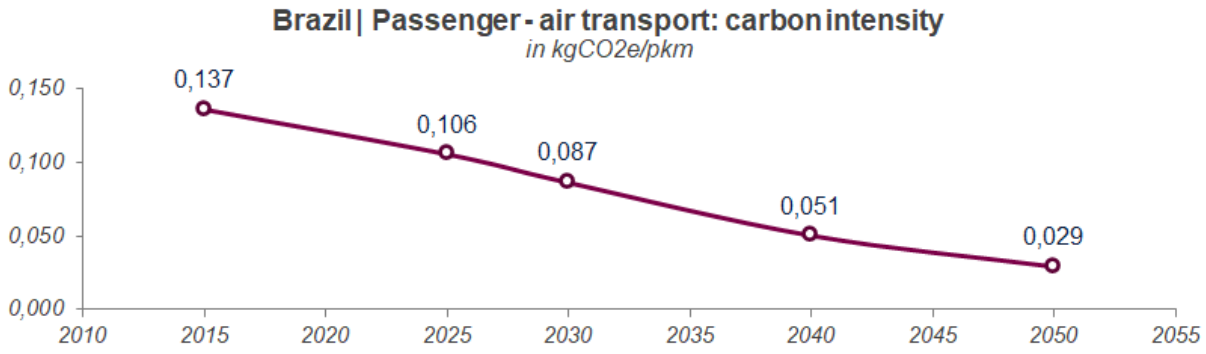


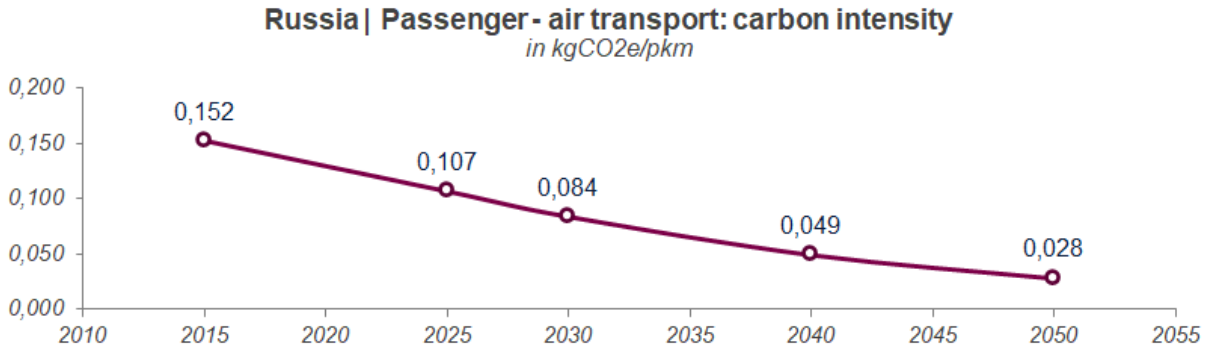


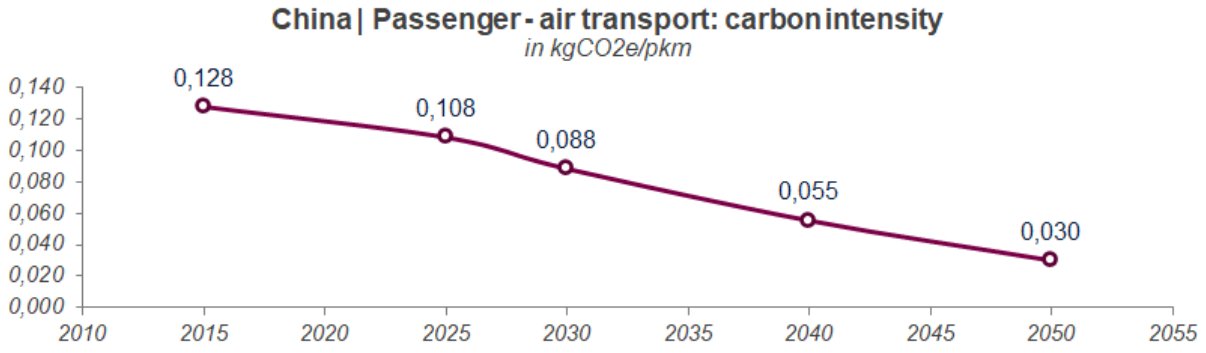


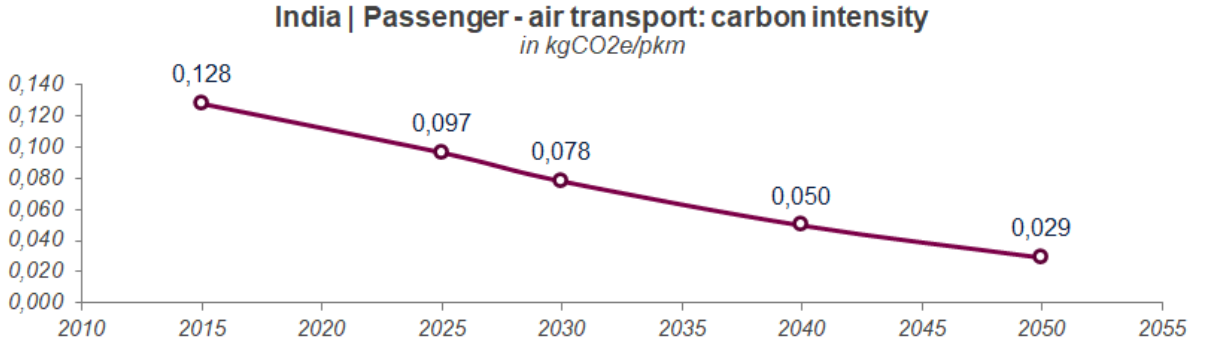


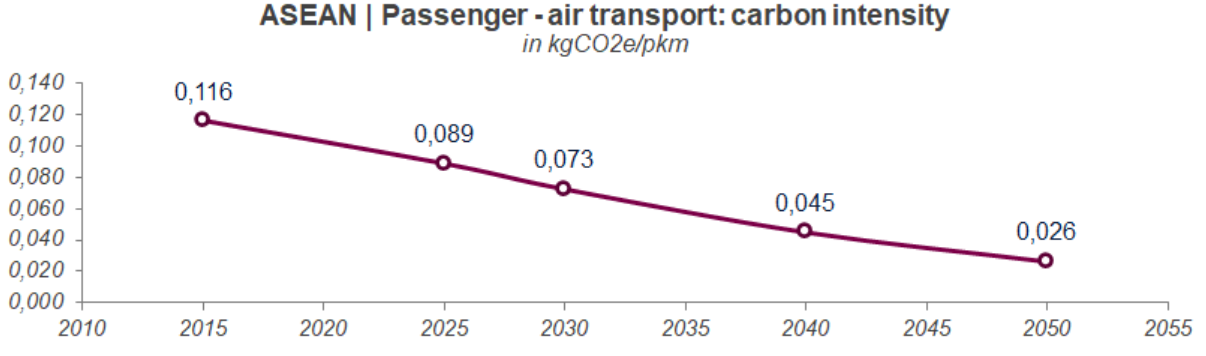


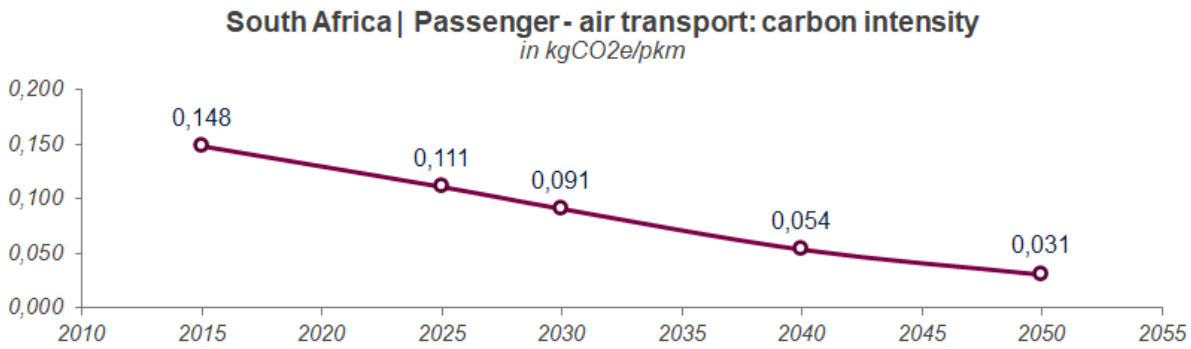

Brazil | Passenger - air transport: carbon intensity
in kgCO2e/pkm
0,150
0,100
0,050
0,000
0,137
0,106
0,087
0,051
0,029
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055


Russia | Passenger - air transport: carbon intensity
in kgCO2e/pkm
0,200
0,150
0,100
0,050
0,000
0,152
0,107
0,084
0,049
0,028
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055


China | Passenger - air transport: carbon intensity
in kgCO2e/pkm
0,140
0,120
0,100
0,080
0,060
0,040
0,020
0,000
0,128
0,108
0,088
0,055
0,030
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055


India | Passenger - air transport: carbon intensity
in kgCO2e/pkm
0,140
0,120
0,100
0,080
0,060
0,040
0,020
0,000
0,128
0,097
0,078
0,050
0,029
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055


ASEAN | Passenger - air transport: carbon intensity
in kgCO2e/pkm
0,140
0,120
0,100
0,080
0,060
0,040
0,020
0,000
0,116
0,089
0,073
0,045
0,026
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055



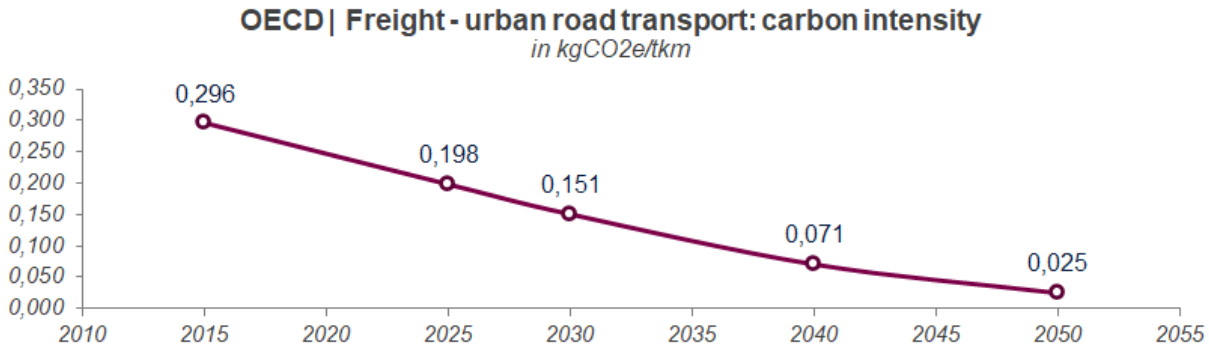
- **REGIONAL BENCHMARKS – SEA & COASTAL PASSENGER WATER TRANSPORT**

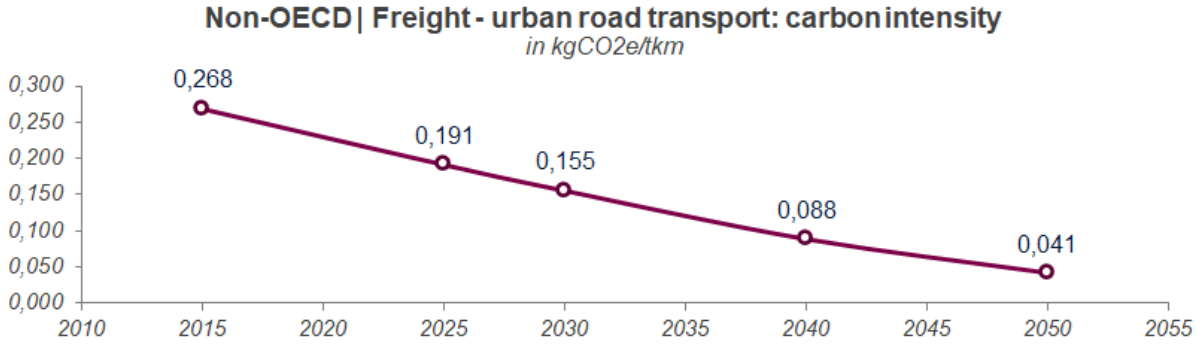
No data available in literature yet

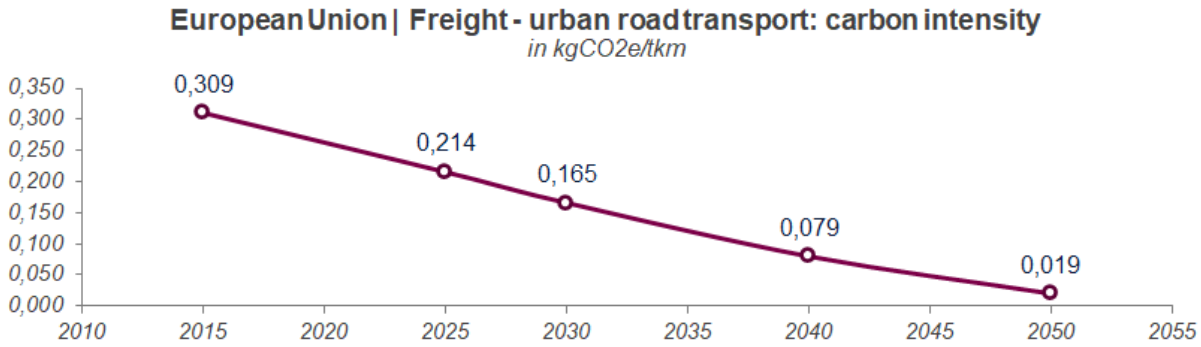
- **REGIONAL BENCHMARKS – INLAND PASSENGER WATER TRANSPORT**

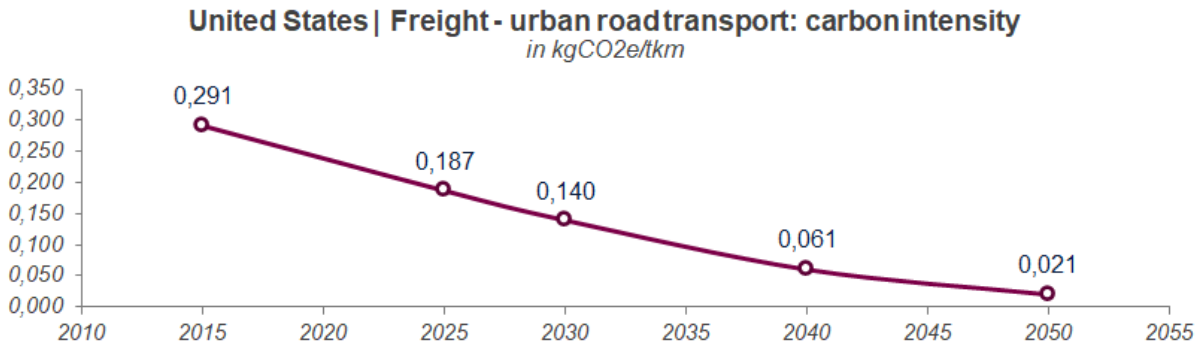
No data available in literature yet

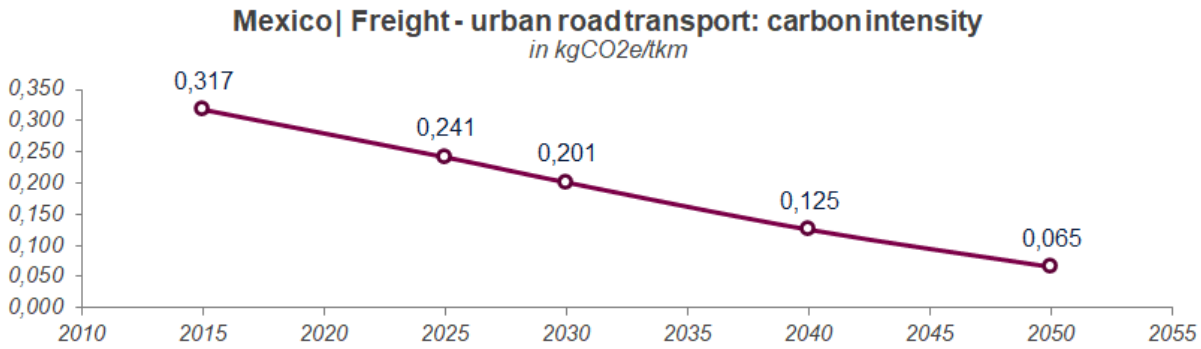
- **REGIONAL BENCHMARKS – URBAN FREIGHT TRANSPORT BY ROAD**

