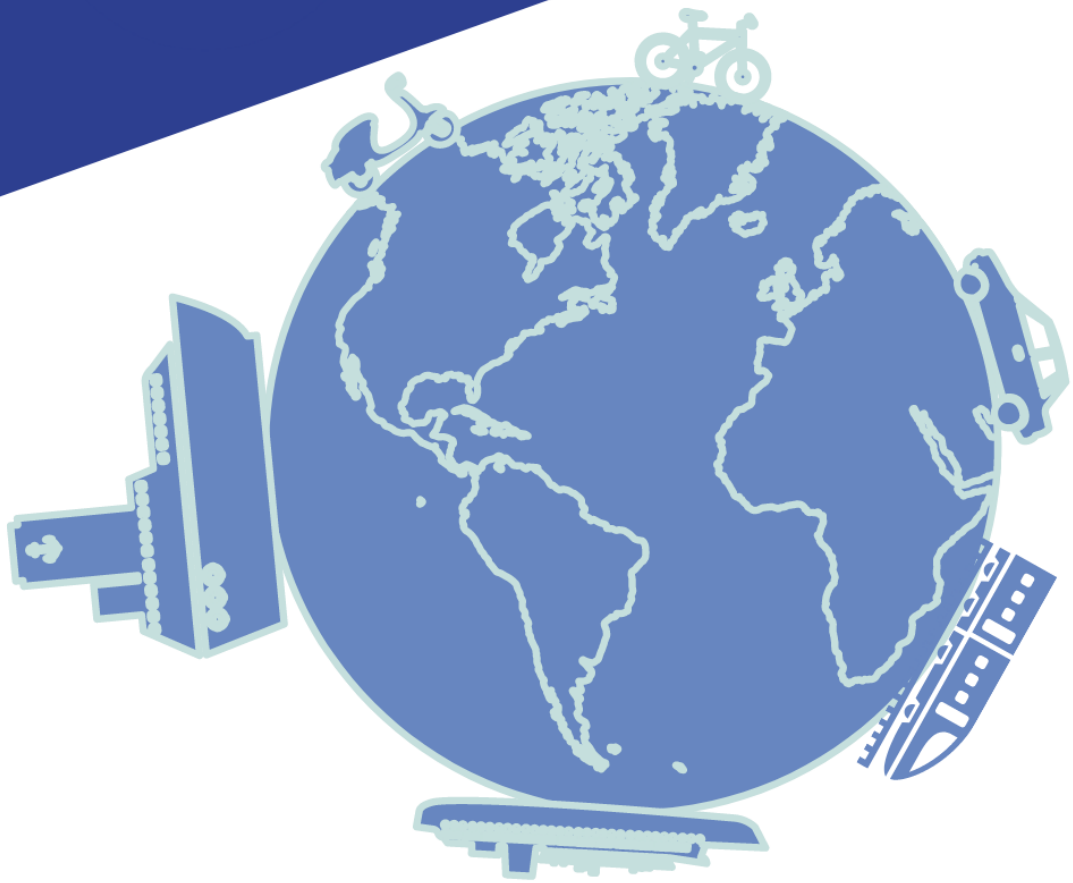
BRINGING EUROPEAN TRANSPORT POLICIES ON THE CLIMATE NEUTRALITY TRACK:

ASSESSMENT OF AND RECOMMENDATION ON MEMBER STATES AND EU TRANSPORT POLICIES



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1. Introduction

Emissions from the transport sector have an important impact on the climate crisis. Between 1990 and 2017, global greenhouse gas emissions generated by the transport sector increased by 75%. Between 2005 and 2017 alone, emissions grew by 25%[1].

With a 33% rise in emissions from transport between 1990 and 2019, European transport is following this devastating emissions increase trend.[2]. In 2018, emissions from the transport sector accounted for 19% of Europe's emissions, rising to 25% when international aviation and shipping is included[3].

Despite increased climate commitments from the EU and other countries, the Climate Action Tracker still predicts a temperature rise of 2.5°C, well above the Paris Agreement's objective. It is clear that the EU needs to do much more in the transport sector in order to achieve the 1.5°C objective of the Paris Agreement and implement its European Green Deal.