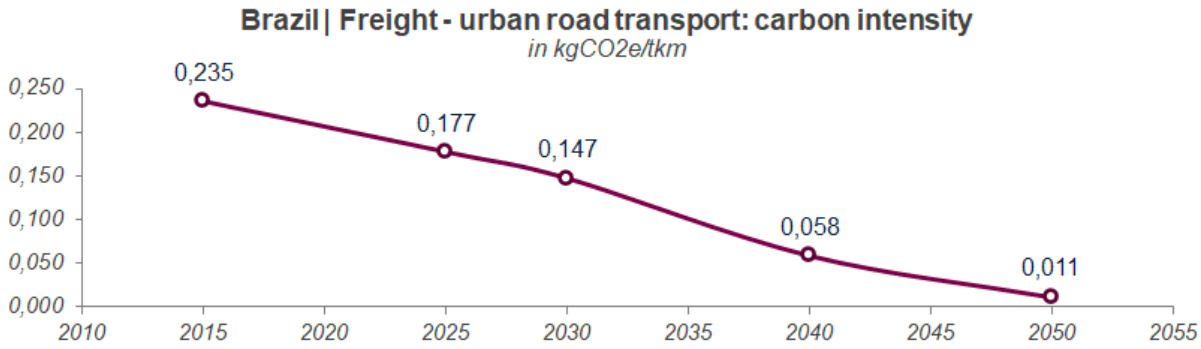


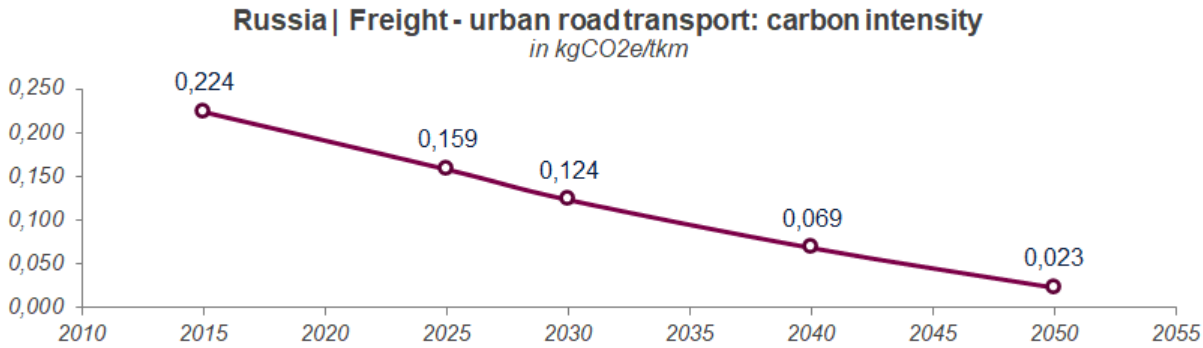


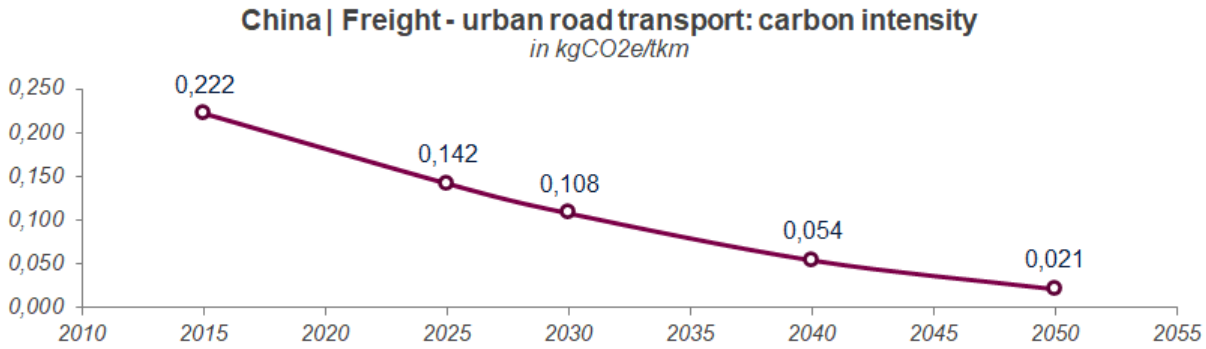

European Union | Freight - urban road transport: carbon intensity
in kgCO2e/tkm
0,350
0,300
0,250
0,200
0,150
0,100
0,050
0,000
0,309
0,214
0,165
0,079
0,019
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

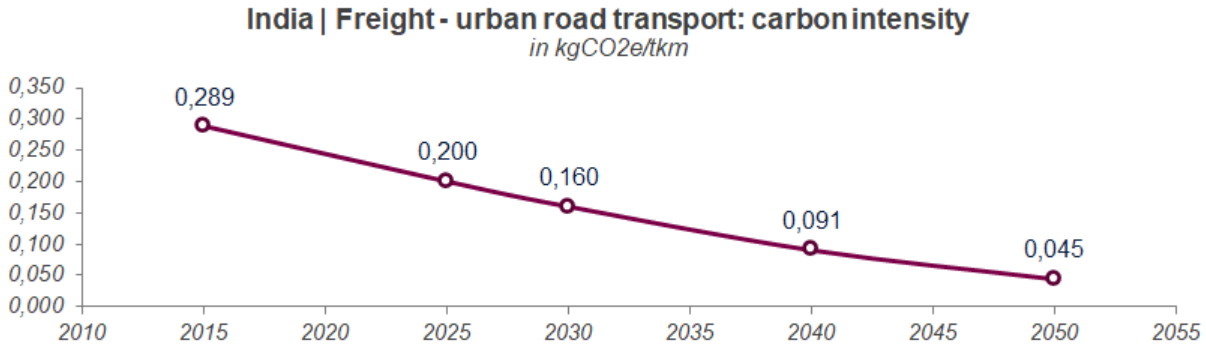

United States | Freight - urban road transport: carbon intensity
in kgCO2e/tkm
0,350
0,300
0,250
0,200
0,150
0,100
0,050
0,000
0,291
0,187
0,140
0,061
0,021
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

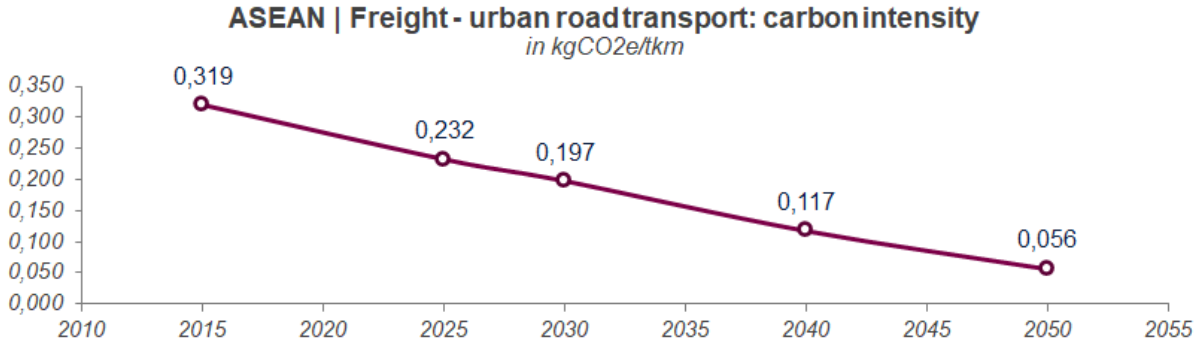

Mexico | Freight - urban road transport: carbon intensity
in kgCO2e/tkm
0,350
0,300
0,250
0,200
0,150
0,100
0,050
0,000
0,317
0,241
0,201
0,125
0,065
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

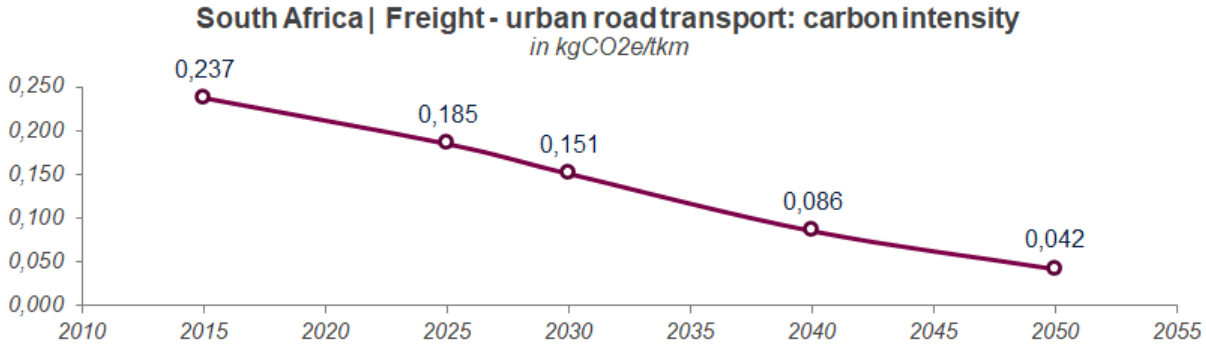

Brazil | Freight - urban road transport: carbon intensity
in kgCO2e/tkm
0,250
0,200
0,150
0,100
0,050
0,000
0,235
0,177
0,147
0,058
0,011
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055


Russia | Freight - urban road transport: carbon intensity
in kgCO2e/tkm
0,250
0,200
0,150
0,100
0,050
0,000
0,224
0,159
0,124
0,069
0,023
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

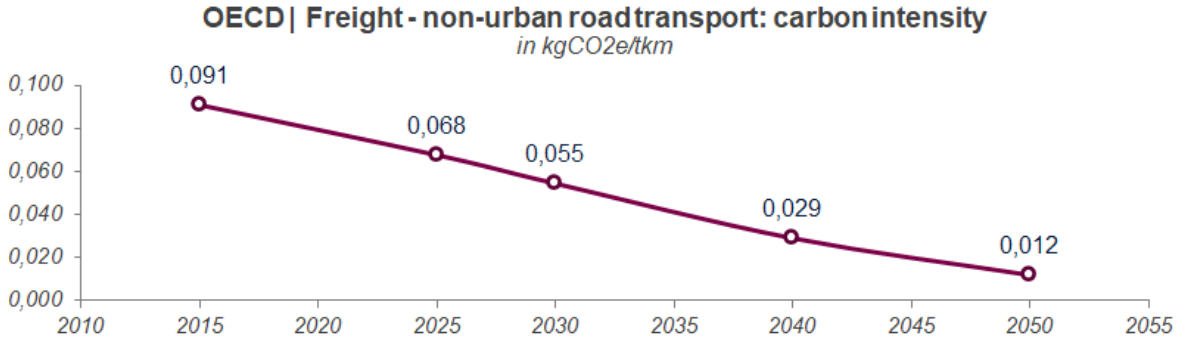


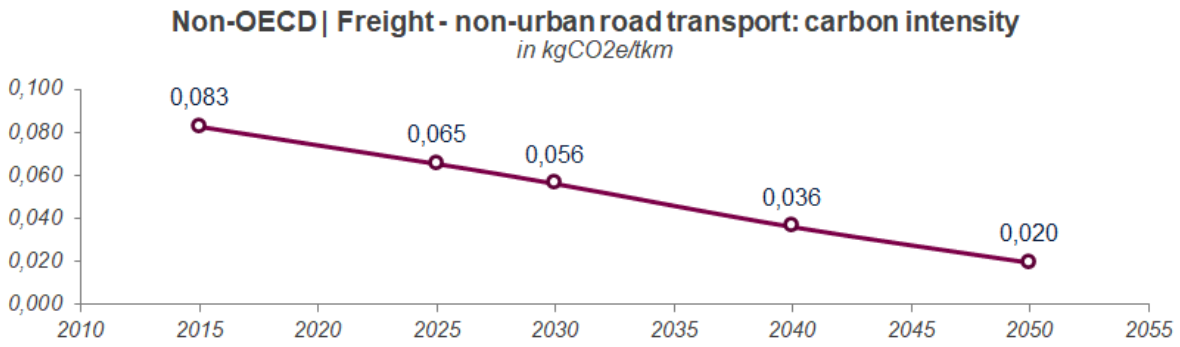


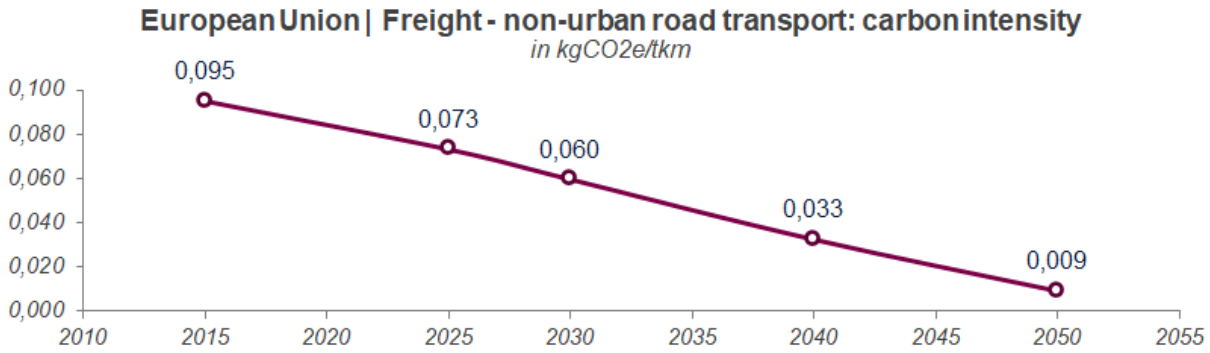


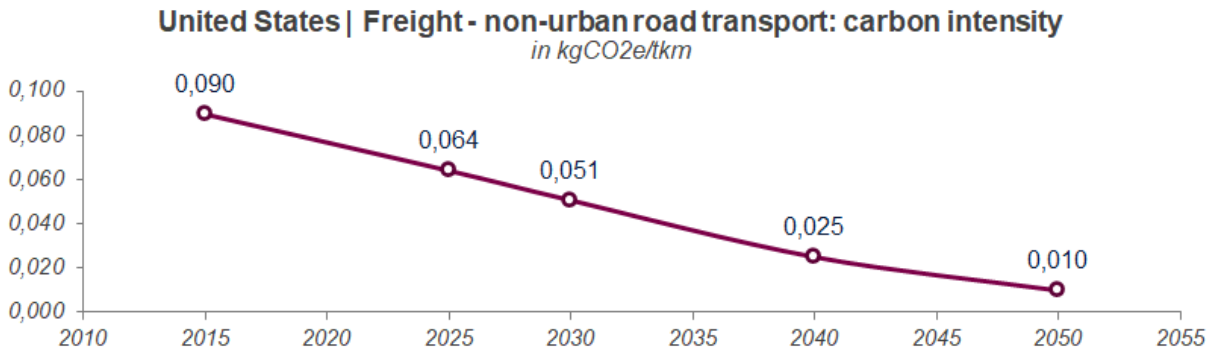


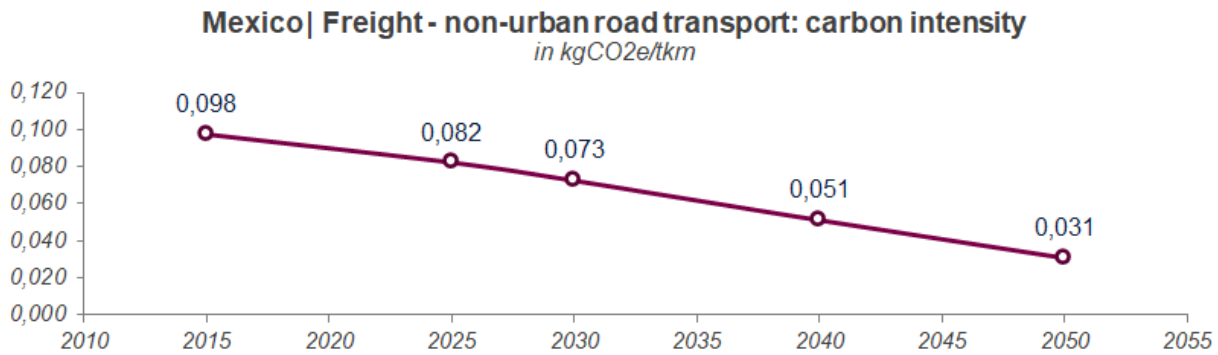
- **REGIONAL BENCHMARKS – NON-URBAN FREIGHT TRANSPORT BY ROAD**

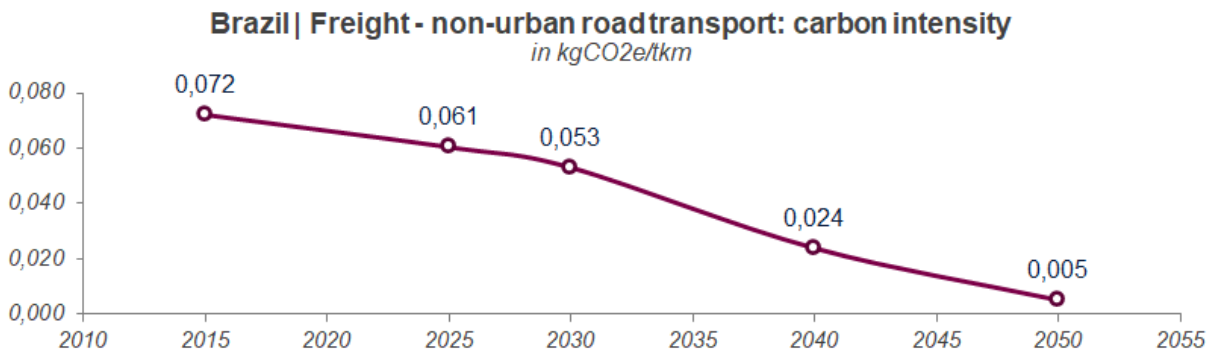


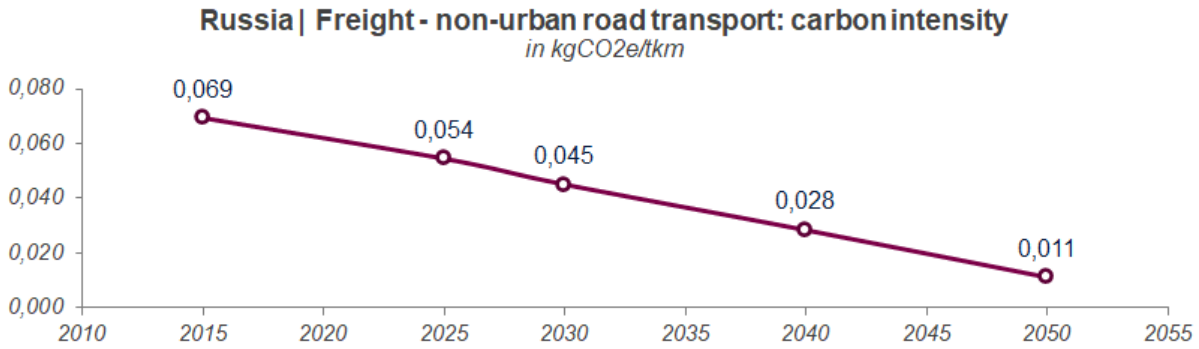

Non-OECD | Freight - non-urban road transport: carbon intensity
in kgCO2e/tkm
0,100
0,080
0,060
0,040
0,020
0,000
0,083
0,065
0,056
0,036
0,020
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