Against this backdrop, this report gives an overview of the EU's current transport policies and examines national transport policies and the transport chapters of the National Energy and Climate Plans of Germany, France, Poland, Portugal and Denmark. It makes recommendations to close the gap with the climate targets and reduce more emissions from the transport sector in these countries.

2. Methodology

To assess Member States' transport emissions, policies and measures, this report uses two guiding documents:

1. The EU's "Sustainable and Smart Mobility Strategy", presented by the European Commission in December 2020[4].

This document sets out objectives for the European transport sector up to 2050, proposing a 90% emissions reduction by 2050. Keeping in mind that the next 10 years are crucial to reduce emissions from the transport sector in order to comply with the EU's commitment under the Paris Agreement, this strategy still allows too high emissions after 2030.

This document sets the following EU transport policy objectives:

By 2030:

- at least 30 million zero-emission cars will be in operation on European roads
- 100 European cities will be climate neutral
- high-speed rail traffic will double across Europe
- scheduled collective travel for journeys under 500 km should be carbon neutral
- automated mobility will be deployed at large scale
- zero-emission marine vessels will be market-ready

[1] https://www.statista.com/statistics/1084096/ghg-emissions-transportation-sector-globally/ and https://ourworldindata.org/emissions-by-sector
[2] https://www.eea.europa.eu/data-and-maps/indicators/transport-emissions-of-greenhouse-gases-7/assessment
[3] https://www.eea.europa.eu/data-and-maps/daviz/ghg-emissions-by-aggregated-sector-5#tab-dashboard-02
[4] https://ec.europa.eu/transport/themes/mobilitystrategy_en

By 2035:

- zero-emission large aircraft will be market-ready

By 2050:

- nearly all cars, vans, buses as well as new heavy-duty vehicles will be zero-emission
- rail freight traffic will double
- a fully operational, multimodal Trans-European Transport Network (TEN-T) for sustainable and smart transport with high speed connectivity

These policies and objectives are relevant for all EU Member States. They need to accelerate national efforts in their transport policies to limit transport related greenhouse gas emissions through energy supply shifts towards renewables, modal shifts towards climate friendly modes of transport and a reduction in travel demand.

2. Paris Agreement Compatible Scenario for Energy Infrastructure (PAC Scenario):

The PAC scenario is the first European-wide energy scenario which is aligned with the Paris Agreement's objective to limit global warming to 1.5°C developed by civil society.

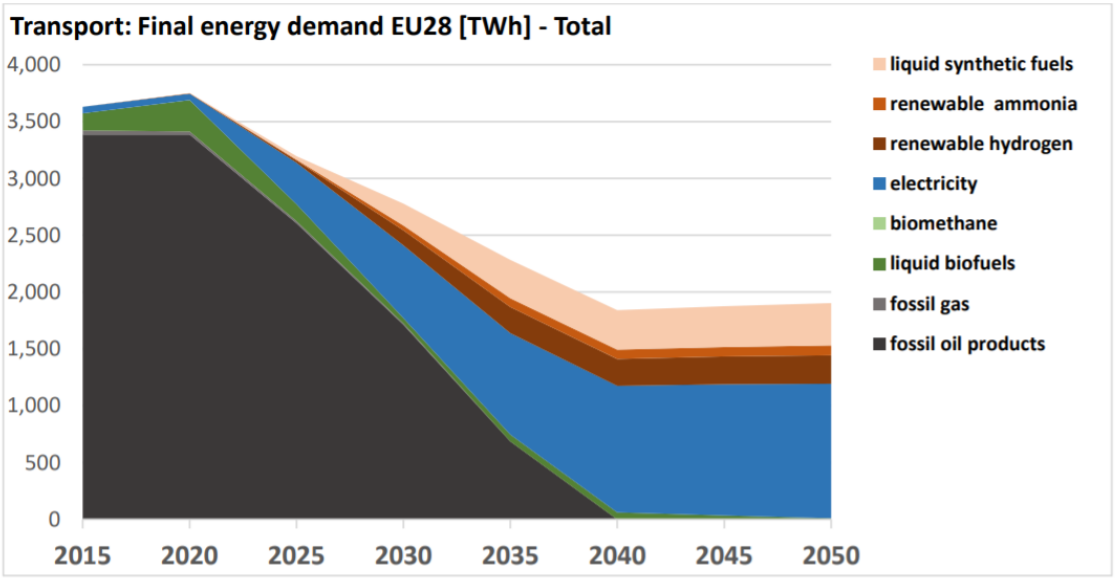
It suggests a trajectory in line with the Paris Agreement's 1.5°C objective:

- 100% renewable energy supply by 2040
- At least 65% greenhouse gas emissions reductions by the year 2030
- Net-zero emissions by 2040[5].