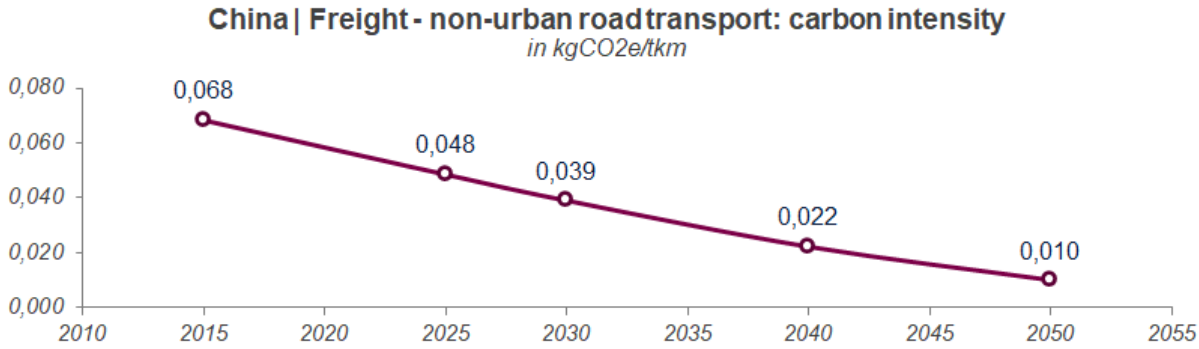

European Union | Freight - non-urban road transport: carbon intensity
in kgCO2e/tkm
0,100
0,080
0,060
0,040
0,020
0,000
0,095
0,073
0,060
0,033
0,009
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

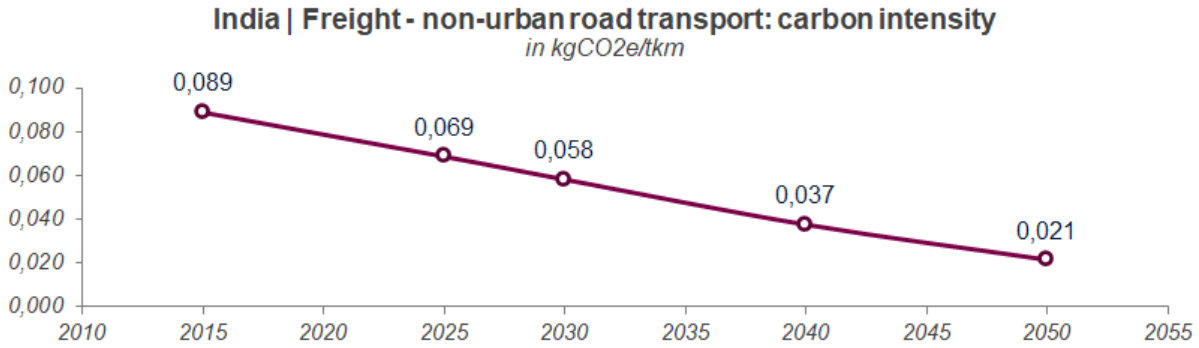

United States | Freight - non-urban road transport: carbon intensity
in kgCO2e/tkm
0,100
0,080
0,060
0,040
0,020
0,000
0,090
0,064
0,051
0,025
0,010
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

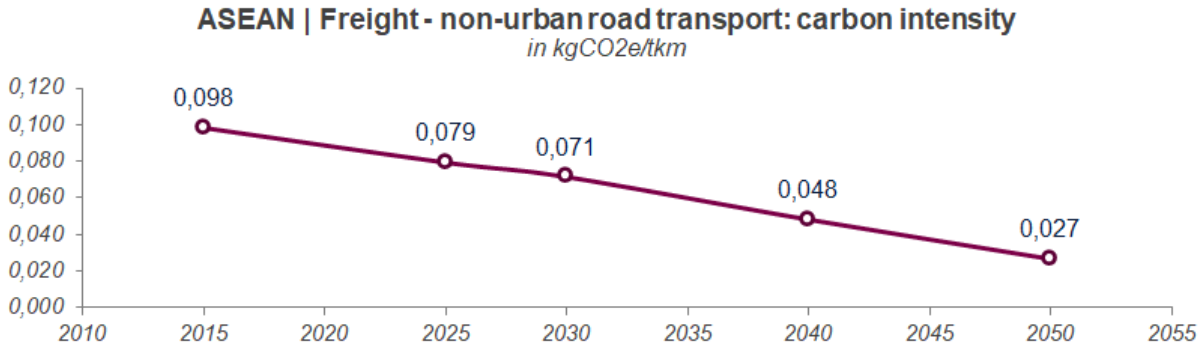

Mexico | Freight - non-urban road transport: carbon intensity
in kgCO2e/tkm
0,120
0,100
0,080
0,060
0,040
0,020
0,000
0,098
0,082
0,073
0,051
0,031
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

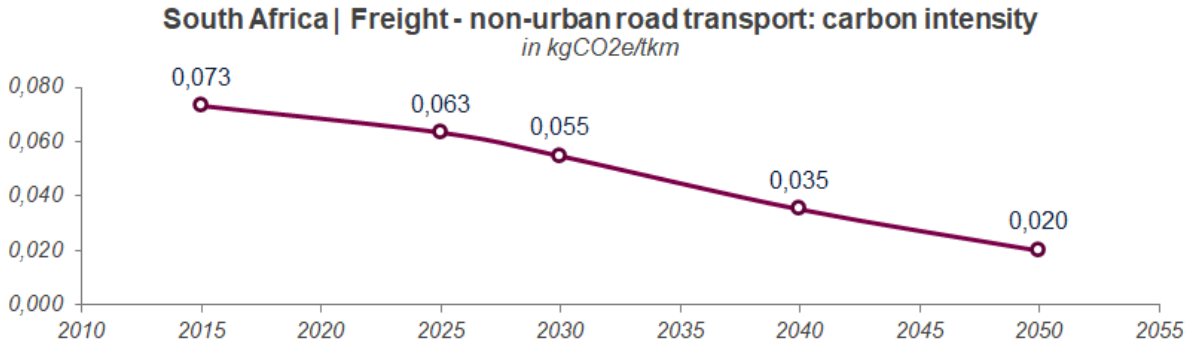

Brazil | Freight - non-urban road transport: carbon intensity
in kgCO2e/tkm
0,080
0,060
0,040
0,020
0,000
0,072
0,061
0,053
0,024
0,005
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055


Russia | Freight - non-urban road transport: carbon intensity
in kgCO2e/tkm
0,080
0,060
0,040
0,020
0,000
0,069
0,054
0,045
0,028
0,011
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

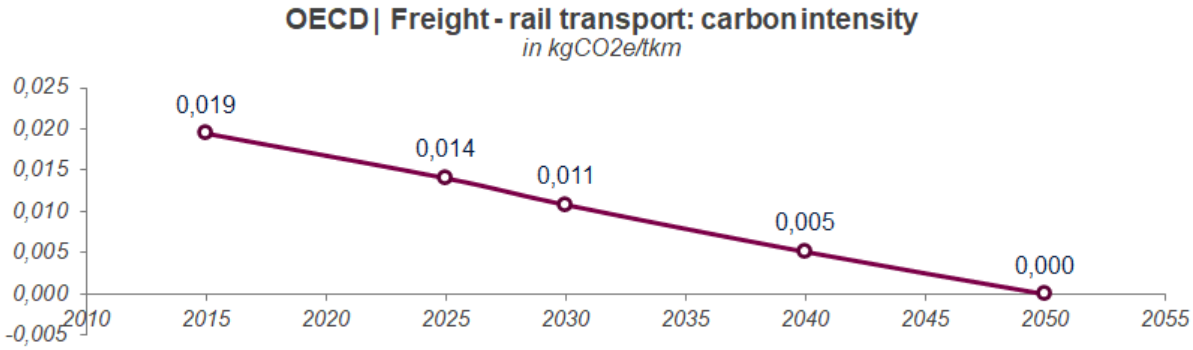

China | Freight - non-urban road transport: carbon intensity
in kgCO2e/tkm
0,080
0,060
0,040
0,020
0,000
0,068
0,048
0,039
0,022
0,010
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

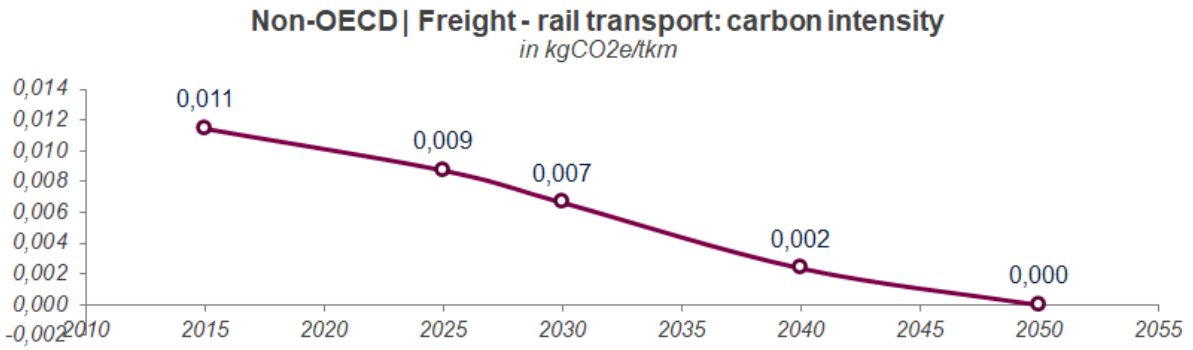

India | Freight - non-urban road transport: carbon intensity
in kgCO2e/tkm
0,100
0,080
0,060
0,040
0,020
0,000
0,089
0,069
0,058
0,037
0,021
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

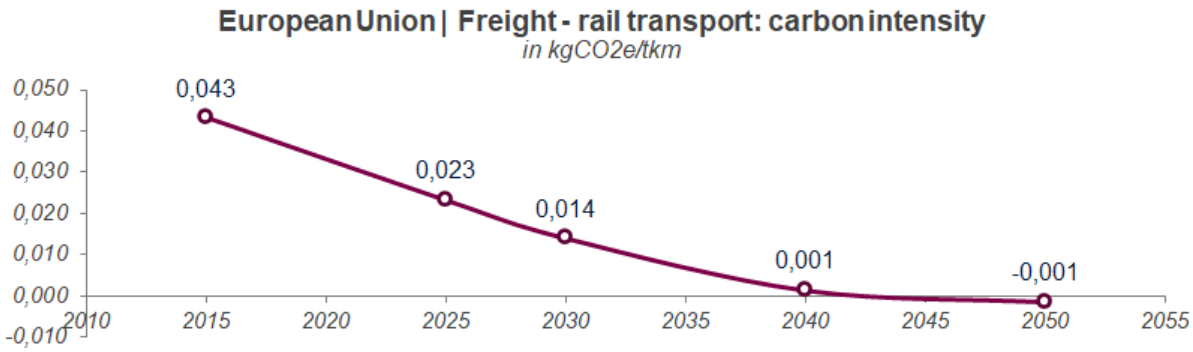

ASEAN | Freight - non-urban road transport: carbon intensity
in kgCO2e/tkm
0,120
0,100
0,080
0,060
0,040
0,020
0,000
0,098
0,079
0,071
0,048
0,027
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

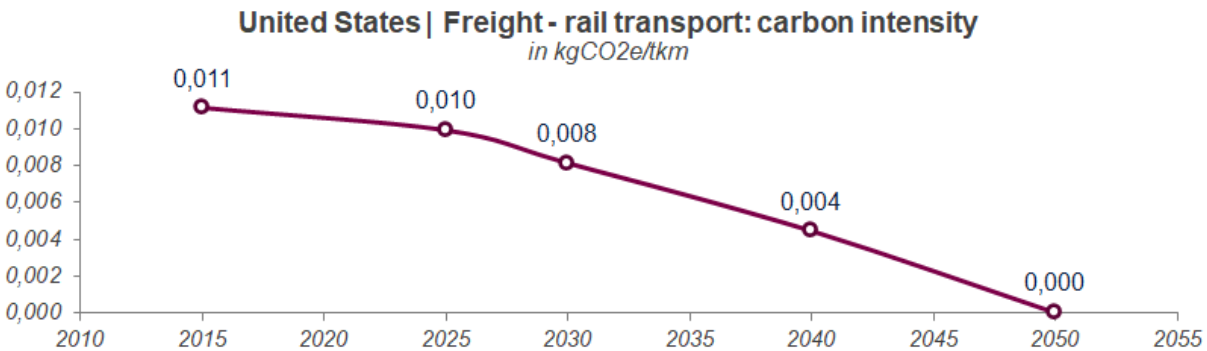

South Africa | Freight - non-urban road transport: carbon intensity
in kgCO2e/tkm
0,080
0,060
0,040
0,020
0,000
0,073
0,063
0,055
0,035
0,020
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

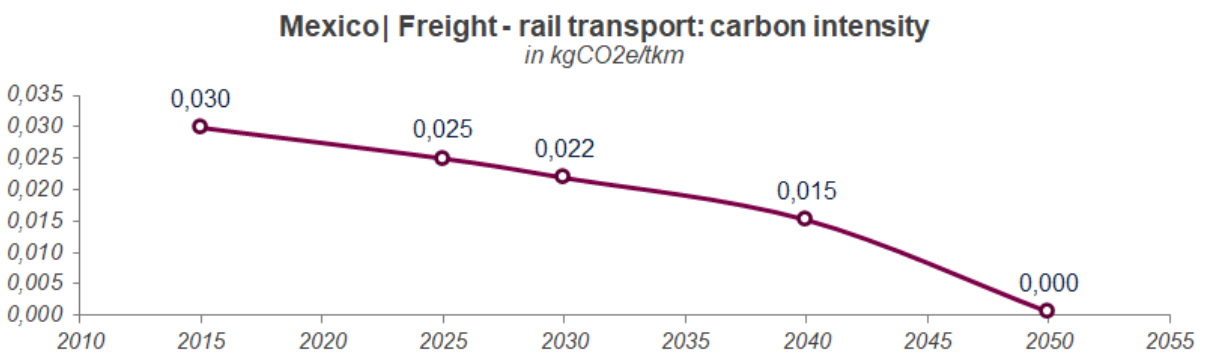
- **REGIONAL BENCHMARKS – FREIGHT RAIL TRANSPORT**

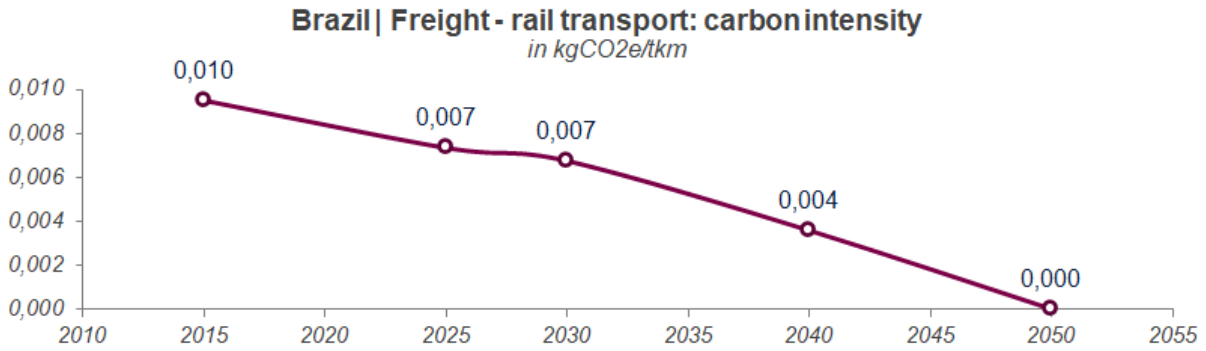


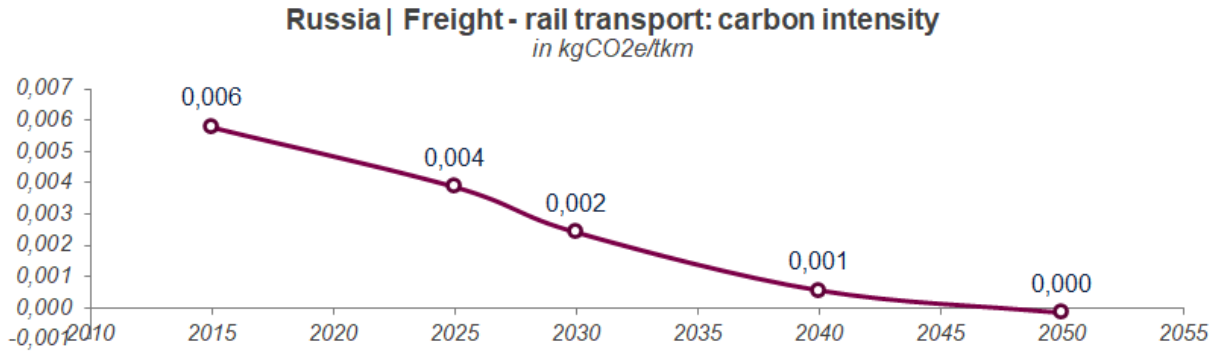


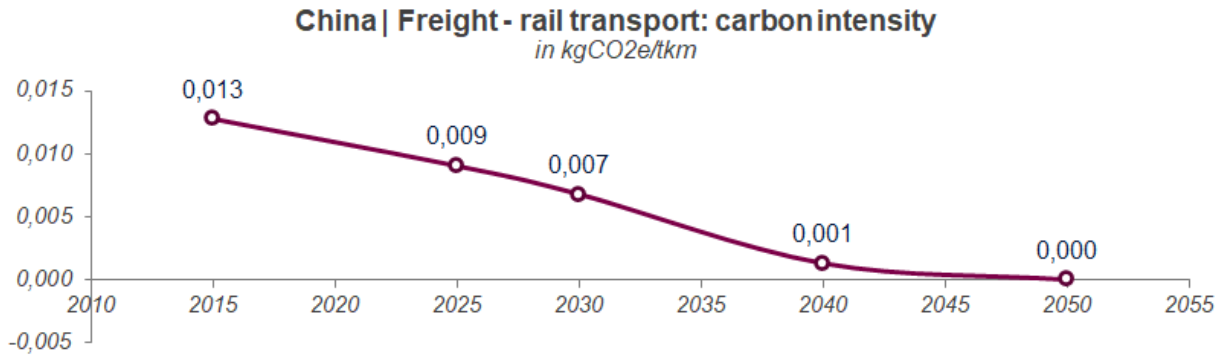


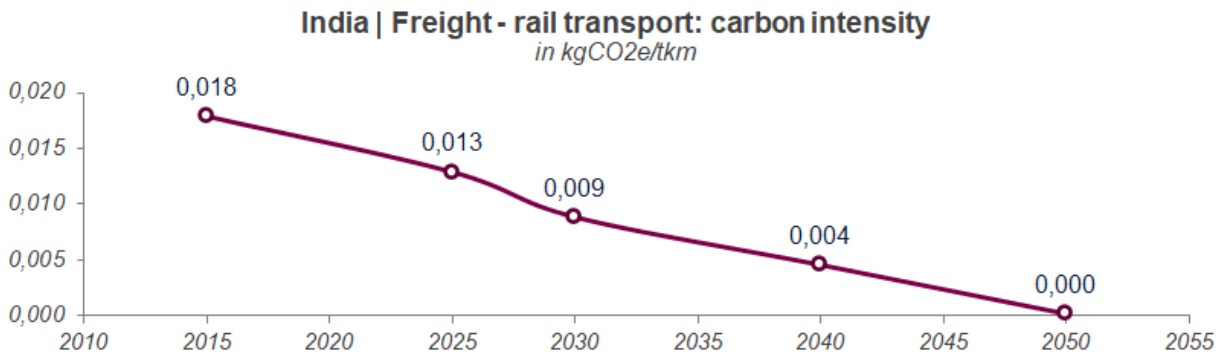


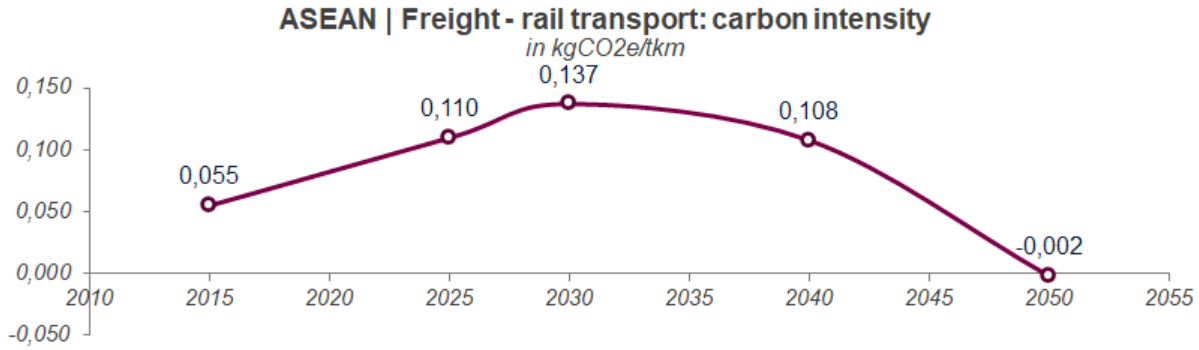


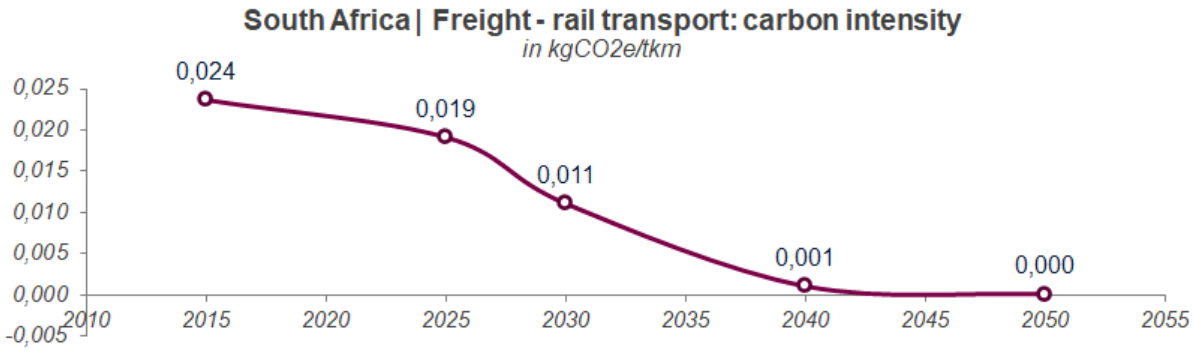

Brazil | Freight - rail transport: carbon intensity
in kgCO2e/tkm
0,010
0,007
0,007
0,004
0,000
0,010
0,008
0,006
0,004
0,002
0,000
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055


Russia | Freight - rail transport: carbon intensity
in kgCO2e/tkm
0,006
0,004
0,002
0,001
0,000
0,007
0,006
0,005
0,004
0,003
0,002
0,001
0,000
-0,001
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

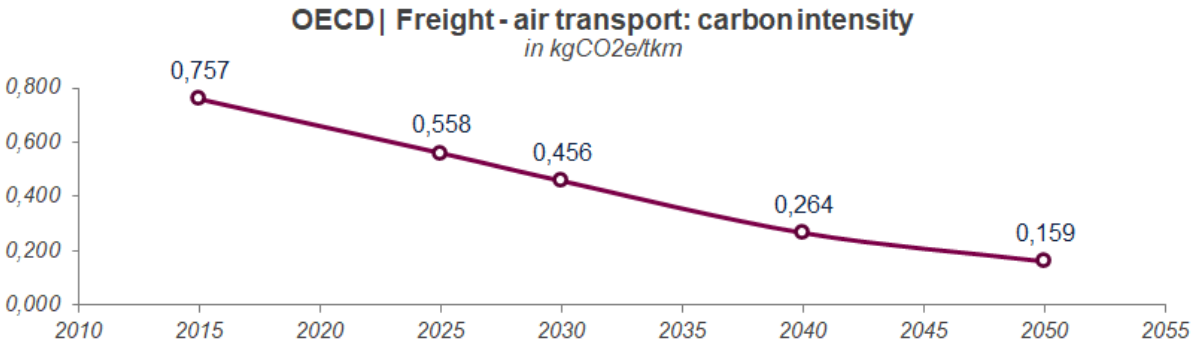

China | Freight - rail transport: carbon intensity
in kgCO2e/tkm
0,013
0,009
0,007
0,001
0,000
0,015
0,010
0,005
0,000
-0,005
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

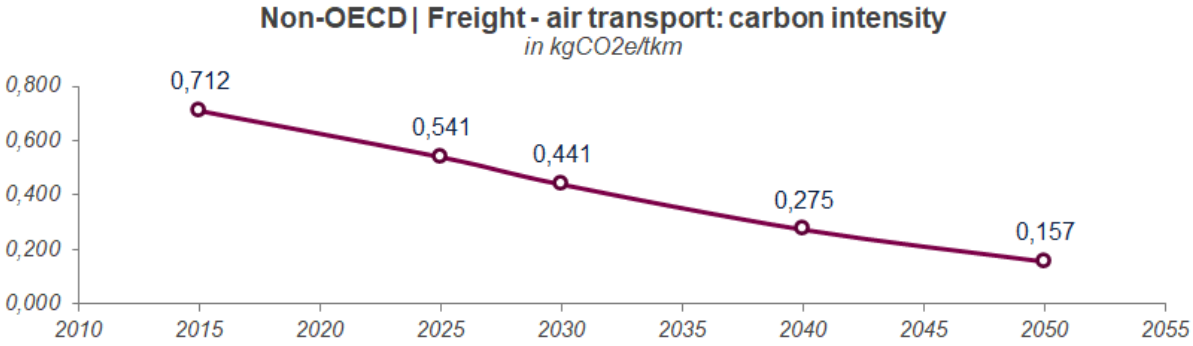

India | Freight - rail transport: carbon intensity
in kgCO2e/tkm
0,018
0,013
0,009
0,004
0,000
0,020
0,015
0,010
0,005
0,000
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

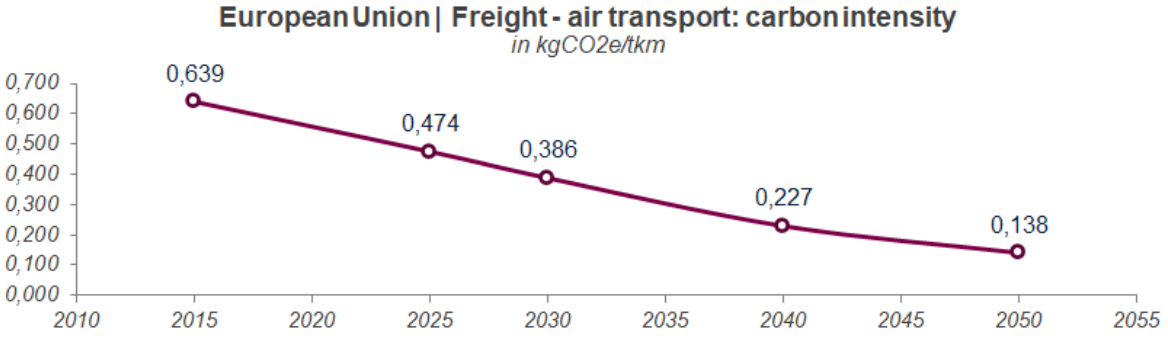

ASEAN | Freight - rail transport: carbon intensity
in kgCO2e/tkm
0,055
0,110
0,137
0,108
-0,002
0,150
0,100
0,050
0,000
-0,050
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

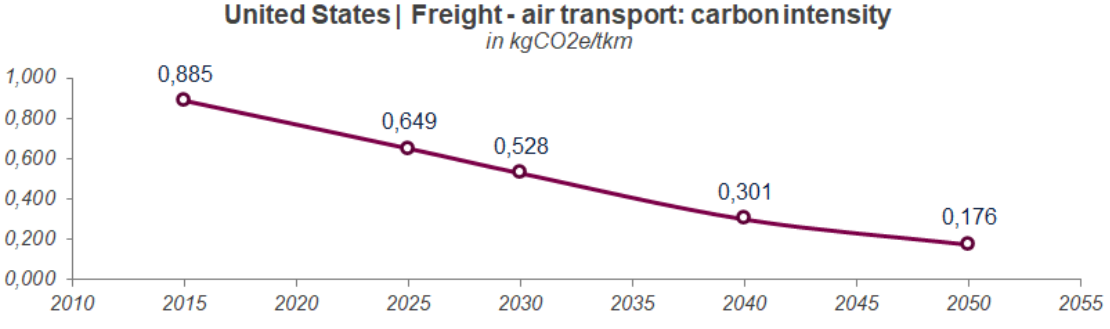


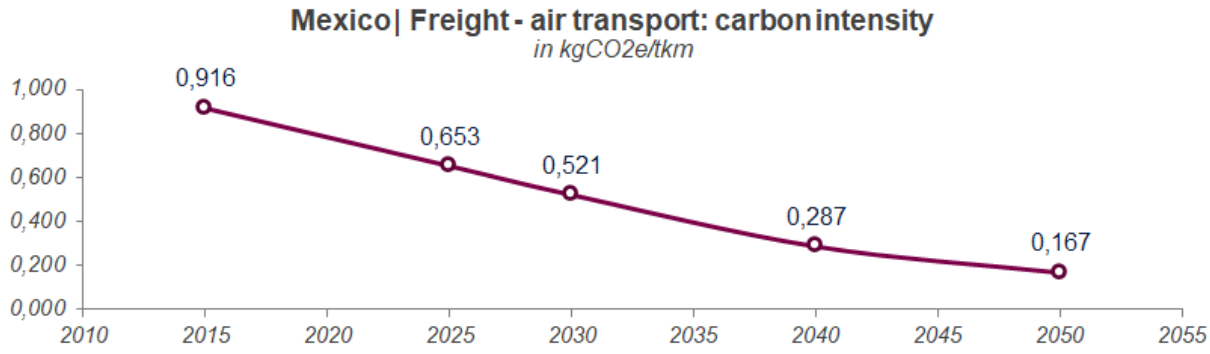
- **REGIONAL BENCHMARKS – FREIGHT AIR TRANSPORT**

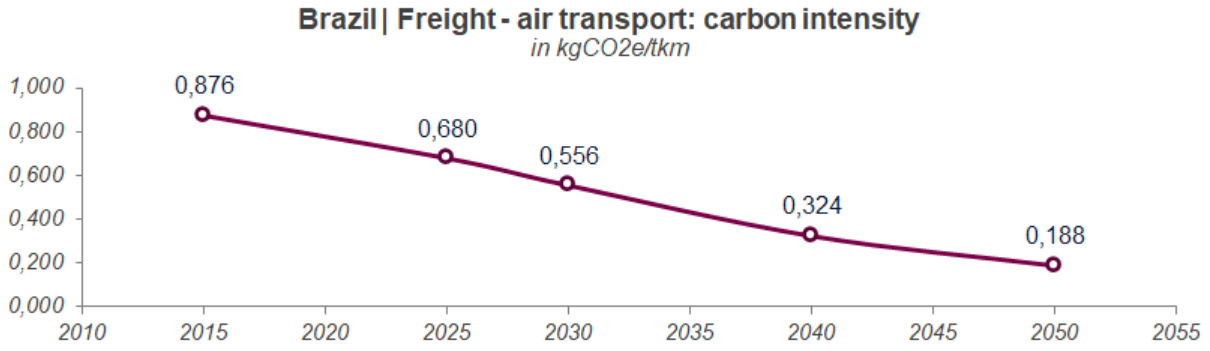


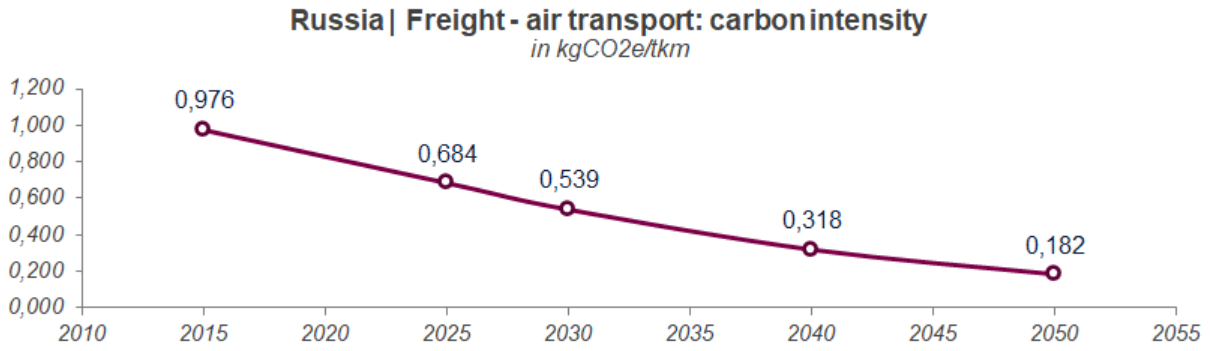


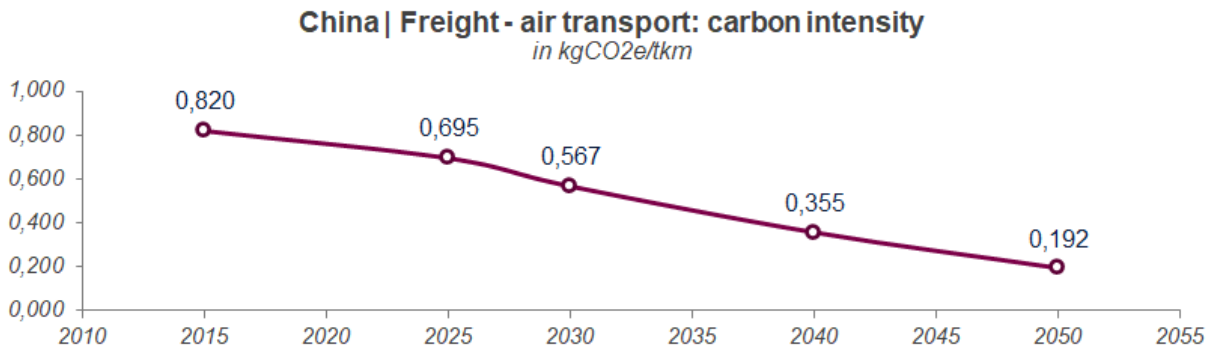


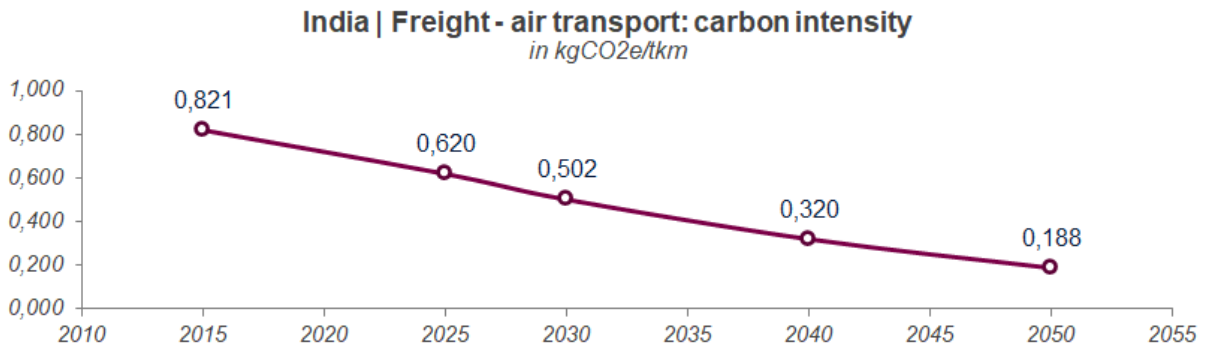


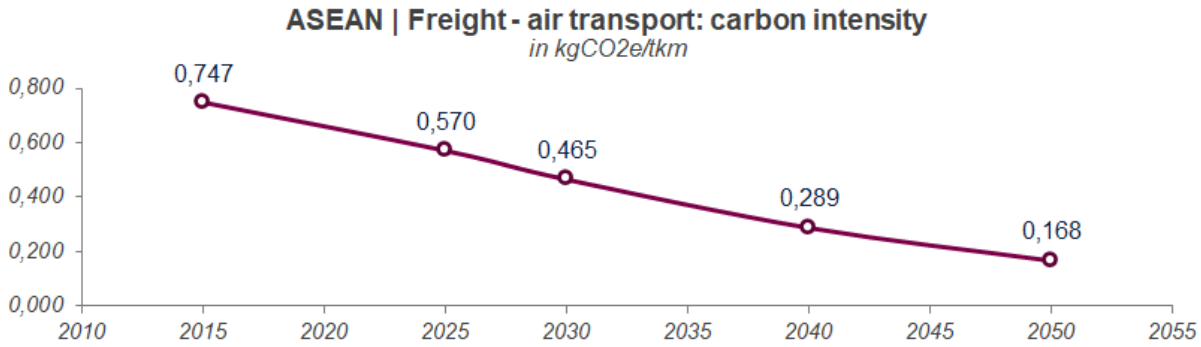

Mexico | Freight - air transport: carbon intensity
in kgCO2e/tkm
1,000
0,800
0,600
0,400
0,200
0,000
0,916
0,653
0,521
0,287
0,167
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