The scenario underlines that in the transport sector, large savings in energy demand and emissions should be generated through electrification, technical improvements, modal shift and behavioural changes. The scenario points out that, with the right policies, measures and investments, transport can move from a 90% fossil-based to a 100% renewable energy mix in the next 20 years. In addition, the demand for biofuels can be halved by 2040, biofuels can be second-generation only and strictly for use in aviation alone. Direct use of electricity will represent around two thirds of the transport fuel mix.

[5] The PAC consortium consists of Climate Action Network (CAN) Europe (+160 NGO members across Europe), European Environmental Bureau (EEB) (+150 NGO members across Europe), Renewables Grid Initiative (RGI) (+12 NGO and 11 Transmission System Operator members) and REN21 (+80 members with an international focus from civil society, academia and research, governments, industry and intergovernmental associations).

Graph 1.PAC Scenario Transport: Final Energy Demand EU28



3. Transport emissions in the EU and analysed Member States

The data below shows once again that the EU and Member States analysed in this report have failed to take climate action in the transport sector. If the EU is serious about complying with its international obligations under the Paris Agreement and the European Green Deal, this needs to change radically.

Table 1. GHG emissions from the transport sector 1990-2018 and emission reductions needed by 2050 in the EU and in the five countries analysed in this report [6].

Mt CO2eq	1990	2018	Rise in emissions 1990-2018	90% emissions reduction from 1990 transport emissions* (MtCO2eq)	Emissions reductions needed to achieve a 90% emissions reduction from 1990 levels (Mt CO2eq)
EU-27	828.3	1095.7	+32.3%	82.8	-1012.9
Denmark	15.6	18.3	+17.2%	1.6	-16.7
Germany	183.6	198.3	+8.0%	18.4	-179.9

[6] EU Energy and Transport in figures 2020.

France	139.4	156.5	+12.2%	13.9	-142.6
Poland	22.7	69.2	+204.7%	2.3	-66.9
Portugal	13.8	24.1	+74.8%	1.4	-22.7

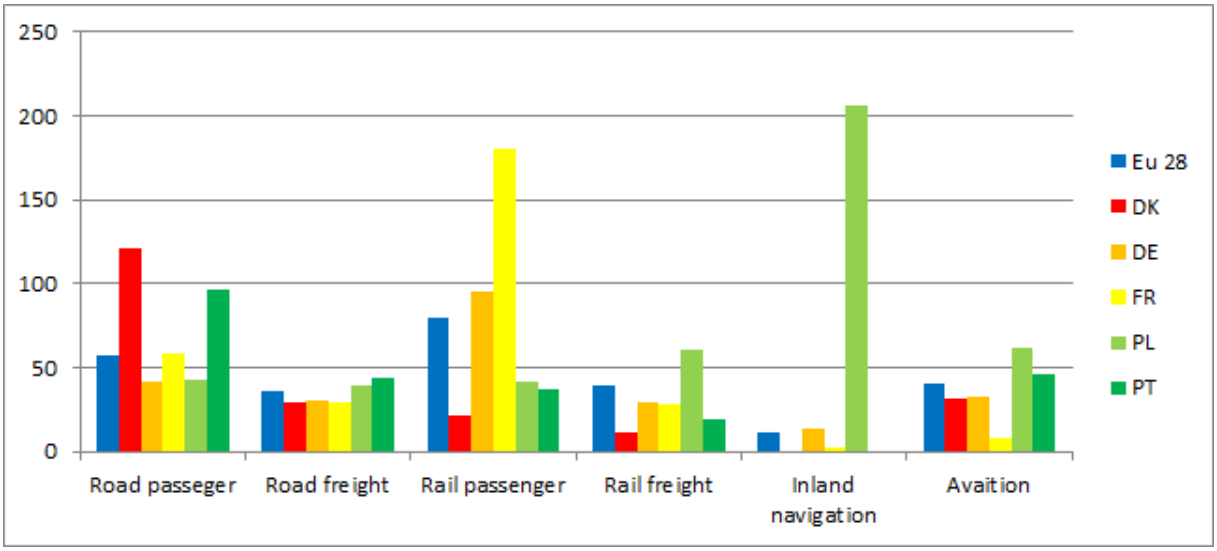
* reduction calculated from each country's 2018 emissions level.

4. Member States' transport systems and policies

Internalisation of external costs

External costs are central to current EU transport policy. At the beginning of the EU sustainable transport agenda, it was expected that external costs of transport would be fully internalised. For example, an external cost of air pollution will result in higher taxes on polluting fuels. The EU has identified external costs and tried to enforce policies to internalise them. In 2020, European Commission presented a study[7], prepared by CE delft, on external costs and their internalisation in the transport sector in the EU and all Member States (graph 2).

Graph 2. Level of external environmental costs' internalisation in analysed countries and EU-28. Source: CE Delft, 2019



[7] https://ec.europa.eu/transport/themes/sustainable/studies/sustainable_en

From the graph, it is clear that the **external costs of transport are not fully internalised, with a few exceptions. External costs are internalised to varying degrees in some modes of transport in different countries, which creates inconsistent and contradictory market signals.**

For example, for rail passenger travel in Europe a relatively high level - 80% - of external costs have been internalised, while for air travel only 41% of the external costs have been internalised. In France, this situation is even more exaggerated with 180% of the external costs of passenger rail travel internalised, compared to only 59% for travel by car and just 8% for air travel.

For freight transport, wide discrepancies can be found: In Poland, 61% of the external costs of rail freight have been internalised, while only 40% of the external costs of road freight have been internalised.

All external costs should be internalised, for all modes of transport. This would allow the modes of transport with lower external costs, like rail, to account for the biggest share of the transport market. However, due to the varying levels of internalisation of costs this is currently not the case.

Car travel produces the highest amount of external costs

The CE Delft study showed that in 2016, road transport still created the biggest environmental burden in Europe. It accounted for both the highest external costs and highest shares of external costs among the main transport modes in the EU and the Member States analysed in this report (graph 2).

Road transport (cars, motorcycles, trucks) also accounted for the greatest marginal external costs - calculated per passenger or per tonne/kilometre for freight - for the EU-28 and most of the analysed countries, except Poland, where inland navigation was worse.

Graphs 3. External costs share (%) for different transport means in EU-28 and analysed countries. Source: CE Delft, 2019

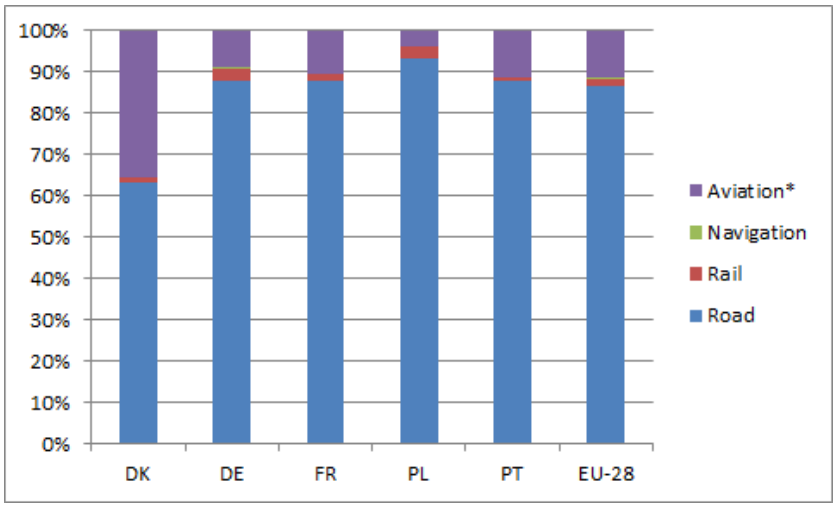


Table 2.1. Marginal external costs of passenger transport in 2016 in the EU-28 and 5 analysed countries, Source: CE Delft, 2019