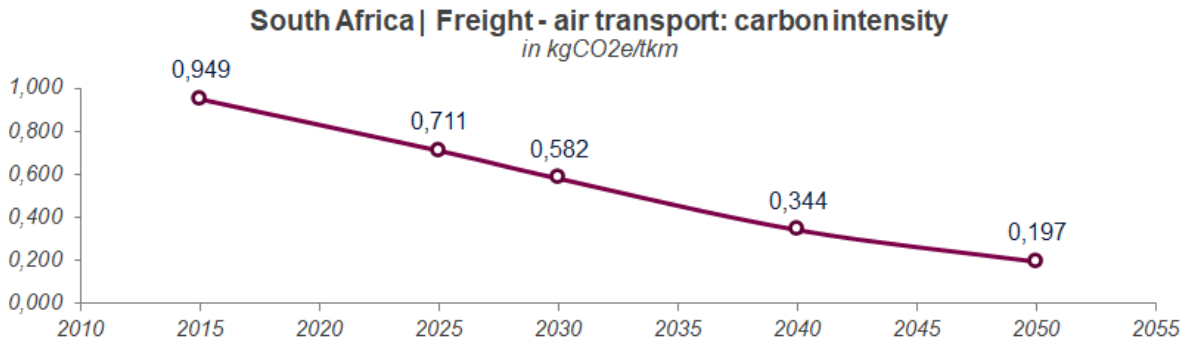

Brazil | Freight - air transport: carbon intensity
in kgCO2e/tkm
1,000
0,800
0,600
0,400
0,200
0,000
0,876
0,680
0,556
0,324
0,188
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055


Russia | Freight - air transport: carbon intensity
in kgCO2e/tkm
1,200
1,000
0,800
0,600
0,400
0,200
0,000
0,976
0,684
0,539
0,318
0,182
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

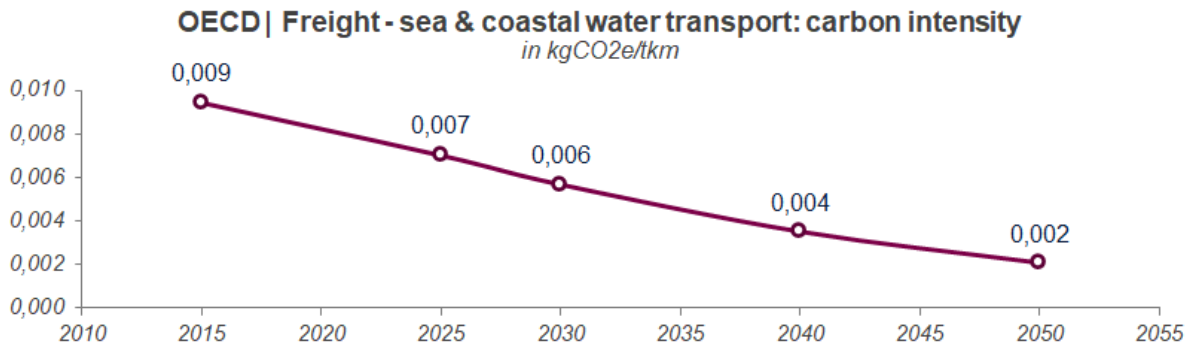

China | Freight - air transport: carbon intensity
in kgCO2e/tkm
1,000
0,800
0,600
0,400
0,200
0,000
0,820
0,695
0,567
0,355
0,192
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

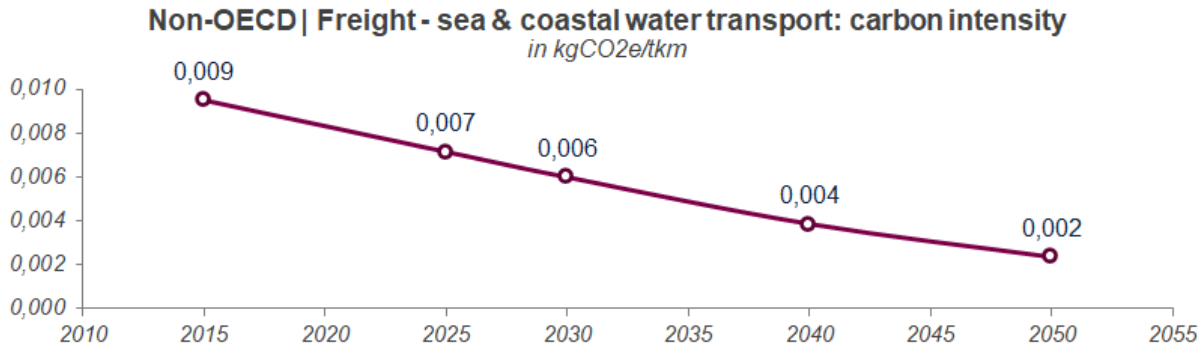

India | Freight - air transport: carbon intensity
in kgCO2e/tkm
1,000
0,800
0,600
0,400
0,200
0,000
0,821
0,620
0,502
0,320
0,188
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055

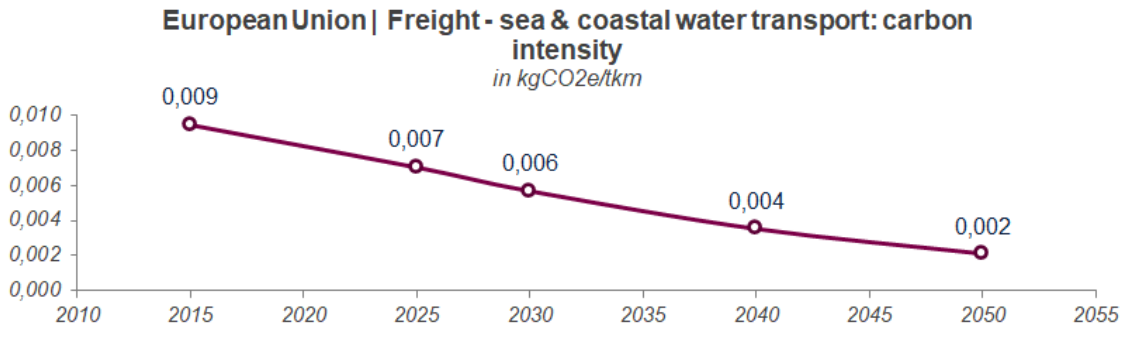


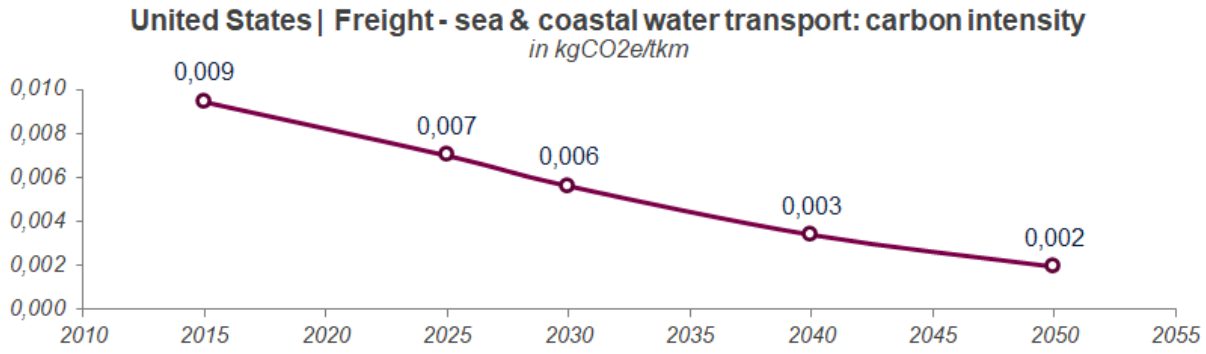


- **REGIONAL BENCHMARKS – SEA & COASTAL FREIGHT WATER TRANSPORT**








United States | Freight - sea & coastal water transport: carbon intensity
in kgCO2e/tkm
0,009
0,007
0,006
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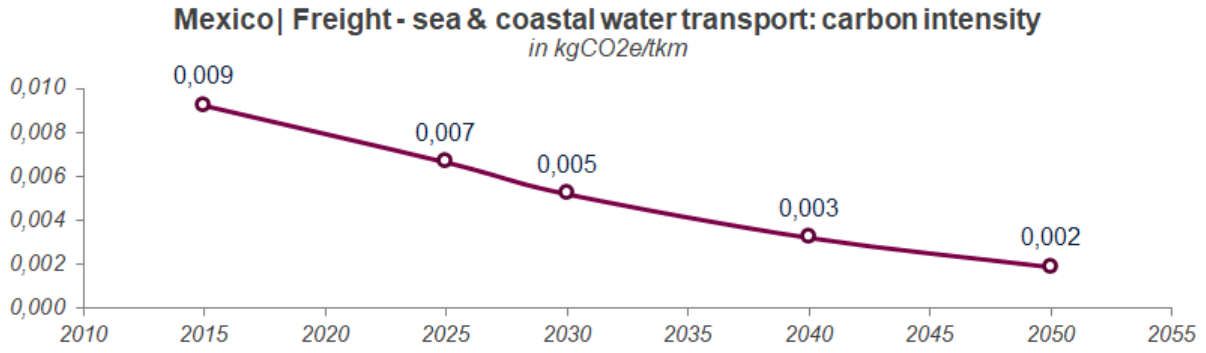
Mexico | Freight - sea & coastal water transport: carbon intensity
in kgCO2e/tkm
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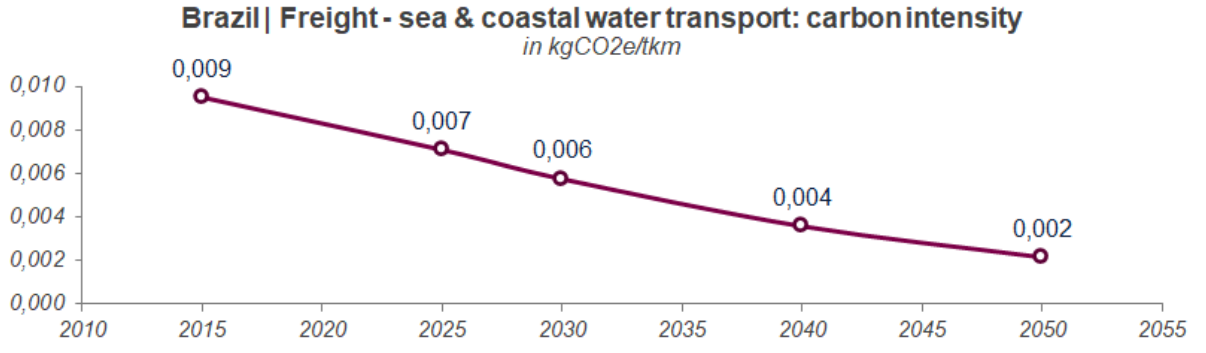
Brazil | Freight - sea & coastal water transport: carbon intensity
in kgCO2e/tkm
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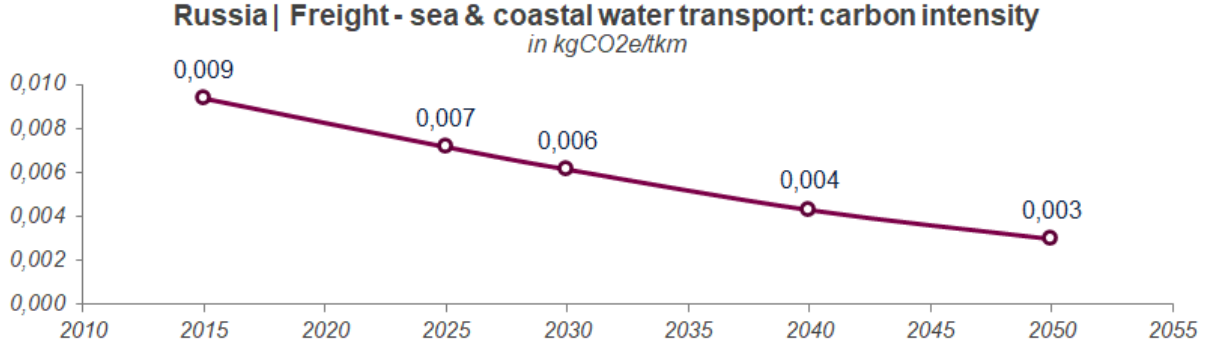
Russia | Freight - sea & coastal water transport: carbon intensity
in kgCO2e/tkm
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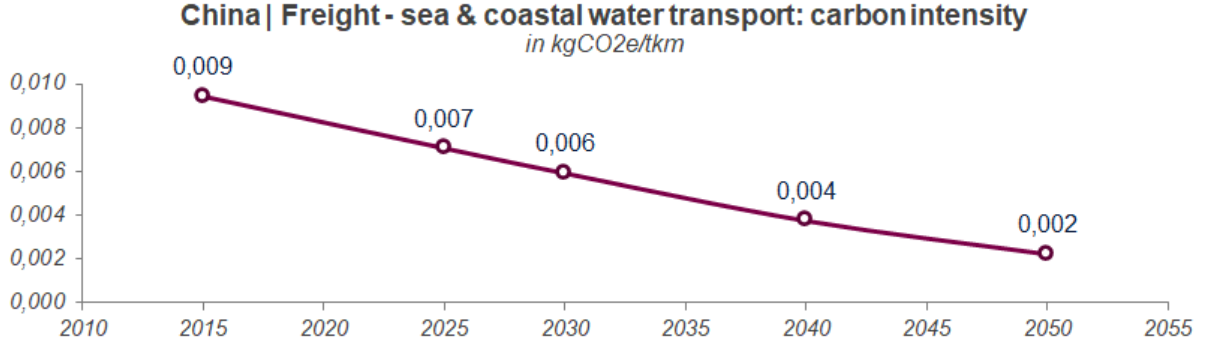
China | Freight - sea & coastal water transport: carbon intensity
in kgCO2e/tkm
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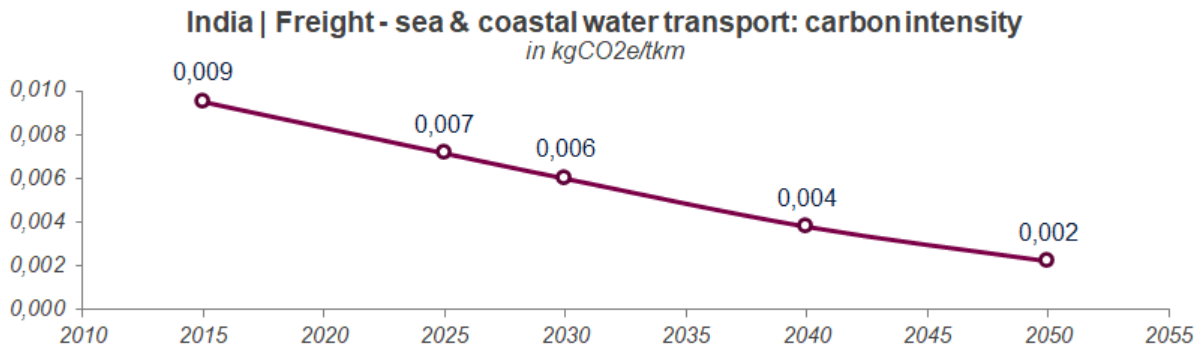

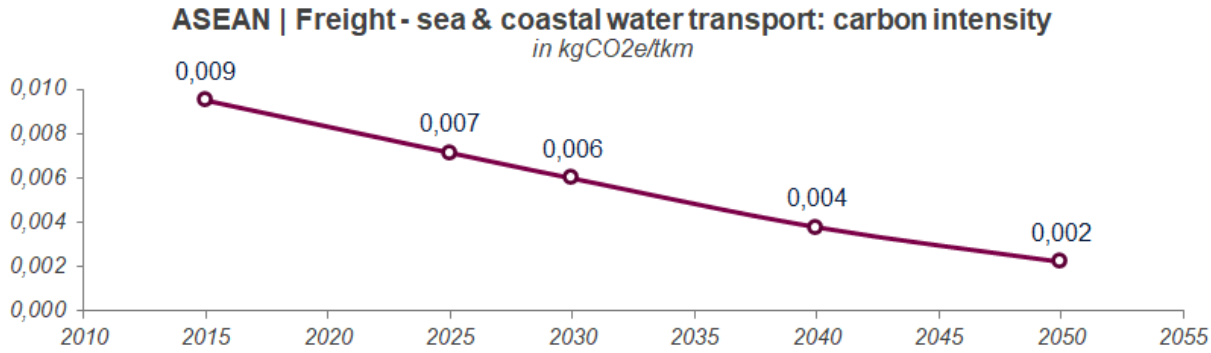

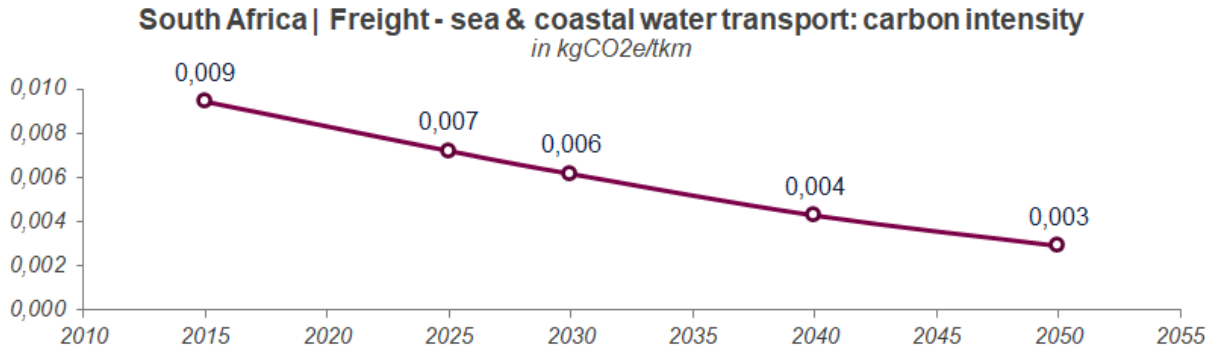

- **REGIONAL BENCHMARKS – INLAND FREIGHT WATER TRANSPORT**

No data on regional pathways available in literature yet

6.2. QUANTITATIVE BENCHMARKS USED FOR THE INDICATORS

The following table lists the benchmarks used for the quantitative indicators and their sources:

TABLE 8: BENCHMARKS FOR THE QUANTITATIVE INDICATORS

BENCHMARK	PARAMETER	SOURCE	INDICATOR RELEVANCE
Company Benchmark for Scope 1+2+3 emissions	$CB_{Scopes\{1,2,3\}}$	IEA ETP 2017 [4] SDA [30] ITF [3] ICCT [31] IATA [32] [12]	TR 1.1 TR 2.1 TR 2.3 TR 4.1
Sector Benchmark for Scope 1+2+3 emissions	$SB_{Scopes\{1,2,3\}}$	IEA ETP 2017 [4] SDA [30] ITF [3] ICCT [31] IATA [32] [12]	TR 2.2 TR 4.2
Average lifetime of vehicles	L_f	The Geography of Transport systems [33]	TR 1.2
Transport Activity	A_T	SDA [30]	TR 2.3
Share of low carbon vehicles and energies required in a low-carbon scenario	$SB_{LCV}(t)$	♦ For shipping: DNV-GL (p.93) [34], IEA ETP (p. 260) [4], ETC (p.110 – illustrative) [8] ♦ For road freight: IEA ETP (p.250) [4], IEA Trucks (pp.124, 126) [17] ♦ For aviation: IEA [35] ♦ For rail: IEA [23] ♦ For inland waterways: none	TR 2.4

COMPUTATION OF THE COMPANY BENCHMARK

The Company Benchmark $CB_{Scopes\{1,2,3\}}$ is computed from the relevant Sector Benchmark $SB_{Scopes\{1,2,3\}}$ presented in section 6.1 using the convergence approach illustrated in Figure 6. The convergence of carbon intensity is a common approach and is used by SDA, which is the main source of sector benchmarks in this methodology. However, SBT is currently (2020) updating the Transport SBT setting Guidance [40] promoting a different approach for some modes (freight at large, air, maritime transport). ACT TR methodology should be updated in a latter version to follow SBT guidance.

- **CASE OF MULTIMODAL COMPANIES**

No aggregation of benchmark is done for multimodal companies, as targets are usually set by mode. Modal shift as a lever for decarbonisation is not encompassed in this case. Multimodal companies shall report for this indicator as many times as the number of modes they operate, the final score is computed by aggregating the score obtained for each mode, weighted by the level of GHG emissions of each mode.

- **CASE OF COMPANIES MIXING PASSENGER AND FREIGHT TRANSPORT**

This is the case mainly for the aviation sector. If the company separates freight activities and passenger activities in its organisation, separate targets are set, and, similarly to the case of multimodal companies, the company's targets shall be compared to separate trajectories: one for freight and one for passenger transport. More details are given in section Specific case of aviation.

6.3. WEIGHTINGS

The selection of weights for both the modules and the individual indicators was guided by the principles of value of information, impact of variation, future orientation and data quality sensitivity. See the ACT Framework [1] document for more information.

As shown in the description of modules and indicators in section 5.3, the weight allocated to some indicators varies depending on whether the company operates its own fleet, or subcontracts the transport service to another company. However, in many cases, the company assessed is actually doing both: some part of the service is carried out internally, while the rest is being subcontracted. For this situation, the company will be evaluated twice for the modules with separated weights: once on the part of own fleet operations, and once on subcontracted operations. The final score will be the average of both scores, weighted by the share of GHG emissions from own fleet operations, or subcontracted operations, respectively.

TABLE 9: PERFORMANCE INDICATOR WEIGHTINGS

MODULE	TR	INDICATOR	WEIGHT OWN FLEET		WEIGHT SUBCONTRACTING		WEIGHT PUBLIC SERVICE DELEGATION	
			Indicator	module	Indicator	module	Indicator	module
TARGETS	1.1	Alignment of transport service emissions reduction targets	10%	15%	10%	15%	10%	15%
	1.2	Time horizon of targets	3%		3%		3%	
	1.3	Achievement of past and current targets	2%		2%		2%	
DIRECT OPERATIONS	2.1	Trend in past emissions intensity	4%	30%	0%	0%	0%	0%
	2.2	Alignment of past performance with carbon budget	4%		0%		0%	
	2.2	Fleet locked-in emissions	15%		0%		0%	
	2.3	Share of low-carbon vehicles and energies	7%		0%		0%	
INTANGIBLE INVESTMENT	3.1	R&D spending on low-carbon technologies	2%	5%	2%	5%	2%	5%
	3.2	Investments in digital solutions for transport optimization	1%		1%		1%	

MODULE	TR	INDICATOR	WEIGHT OWN FLEET		WEIGHT SUBCONTRACTING		WEIGHT PUBLIC SERVICE DELEGATION	
			Indicator	module	Indicator	module	Indicator	module
	3.3	Investments in human capital - training of employees	2%		2%		2%	
INDIRECT OPERATIONS	4.1	Trend in past emissions intensity	0%	0%	4%	30%	4%	30%
	4.2	Alignment of past performance with carbon budget	0%		4%		4%	
	4.3	Performance of sub-contracted service	0%		22%		22%	
GOVERNANCE	5.1	Oversight of climate change issues	2%	10%	2%	10%	2%	10%
	5.2	Climate change oversight capability	1%		1%		1%	
	5.3	Low-carbon transition plan	3%		3%		3%	
	5.4	Climate change management incentives	1%		1%		1%	
	5.5	Climate change scenario testing	3%		3%		3%	
SUPPLIER ENGAGEMENT	6.1	Engagement with transport service subcontractors	8%* share of GHG emissions linked to subcontracted activities	15%	%* share of GHG emissions linked to subcontracted activities	15%	0%	7%
	6.2	Engagement with vehicles manufacturers	2%+8%*(1-share of GHG emissions linked to subcontracted activities)		2%+8%*(1-share of GHG emissions linked to subcontracted activities)		2%	
	6.3	Engagement with infrastructure providers	5%		5%		5%	
CLIENTS ENGAGEMENT	7.1	Strategy to influence customer behaviour to reduce their GHG emissions	3%	10%	3%	10%	4.5%	15%
	7.2	Activities to influence customer behaviour to reduce their GHG emissions	7%		7%		10.5%	
POLICY ENGAGEMENT	8.1	Company policy on engagement with trade associations	2%	5%	2%	5%	2%	8%
	8.2	Position on significant climate policies	1%		1%		1%	
	8.3	Interactions with local public authorities	2%		2%		5%	
BUSINESS MODEL	9.1	Business activities shifting demand for highly emissive to low-carbon modes	4%	10%	4%	10%	4%	10%
	9.2	Business activities promoting technical and operational low-carbon innovations	2%		2%		2%	
	9.3	Business activities engaging clients	4%		4%		4%	
			100%	100%	100%	100%	100%	100%

The quantitatively scored modules (Targets, Direct operations, Intangible investment, Indirect operations) carry 50% of the final weight, and the qualitatively scored modules (Governance, Policy engagement, Business model) carry 50%. The indicators within the modules also carry their own weighting.

- **RATIONALE FOR WEIGHTINGS**

Targets 15%

The targets module has a relatively large weight of 15%. Most of this is placed on *alignment of transport service emissions reduction targets*, with 10%. This is because this indicator covers the totality of the company emissions, (WTW emissions as well as emissions from subcontracting) and targets are the only quantified metric to assess the ambition of a company.

The *time horizon of targets & achievement of current and past targets* have a low weight of 3% and 2%. The time horizon of targets is a proxy of how forward-looking the company is, which should be coherent with the lifetime of its assets. Finally, the previous achievement indicator measures the company's past credentials on target setting and achievement, which provides more contextual information on the company's ability to meet ambitious future targets

Direct operations 30% or 0%

For companies owning their fleet, the focus of the ACT project is on the WTW fleet emissions, and this module captures all indicators that relate to this concept. More specifically, the indicators *Fleet emissions lock-in* is a way of capturing how the company fleet emissions will evolve in the future. This indicator is a measurement of the company's alignment with a low-carbon future and receives a strong weight of 15%.

The past performance of the company is also assessed, in an attempt to see if the company recent emissions reduction is aligned with the needed future emissions reduction. The indicator *Alignment of past performance with its carbon budget* aims at evaluating if the company has emitted more carbon in the past than what it should have. These two indicators weight for 8%, and if the indicator *Alignment of past performance with its carbon budget* is not kept, its weight will be given to the indicator *Trend in past emissions intensity*.

Finally, the future outlook of the transport sector is based wholly on the adoption of low-carbon vehicles to replace conventional ICE vehicles. Therefore, the present *low-carbon vehicles and energies* of the company is a direct measurement of the company's progress towards this goal. It receives a weight of 7%.

Intangible Investment 5%

Intangible investment is divided in three dimensions that are important for transport sector decarbonization. Low-carbon R&D is one aspect of the decarbonization, but transport operators are not at the forefront of R&D. Adoption of new digital solutions aiming at the optimization of the activity should also be adopted. Creating a company culture around the climate change issues should be also considered to ensure that everyone is playing its part. The weight of low-carbon R&D is 2%, investment in digital solutions is 1% and Investment in human capital is 2%. The weight is quite low because these investments are quite difficult to quantify and evaluate.

Indirect operations 0% or 30%

For companies subcontracting activities or in the specific case of public service delegation, data on future carbon performance might be difficult to obtain. This module is very important to encourage the collaboration toward low-carbon transport and thus has an important weight. Performance of subcontracted services is future oriented and covers all the aspects on carbon performance that companies should take into account when working with a sub-contractor or public authorities. The knowledge of subcontracting companies' environmental performance is essential for companies with a lot of subcontracting as it weights a lot in the future carbon performance of the company. Thus, this indicator receives a strong weight of 22%.

The past performance of the company is also assessed, to see if the company's recent emissions reduction is aligned with the needed future emissions reduction. The indicator *Alignment of past performance with its carbon budget* aims at evaluating if the company has emitted more carbon in the past than it should have. These two indicators have a weight of 8%, and if the indicator *Alignment of past performance with its carbon budget* is not kept, its weight will be given to the indicator *Trend in past emissions intensity.*

Governance 10%

Governance is a multi-faceted module that makes up 10% of the score, because it incorporates many different smaller indicators that together paint a picture of the company's management and strategic approach to the low-carbon transition. Going by the principle of future orientation, most of this weight is placed on the *low-carbon transition plan* and *climate change scenario testing*, which are both weighted 3%. These two indicators provide more information on how this company will specifically deal with the transition, given its unique constraints and opportunities, and therefore provide valuable insights into the company's planning and narrative towards the final goal.

The other three indicators have a low weight of 1% and 2%, as they are contextual indicators whose outcome can strengthen or undermine the company's ability to carry out the transition plan and meet ambitious science-based targets.

Supplier engagement 15% or 7%

In order to decarbonize the transport sector, it is essential that all actors get involved.

First, companies that are subcontracting a part of their activities must ensure that subcontracting companies are tackling the climate change problem and decarbonizing their activities.

To develop the technology required for the low-carbon transition, it is imperative that transport operators involve manufacturers to identify together the best low-carbon options.

These two indicators are weighted 10% together, as a company with a lot of subcontracting must first and foremost engage with subcontractors and a company with an owned fleet must engage with vehicle manufacturers in priority.

Finally, changing habits, such as modal shift, requires that transport operators get involved with infrastructure operators and voice their needs.

This module covers the whole picture for decarbonizing the transport sector and thus as an important weight of 15%.

The specific case of public service delegation has shown that the companies concerned have very few possibilities to influence the strategy and actions regarding GHG emissions from the owner of the fleet. Therefore, the module has a weight of 7%.

Client engagement 10% or 15%

The client engagement indicator is focused on the company's efforts to promote low-carbon transport offers to their customers. This is an important aspect, in order to identify companies that make real efforts to make low-carbon activities a significant part of their activity. This module is complementary to the previous one as influencing the demand toward low carbon offers is essential to decarbonization and therefore is weighted 10%.

For companies dealing with public service delegation, they have a key role with (local) public authorities and must work more closely with them so that they can reduce their GHG emissions and work with the operators of the fleet. The weight of this module is therefore higher and represents 15%.

Policy engagement 5% or 8%

In line with the rationale for the low weighted management indicators, the policy engagement indicators are also contextual aspects that tell a narrative about the company's stance on climate change and how the company expresses that in their engagement with policymakers and trade associations. The total weight for this module is therefore medium at 5%. *Company policy on engagement with trade associations* weighs 2%, *company's position on significant climate policies* weighs 1% and *interaction with local public authorities* weighs 2%.

For companies dealing with public service delegation, they have a key role with (local) public authorities and must work more closely with them so that they can reduce their GHG emissions and work with the operators of the fleet. The weight of this module is therefore higher and represents 8%.

Business model 10%

The Business activities shifting demand for highly emissive modes to low-carbon modes indicator includes the aspects that are relevant to low-carbon transport offers but are not currently developed by the company today. It is future oriented by asking the companies in their narrative about certain future directions that the sector can/has to take to enable the transition. It weighs 4%, to account for the importance of developing new business to ensure resilience.

Business activities promoting technical and operational low-carbon innovations ask transport operators how they are engaging with the future development that could occur to decarbonize the transport sector. It is important as this can have major impacts on the company's future business model. It weighs 2% because it is complementary to module 3.

The indicator Business activities engaging clients evaluates the business development that could promote innovative low carbon transport offers that are not currently financially possible but could become possible if customers get involved with transport operators. The weight is 4% because it addresses an aspect essential to the development of low carbon transport.

7. Rating

The ACT rating shall comprise:

→ A performance score
→ A narrative score
→ A trend score

These pieces of information shall be represented within the ACT rating as follows:

a. **Performance score** as a number from 0 (lowest) to 100 (highest)
b. **Narrative score** as a letter from E (lowest) to A (highest)
c. **Trend score** as either "+" for improving, "-" for worsening, or "=" for stable.

The highest rating is thus represented as "100A+", the lowest as "0E-" and the midpoint as "50C=".

TABLE 10: LOWEST, HIGHEST AND MIDPOINT FOR EACH ACT SCORE TYPE

LOW SCORES	MID SCORES	HIGH SCORES
0E-	50C=	100A+

See the ACT Framework [1] for general information and methodology on the ACT rating.

7.1. PERFORMANCE SCORING

A detailed description of the performance indicators and of their weightings for the TR sector is presented in *5.3. Performance indicators.* Figure 20 and Figure 21 show example of the decomposition of the performance score of the company along each module score, in the case of own fleet, or subcontracting, respectively.

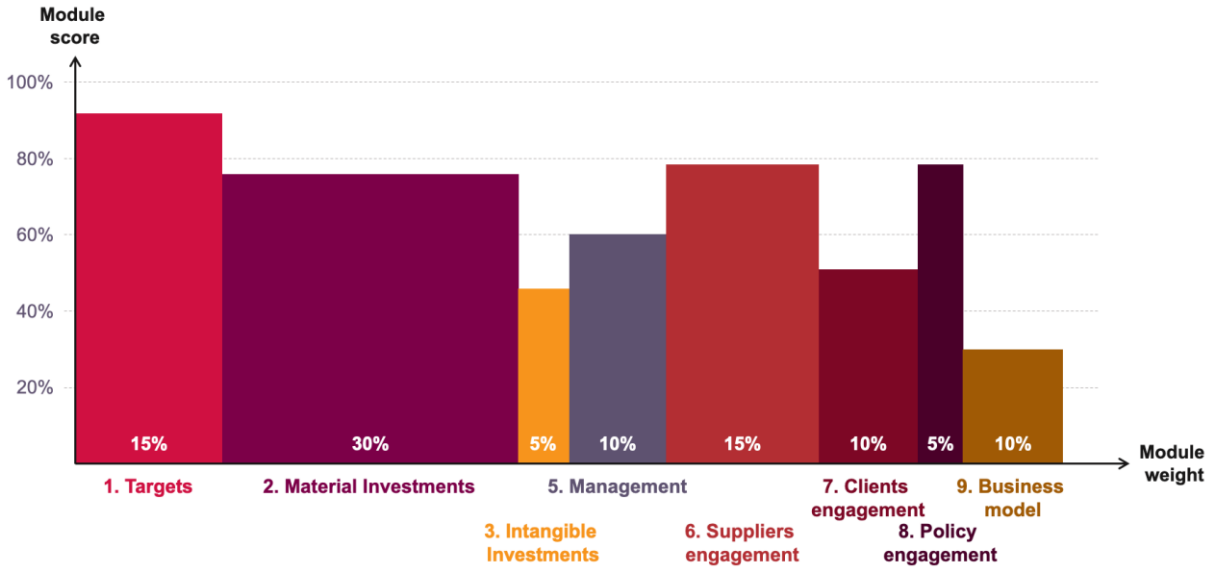

FIGURE 20: EXAMPLE OF A DISPLAY OF THE PERFORMANCE SCORE BROKEN DOWN BY MODULE – CASE OF OWN FLEET (THE WIDTH OF THE BARS IS PROPORTIONAL TO THE MODULE'S WEIGHTING)

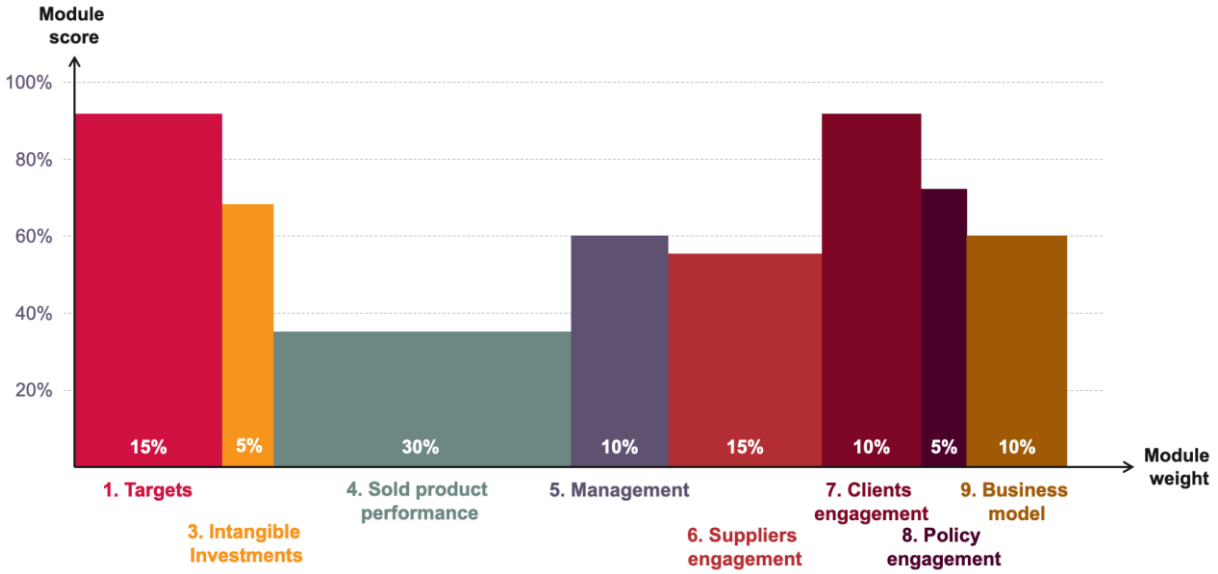

FIGURE 21: EXAMPLE OF A DISPLAY OF THE PERFORMANCE SCORE BROKEN DOWN BY MODULE – CASE OF SUBCONTRACTING

Performance scoring shall be performed in compliance with the ACT Framework. No additional sector-specific issue impacting the performance scoring for this sector has been identified to date.

7.2. NARRATIVE SCORING

Narrative scoring shall be performed in compliance with the ACT Framework, assessing the company on the 4 following criteria:

- Business model and strategy
- Consistency and credibility
- Reputation

- Risk

The information reported in Module 2 and 4 shall be considered with peculiar attention for the narrative analysis and narrative scoring for the TR sector: with this information, the analyst can take a holistic view on the company's actions to perform a low-carbon transport service, and assess the consistency of actions taken with respect to targets, business model and engagement with other stakeholders.

No other sector-specific issue impacting the narrative scoring for this sector has been identified to date.

7.3. TREND SCORING

Trend scoring shall be performed in compliance with the ACT Framework.

To apply the trend scoring methodology presented in the ACT Framework, the analyst should identify the trends from the existing data infrastructure based on the data points and/or indicators that can indicate the future direction of change within the company.

The table below includes an overview of which indicators/data points could possibly have valuable information about future directions for the TR sector.

TABLE 11: RELEVANT PERFORMANCE INDICATORS FOR TRENDS IDENTIFICATION FOR THE TR SECTOR

MODULE	INDICATOR
Targets	TR 1.1 Alignment of transport service emissions reduction targets
	TR 1.2 Time horizon of targets
Direct operations	TR 2.3 Fleet locked-in emissions
	TR 2.4 Share of low-carbon vehicles and energies
Intangible investments	TR 3.1 R&D in low-carbon vehicles and energies
	TR 3.2 Investments in digital solutions for transport optimization
	TR 3.3 Investments in human capital - training of employees
Indirect operations	TR 4.3 Subcontracted service performance
Governance	TR 5.3 Low-carbon transition plan
	TR 5.5 Climate change scenario testing
Clients	TR 7.1 Strategy to influence customers behaviour to reduce their GHG emissions
	TR 7.2 Activities to influence customers behaviour to reduce their GHG emissions
Business model	TR 9.1 Business activities shifting demand for highly emissive to low-carbon modes

	TR 9.2 Business activities promoting technical and operational low-carbon innovations
	TR 9.3 Business activities engaging clients

8. Aligned state

The table below presents the response of a low-carbon aligned company of the sector to the 5 questions of ACT:

- → What is the company planning to do? [Commitment]
- → How is the company planning to get there? [Transition Plan]
- → What is the company doing at present? [Present]
- → What has the company done in the recent past? [Legacy]
- → How do all of these plans and actions fit together? [Consistency]

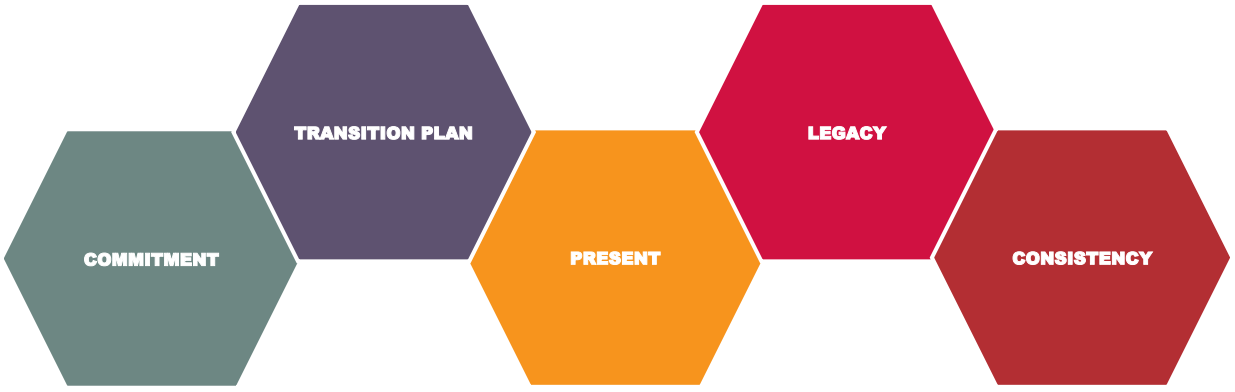

FIGURE 22: ALIGNED STATE FOR COMPANIES IN THE TRANSPORT SECTOR

1	2	3	4	5
The company has science-based targets for each transport activity, which have a time horizon that covers the lifetime of the vehicles.	The company's strategic planning details the investments in low carbon vehicles, modal shift or selection of subcontractors aligned with a low carbon transition. Actions on the demand for transport to reduce GHG emissions are not excluded.	Current investment strategy in intangible investment (R&D, trainings) places clear focus on low-carbon transition. Operational optimization of the transport activity is a common practice in the company.	A trend is evident of lowering emissions intensity of the fleet or subcontractors over the last 5 years, that is in alignment with the emissions reductions required in the short term through deliberate development decisions.	The company's targets, transition plan, present actions and past legacy show a consistent willingness to achieve the goals of low-carbon transition, especially by developing new transport business models.

9. Acronym list

ACT	Assessing low-Carbon Transition
ACT TR	ACT Transport methodology
ADEME	Agence de l'environnement et de la maîtrise de l'énergie
ASEAN	Association of Southeast Asian Nations
CDP	Carbon Disclosure Project
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CNG	Compressed Natural Gas
COO	Chief Operating Officer
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
FTE	Full-time equivalent
GHG	Greenhouse Gases
GLEC	Global Logistics Emissions Council
GPS	Global Positioning System
HFO	Heavy Fuel Oil
HFT	Heavy freight trucks
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICCT	International Council on Clean Transportation
ICE	Internal Combustion Engine
IEA	International Energy Agency
IEA ETP 2017	International Energy Agency, “Energy Technology Perspectives 2017”
IMO	International Maritime Organization
ISO	International Organization for Standardization
IT	Information Technology
ITF	International Transport Forum
KPI	Key Performance Indicator

LCA	Life Cycle Analysis
LNG	Liquefied Natural Gas
LSP	Logistics Service Provider
LULUCF	Land Use, Land-Use Change and Forestry
M&A	Mergers & Acquisitions
MFT	Medium freight trucks
MoMo	Mobility Model
NACE	Statistical Classification of Economic Activities in the European Community (for the French term "Nomenclature statistique des Activités économiques dans la Communauté Européenne")
NG	Natural Gas
OECD	Organisation for Economic Co-operation and Development
R&D	Research and Development
SAF	Sustainable Aviation Fuels
SBB CFF FFS	Schweizerische Bundesbahnen - Chemins de fer fédéraux suisses - Ferrovie Federali Svizzere (Switzerland Railways)
SDA	Sectoral Decarbonization Approach
SBTi	Science-Based Targets initiative
SMART	Specific, Measurable, Achievable, Realistic, Time-bound
TtW	Tank-to-Wheel
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
UNPRI	The United Nations-supported Principles for Responsible Investment
WtT	Well-to-Tank
WtW	Well-to-Wheel

10. Sources

[1] ACT Initiative , “ACT Framework - Version 1.1,” 2019.

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[3] International Transport Forum, “Transport Outlook 2019,” OECD, 2019.

[4] International Energy Agency, “Energy Technology Perspectives 2017,” 2017.

[5] ALICE - Alliance for Logistics Innovation trhough Collaboration in Europe, “ A framework and process for the development of a ROADMAP TOWARDS ZERO EMISSIONS LOGISTICS 2050,” 2019.

[6] ISO, “ISO/AWI 14083: Greenhouse gas management and related activities — Quantification and reporting of greenhouse gas emissions of transport operations,” Under development.

[7] IMO - International Maritime Organization, “RESOLUTION MEPC.203(62)”.

[8] Energy Transitions Commission, “Mission possible: reaching net-zero carbon emissions from harder-to-abate sectors by mid-century", Energy Transitions Commission,” 2018.

[9] ACT Initiative, “ACT Sector methodology - Auto- Version 1.1,” 2019.

[10] ACT Initiative, “ACT Guidelines for the development of sector methodologies - Version 1.0,” 2018.

[11] Global Logistics Emissions Council, “GLEC Framework for Logistics Emissions Accounting and Reporting.,” Smart Freight Centre, 2019.

[12] IATA, “RECOMMENDED PRACTICE 1678 – CO2 EMISSIONS MEASUREMENT METHODOLOGY,” 2014.

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11. Glossary

2 DEGREES (2°C)	A political agreement was reached at COP21 on limiting global warming to 2°C above the pre-industrial level (COP21: Why 2°C?). A 2°C scenario (or 2°C pathway) is a scenario (or pathway) compatible with limiting global warming to 2°C above the pre-industrial level.
ACT	The Assessing low-Carbon Transition (ACT) initiative was jointly developed by ADEME and CDP. ACT assesses how ready an organization is to transition to a low-carbon world using a future-oriented, sector-specific methodology (ACT website).
ACTION GAP	In relation to emissions performance and reduction, the action gap is the difference between what a given company has done in the past plus what it is doing now, and what has to be done. For example, companies with large action gaps have done relatively little in the past, and their current actions point to continuation of past practices.
ACTIVITY DATA	Activity data are defined as data on the magnitude of human activity resulting in emissions or removals taking place during a given period of time (UNFCCC definitions).
ADEME	Agence de l'Environnement et de la Maîtrise de l'Energie; The French Environment and Energy Management Agency (ADEME webpage).
ALIGNMENT	The ACT project seeks to gather information that will be consolidated into a rating that is intended to provide a general metric of the 2-degree alignment of a given company. The wider goal is to provide companies specific feedback on their general alignment with 2-degrees in the short and long term.
ANALYST	Person in charge of the ACT assessment.
ASSESS	Under the ACT project, to evaluate and determine the low-carbon alignment of a given company. The ACT assessment and rating will be based on consideration of a range of indicators. Indicators may be reported directly from companies. Indicators may also be calculated, modelled or otherwise derived from different data sources supplied by the company. The ACT project will measure 3 gaps (Commitment, Horizon and Action gaps – defined in this glossary) in the GHG emissions performance of companies. This model closely follows the assessment framework presented above. It starts with the future, with the goals companies want to achieve, followed by their plans, current actions and past actions.

ASSET	An item of property owned by a company, regarded as having value and available to meet debts, commitments, or legacies. Tangible assets include 1) fixed assets, such as machinery and buildings, and 2) current assets, such as inventory. Intangible assets are nonphysical such as patents, trademarks, copyrights, goodwill and brand value.
BARRIER	A circumstance or obstacle preventing progress (e.g. lacking information on supplier emissions and hotspots can be a barrier to companies managing and reducing their upstream Scope 3 emissions).
BASE YEAR	According to the GHG Protocol and ISO14064-1, a base year is “a historic datum (a specific year or an average over multiple years) against which a company’s emissions are tracked over time”. Setting a base year is an essential GHG accounting step that a company must take to be able to observe trends in its emissions information (GHG Protocol Corporate Standard).
BENCHMARK	A standard, pathway or point of reference against which things may be compared. In the case of pathways for sector methodologies, a sector benchmark is a low-carbon pathway for the sector average value of the emissions intensity indicator(s) driving the sector performance. A company’s benchmark is a pathway for the company value of the same indicator(s) that starts at the company performance for the reporting year and converges towards the sector benchmark in 2050, based on a principle of convergence or contraction of emissions intensity.
BOARD	Also, the “Board of Directors” or “Executive Board”; the group of persons appointed with joint responsibility for directing and overseeing the affairs of a company.
BUSINESS-AS-USUAL	No proactive action taken for change. In the context of the ACT methodology, the business-as-usual pathway is constant from the initial year onwards. In general, the initial year – which is the first year of the pathway/series – is the reporting year (targets indicators) or the reporting year minus 5 years (performance indicators).
BUSINESS MODEL	A plan for the successful operation of a business, identifying sources of revenue, the intended customer base, products, and details of financing. Under ACT, evidence of the business model shall be taken from a range of specific financial metrics relevant to the sector and a conclusion made on its alignment with low-carbon transition and consistency with the other performance indicators reported.
CAPITAL EXPENDITURE	Money spent by a business or organization on acquiring or maintaining fixed assets, such as land, buildings, and equipment.
CDP	Formerly the "Carbon Disclosure Project", CDP is an international, not-for-profit organization providing the only global system for companies and cities to measure, disclose, manage and share vital environmental information. CDP

	works with market forces, including 827 institutional investors with assets of over US$100 trillion, to motivate companies to disclose their impacts on the environment and natural resources and take action to reduce them. More than 5,500 companies worldwide disclosed environmental information through CDP in 2015. CDP now holds the largest collection globally of primary climate change, water and forest risk commodities information and puts these insights at the heart of strategic business, investment and policy decisions (CDP website).
CLIMATE CHANGE	A change in climate, attributed directly or indirectly to human activity, that alters the composition of the global atmosphere and that is, in addition to natural climate variability, observed over comparable time periods (UNFCCC).
COMPANY	A commercial business.
COMPANY PATHWAY	A company's past emissions intensity performance pathway up until the present.
COMPANY TARGET PATHWAY	The emissions intensity performance pathway that the company has committed to follow from the initial year on until a future year, for which it has set a performance target.
COMMITMENT GAP	In relation to emissions performance, the difference between what a company needs to do and what it says it will do.
CONFIDENTIAL INFORMATION	Any non-public information pertaining to a company's business.
CONSERVATIVENESS	A principle of the ACT project; whenever the use of assumptions is required, the assumption shall err on the side of achieving 2-degrees maximum.
CONSISTENCY	A principle of the ACT project; whenever time series data is used, it should be comparable over time. In addition to internal consistency of the indicators reported by the company, data reported against indicators shall be consistent with other information about the company and its business model and strategy found elsewhere. The analyst shall consider specific, pre-determined pairs of data points and check that these give a consistent measure of performance when measured together.
COP21	The 2015 United Nations Climate Change Conference, held in Paris, France from 30 November to 12 December 2015 (COP21 webpage).
CONVENTIONAL (TECHNOLOGY)	In relation to transport vehicles and emissions, conventional internal combustion engines (ICE) are those that generate motive power by burning fossil fuels, as opposed to advanced (low-carbon) vehicle engines such as battery electric vehicles or hydrogen fuel cells.

DATA	Facts and statistics collected together for reference and analysis (e.g. the data points requested from companies for assessment under the ACT project indicators).
DECARBONIZATION	A complete or near-complete reduction of greenhouse gas emissions over time (e.g. decarbonization in the electric utilities sector by an increased share of low-carbon power generation sources, as well as emissions mitigating technologies like Carbon Capture and Storage (CCS)).
DECARBONIZATION PATHWAY	Benchmark pathway (See 'Benchmark')
EMISSIONS	The GHG Protocol defines direct GHG emissions as emissions from sources that are owned or controlled by the reporting entity, and indirect GHG emissions as emissions that are a consequence of the activities of the reporting entity, but occur at sources owned or controlled by another entity (GHG Protocol).
ENERGY	Power derived from the utilization of physical or chemical resources, especially to provide light and heat or to work machines.
FLEET	A group of vehicles (e.g. all the vehicles manufactured by a transport vehicle manufacturing company and currently in use by transport operators).
FOSSIL FUEL	A natural fuel such as coal, oil or gas, formed in the geological past from the remains of living organisms.
FUTURE	A period of time following the current moment; time regarded as still to come.
PRIMARY ENERGY	Primary energy is an energy form found in nature that has not been subjected to any conversion or transformation process. It is energy contained in raw fuels, and other forms of energy received as input to a system. Primary energy can be non-renewable or renewable.
GREENHOUSE GAS (GHG)	Greenhouse gas (e.g. carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and three groups of fluorinated gases (sulphur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs)) which are the major anthropogenic GHGs and are regulated under the Kyoto Protocol. Nitrogen trifluoride (NF_3) is now considered a potent contributor to climate change and is therefore mandated to be included in national inventories under the United Nations Framework Convention on Climate Change (UNFCCC).
GUIDANCE	Documentation defining standards or expectations that are part of a rule or requirement (e.g. CDP reporting guidance for companies).
HORIZON GAP	In relation to emissions performance, the difference between the average lifetime of a company's production assets (particularly carbon intensive) and the time-

	horizon of its commitments. Companies with large asset-lives and small-time horizons do not look far enough into the future to properly consider a transition plan.
INCENTIVE	A thing, for example money, that motivates or encourages someone to do something (e.g. a monetary incentive for company board members to set emissions reduction targets).
INDICATOR	An indicator is a quantitative or qualitative piece of information that, in the context of the ACT project, can provide insight on a company's current and future ability to reduce its carbon intensity. In the ACT project, 3 fundamental types of indicators can be considered: ♦ Key performance indicators (KPIs). ♦ Key narrative indicators (KNIs); and ♦ Key asset indicators (KAIs).
INTENSITY (EMISSIONS)	The average emissions rate of a given pollutant from a given source relative to the intensity of a specific activity; for example, grams of carbon dioxide released per MWh of energy produced by a power plant.
INTERVENTION	Methods available to companies to influence and manage emissions in their value chain, both upstream and downstream, which are out of their direct control (e.g. a retail company may use consumer education as an intervention to influence consumer product choices in a way that reduces emissions from the use of sold products).
LIFETIME	The duration of a thing's existence or usefulness (e.g. a physical asset such as a power plant).
LONG-TERM	Occurring over or relating to a long period of time; under ACT this is taken to mean until the year 2050. The ACT project seeks to enable the evaluation of the long-term performance of a given company while simultaneously providing insights into short- and medium-term outcomes in alignment with the long-term.
LOW-CARBON SCENARIO (OR PATHWAY)	A low-carbon scenario (or pathway) is a 2°C scenario, a well-below 2°C scenario or a scenario with higher decarbonization ambition.
LOW-CARBON TRANSITION	The low-carbon transition is the transition of the economy according to a low-carbon scenario.
LOW-CARBON SOLUTION	A low-carbon solution (e.g. energy, technology, process, product, service, etc.) is a solution whose development will contribute to the low-carbon transition.

LOW-CARBON VEHICLES AND ENERGIES

Following the general principles detailed in the Technical annex of the Taxonomy Report of the EU [36], the guidelines to define low-carbon vehicles are these ones:

- Vehicles powered by biofuels, bio natural-gas or advanced fuels (e.g. electrofuels / synfuels), assuming these fuels have demonstrated a clear GHG reduction compared to conventional fossil-derived fuels, on a full lifecycle perspective. Thanks to policies instruments, that will be probably the case in Europe, but not elsewhere. Conventional ICE vehicles operated with low-carbon energy are accounted for, proportionally to the share of low-carbon energy used in those vehicles (ex: if the company plans to purchase 20% of sustainable biodiesel for its diesel-fuelled vehicles in 2025, then we will consider 20% of these diesel-fuelled vehicles to be low-carbon, and considered as such in the calculation below). However, in this case, the company has to bring strong evidence that it will use such quantities of biofuels / bioNGV to operate its fleet, **through both contractual agreements with energy suppliers and the implementation of a verification process.**
- Electric, plug-in hybrid, hydrogen-fuelled and ammonia-fuelled vehicles, assuming electricity to generate these energy carriers is low-carbon
- Additional vehicles for passenger rail transport:
    - If direct emissions (TtW) are below 50 gCO_2e/p.km until 2025
- Additional vehicles for freight rail transport:
    - If direct emissions (TtW) are below 50% of the average reference for heavy-duty vehicles defined by the Heavy-Duty CO_2 regulation
- Additional vehicles for freight road transport:
    - Low-emission heavy-duty vehicles with specific direct CO_2 emissions of less than 50% of the reference CO_2 emissions of all vehicles in the same sub-group are eligible.
- Additional vehicles for urban and suburban passenger transport:
    - Other vehicles are eligible if direct emissions are below 50 gCO_2e/p.km
- Additional vehicles for maritime transport:
    - Vehicles using wind for propulsion
- Additional vehicles for urban freight:
    - Vehicles using electric/human propulsion (cargo-bikes, pedestrian)
- Additional vehicles for inland waterways passenger transport:
    - Other Inland waterways vessels are eligible if direct emissions are below 50 gCO_2e/pkm. Eligibility should be reviewed in 2025.
- Additional vehicles for inland waterways freight transport:

- Other inland waterway vessels are eligible if direct emissions per tkm are 50% lower than the average reference value defined for HDVs (Heavy Duty CO_2 Regulation). Eligibility should be reviewed in 2025.

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The table hereafter compiles some exclusions to bring more clarification, on a mode by mode basis:

Aviation: biofuels that don't respect the ICAO standards cannot be considered as low-carbon, hence the same for aircraft using them.

Shipping: LNG-powered vessels are not considered as low-carbon vehicles, unless natural gas is replaced by biogas.

Rail: LNG or CNG-powered trains are not considered as low-carbon vehicles, unless natural gas is replaced by biogas.

Road: LNG or CNG-powered trucks are not considered as low-carbon vehicles, unless natural gas is replaced by biogas.

MANUFACTURE	Making objects on a large-scale using machinery.
MATURITY MATRIX	A maturity matrix is essentially a “checklist”, the purpose of which is to evaluate how well advanced a particular process, program or technology is according to specific definitions.
MATURITY PROGRESSION	An analysis tool used in the ACT project that allows both the maturity and development over time to be considered with regards to how effective or advanced a particular intervention is.
MITIGATION (EMISSIONS)	The action of reducing the severity of something (e.g. climate change mitigation through absolute GHG emissions reductions)
MODEL	A program designed to simulate what might or what did happen in a situation (e.g. climate models are systems of differential equations based on the basic laws of physics, fluid motion, and chemistry that are applied through a 3-dimensional grid simulation of the planet Earth).
PATHWAY (EMISSIONS)	A way of achieving a specified result; a course of action (e.g. an emissions reduction pathway).
PERFORMANCE	Measurement of outcomes and results.
PLAN	A detailed proposal for doing or achieving something.

POINT	A mark or unit of scoring awarded for success or performance.
POWER	Energy that is produced by mechanical, electrical, or other means and used to operate a device (e.g. electrical energy supplied to an area, building, etc.).
PROGRESS RATIO	An indicator of target progress, calculated by normalizing the target time percentage completeness by the target emissions or renewable energy percentage completeness.
TR	Abbreviation of the 'Transport' sector
RELEVANT / RELEVANCE	In relation to information, the most relevant information (core business and stakeholders) to assess low-carbon transition.
RENEWABLE ENERGY	Energy from a source that is not depleted when used, such as wind or solar power.
REPORTING YEAR	Year under consideration.
RESEARCH AND DEVELOPMENT (R&D)	A general term for activities in connection with innovation; in industry; for example, this could be considered work directed towards the innovation, introduction, and improvement of products and processes.
SCIENCE-BASED TARGET	To meet the challenges that climate change presents, the world's leading climate scientists and governments agree that it is essential to limit the increase in the global average temperature at below 2°C. Companies making this commitment will be working toward this goal by agreeing to set an emissions reduction target that is aligned with climate science and meets the requirements of the Science-Based Targets Initiative.
SCENARIO	The Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) presents the results of an extensive climate modelling effort to make predictions of changes in the global climate based on a range of development/emissions scenarios. Regulation on climate change-related issues may present opportunities for your organization if it is better suited than its competitors to meet those regulations, or more able to help others to do so. Possible scenarios would include a company whose products already meet anticipated standards designed to curb emissions, those whose products will enable its customers to meet mandatory requirements or those companies that provide services assisting others in meeting regulatory requirements.
SCENARIO ANALYSIS	A process of analysing possible future events by considering alternative possible outcomes.
SECTORAL DECARBONIZATION APPROACH (SDA)	To help businesses set targets compatible with 2-degree climate change scenarios, the Sectoral Decarbonization Approach (SDA) was developed. The

	SDA takes a sector-level approach and employs scientific insight to determine the least-cost pathways of mitigation and converges all companies in a sector towards a shared emissions target in 2050.
SHORT-TERM	Occurring in or relating to a relatively short period of time in the future.
STRESS TEST	A test designed to assess how well a system functions when subjected to greater than normal amounts of stress or pressure (e.g. a financial stress test to see if an oil & gas company can withstand a low oil price).
SCOPE 1 EMISSIONS **DIRECT GHG EMISSIONS AND REMOVALS**	All direct GHG emissions (GHG Protocol Corporate Standard). Category 1 from ISO 14064-1:2018*: Direct GHG emissions and removals occur from GHG sources or sinks inside organizational boundaries and that are owned or controlled by the* [reporting] *organization. Those sources can be stationary (e.g. heaters,electricity generators, industrial process) or mobile (e.g. vehicles).*
SCOPE 2 EMISSIONS **INDIRECT GHG EMISSIONS FROM IMPORTED ENERGY**	Indirect GHG emissions from consumption of purchased electricity, heat or steam (GHG Protocol Corporate Standard). Category 2 from ISO 14064-1:2018: *GHG emissions due to the fuel combustion associated with the production of final energy and utilities, such as electricity, heat, steam, cooling and compressed air* [imported by the reported company]. *It excludes all upstream emissions (from cradle to power plant gate) associated with fuel, emissions due to the construction of the power plant, and emissions allocated to transport and distribution losses.*
SCOPE 3 EMISSIONS **INDIRECT GHG EMISSIONS**	Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. Transmission & Distribution losses) not covered in Scope 2, outsourced activities, waste disposal, etc. (GHG Protocol Corporate Standard). Scope 3 also encompass the emissions related to the use of sold-products. ISO 14064-1:2018: *GHG emission that is a consequence of an organization's operations and activities, but that arises from GHG sources that are not owned or controlled by the* [reporting] *organization*. *These emissions occur generally in the upstream and/or downstream chain.* *Category 3 : indirect GHG emissions from transportation* *Category 4: Indirect GHG emissions from products used by an organization* *Category 5: Indirect GHG emissions associated with the use of products from the organization* *Category 6: Indirect GHG emissions from other sources*
SECTOR	A classification of companies with similar business activities, e.g. automotive manufacturers, power producers, retailers, etc.

STRATEGY	A plan of action designed to achieve a long-term or overall aim. In business, this is the means by which a company sets out to achieve its desired objectives; long-term business planning.
SUPPLIER	A person or entity that is the source for goods or services (e.g. a company that provides engine components to an automotive manufacturing company).
TANK-TO-WHEEL EMISSIONS (TTW)	Tank-to-wheel emissions refer to the emissions occurring during the combustion of fuel by vehicles.
TARGET	A quantifiable goal (e.g. to reduce GHG emissions). ♦ The following are examples of absolute targets: → metric tons CO_2e or % reduction from base year → metric tons CO_2e or % reduction in product use phase relative to base year → metric tons CO_2e or % reduction in supply chain relative to base year ♦ The following are examples of intensity targets: → metric tons CO_2e or % reduction per passenger. Kilometre (also per km; per nautical mile) relative to base year → metric tons CO_2e or % reduction per square foot relative to base → metric tons CO_2e or % reduction per MWh
TRADE ASSOCIATION	Trade associations (sometimes also referred to as industry associations) are an association of people or companies in a particular business or trade, organized to promote their common interests. Their relevance in this context is that they present an “industry voice” to governments to influence their policy development. The majority of organizations are members of multiple trade associations, many of which take a position on climate change and actively engage with policymakers on the development of policy and legislation on behalf of their members. It is acknowledged that in many cases companies are passive members of trade associations and therefore do not actively take part in their work on climate change (CDP climate change guidance).
TRANSPORT	To take or carry (people or goods) from one place to another by means of a vehicle, aircraft, or ship.
TREND	A general direction in which something (e.g. GHG emissions) is developing or changing.
TECHNOLOGY	The application of scientific knowledge for practical purposes, especially in industry (e.g. low-carbon power generation technologies such as wind and solar power, in the electric power generation sector).

TRANSITION	The process or a period of changing from one state or condition to another (e.g. from an economic system and society largely dependent on fossil fuel-based energy, to one that depends only on low-carbon energy).
VERIFIABLE / VERIFIABILITY	To prove the truth of, as by evidence or testimony; confirm; substantiate. Under the ACT project, the data required for the assessment shall be verified or verifiable.
WEIGHTING	The allowance or adjustment made in order to take account of special circumstances or compensate for a distorting factor.
WELL-TO-TANK EMISSIONS (WTT)	Well-to-Tank emissions are based on attributional life-cycle analysis studies of fossil-derived fuels (e.g. gasoline, diesel, compressed and liquefied natural gas), biofuels and electricity (based on time- and scenario-specific estimated average grid carbon intensity). Energy use and emissions resulting from pipeline transport are accounted for under “Energy industry own use” in the IEA modelling.
WELL-TO-WHEEL EMISSIONS (WTW)	Tank-to-Wheel (TTW) and Well-to-Tank (WTT) make up WTW emissions.

12. Annexes

12.1. TWG MEMBERS

ACT Transport methodology has been developed with inputs and feedbacks of the Transport Technical Working Group, which met five times over the course of the development phase and once at the end of the transport road-test.

Organisation	Name
ADEME	Jérémie Almosni Edouard Fourdrin Anaïs Goburdhun Marlène Dresch Maxime Pasquier
Aéroports de Lyon	Lionel Lassagne
Aéroports de Paris	Amelie Lummaux
Air France	Nathalie Simmenauer Dominique Granville
Airbus	Bruno Costes Hubert Mantel
Alstom	Cécile Texier Camille Rozanes
American Airlines	Tom Opderbeck
Andreani	Gabriel Perez
Blablabus	Verena Butt d'Espous
BNP Paribas	Delphine Riou
Bolloré Logistics	Mailys Treluyer Odile Maarek
Carbone 4	Stéphane Amant Juliette Noirot Rodrigo Baranna
CDP	Esther Stoakes Dua Zehra Alice de Palma
CMA-CGM	Corinne Bonnard
ComfortDelGro	Sarah Chan
DB Schenker	Andrea Dorothea Schoen Tariel Chamerois Claire Gilot
DHL	Noelle Froehlich
Egis	Nathalie Auffret-Guillen
EPE	David Laurent
Fedex	Anne-Catherine Trepagne
Feduco	Tristan Roussel
Ferrovie dello Stato	Valério Birindelli
France Nature Environnement	Patrice Henry Duchene
Geodis	Cécile Bray Philippe de Carné
Groupe Noblet	Laurent Galle
I Care & Consult	Léo Génin
IDDRI	Yann Briand

Organisation	Name
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ODC Marine	Stéphane Gonnetand
Safran	Bertrand Fiol Etienne Pouteau
SkyNRG	Karlijn Arts
Smart Freight Center	Sophie Punte
SNCF	Sophie Chambon Claire Rousselet Sophie Chambon
SNCF logistics	Guillaume Gazaignes
Thalys	Romain Philippe
Transdev	Christophe Boissier
Transport Environment	Samuel Kenny Carlos Calvoambel
UCL	Mark Barrett
World Benchmarking Alliance	Charlotte Hugman

12.2. COMPANIES INVOLVED IN THE ROAD-TEST

Ferrovie dello Stato
Eurotunnel
SNCF
Transdev
La Poste
ComfortDelGro
Transports Derval
Andreani
CMA-CGM
Keolis
Geodis
Bolloré Logistics

Document Version History

Version	Date of change	Location of change	Description of change
2.1	March 2022	Page 48, TR 2.2 Page 57, TR 2.3 Page 61, TR 2.4 Page 76, TR 4.2	Remove redundant sentence referring to road-test. Remove redundant sentence referring to road-test. Replace incorrect section reference. Remove redundant sentence referring to road-test.
2.0	February 2021		Initial publication