	Passenger Transport						
	Car	Bus	MC	Rail Highspeed	Rail Electric	Rail Diesel	Aviation
Country	€ cent/pkm	€ cent/pkm	€ cent/pkm	€ cent/pkm	€ cent/pkm	€ cent/pkm	€ cent/pkm
EU 28	7,8	2,9	24,5	1,3	2,6	3,9	3,4
Denmark	5,8	2,2	21,7		2,6	2,1	3,3
France	6,5	2,8	20,7	0,9	1,4	2,5	3,8
Germany	9,8	3,6	40,4	1,6	3,5	7,1	4,2
Poland	7,8	2,7	23,1		5,0	4,1	3,9
Portugal	6,6	2,4	28,2		2,9	3,8	3,1

Table 2.2. Marginal external costs of freight transport in 2016 in the EU-28 and 5 analysed countries, Source: CE Delft, 2019

	Freight Transport			
	LCV Diesel	HGV	Rail	IWT
Country	€ cent/vkm	€ cent/tkm	€ cent/tkm	€ cent/tkm
EU 28	13,1	3,4	1,3	1,9
Denmark	9,7	4,4	0,9	0
France	11,2	3,7	1,5	2,1
Germany	19,3	4,4	1,9	2,2
Poland	8,6	2,5	1	20,1
Portugal	11,8	2,6	1,9	0

Table 3. Emission intensity of passenger transport means in analysed countries. Source: National contributors to the report.

CO2 g per km	Car	Bus	Tram	Rail	High Speed Train	Air
Denmark	85*	30	NA	40	NA	200
Germany	143	80	55	55	29	214
France	85,5	58,5	NA	10,8	3,2	144,6
Poland**	148,9	42,2	33,7	NA	NA	NA
Portugal	210	105	30	NA	NA	NA
* car occupied by 2 people ** data for Warsaw						

Data on marginal external costs shows that electric rail transport for both passenger and freight creates the lowest environmental burden. High speed railway lines can be considered the most environmentally friendly, especially in terms of their emission intensiveness. In addition, public transport by bus can be as emission intensive as rail, or sometimes even better.

The internalisation of external costs has been on the policy agenda for at least 15 years, meaning that policy should have favoured a rise in public transport and rail in particular. Meanwhile, passenger cars, trucks and air travel should have declined. However, this is not the case.

European transport is still dominated by fossil fuel powered cars

For years, the EU and analysed countries' passenger and freight travel both has been dominated by road transport. In 2018, in all of the assessed countries, 80% of passenger travel was made by passenger cars (table 6). A similar result was observed for freight transport, with 70-80% modal shares of road transport (table 7).

However, all modes of transport use have increased in recent years. From 1995 to 2018 both passenger car and rail travel has risen by about 30% and air transport has seen a sharp rise of 140%. From 1995 to 2018 freight road, sea and air transport grew by about 50%, just 10% more than the whole freight sector, while rail freight grew by about only 10%.

Table 4.1. Modal split (%) of passenger transport in the EU and analysed 5 countries in 2018. Source: Eurostat

Modal split pass 2018	Passenger cars	Buses & coaches	Railways	Tram & metro
EU 27	81,4	9,1	7,8	1,7
Denmark	81,6	9,6	8,3	0,5
Germany	83,8	5,7	8,9	1,6
France	82,1	6,2	10,5	1,2
Poland	78,0	12,7	7,7	1,6
Portugal	87,5	7,3	4,2	1,1

Table 4.2. Modal split (%) of freight transport in the EU and analysed 5 countries in 2018. Source: Eurostat

Modal split Freight	Road	Rail	Inland Waterways	Pipelines
EU 27	73,1	17,2	5,3	4,4
Denmark	80,8	10,9	-	8,4
Germany	70,8	19,3	7,2	2,7
France	84,6	9,6	2,2	3,7
Poland	66,7	24,5	0,1	8,8
Portugal	83,9	13,9	-	2,2

Even the COVID-19 pandemic has not affected road transport, unlike other modes of transport. In each of the countries analysed in this report, during the COVID-19 lockdowns in 2020 the level of road traffic dropped the least among all modes of transport[8]. In Germany, France and Poland it dropped by about 10%, whereas public transport and rail fell by around 40%, and air travel by 80%. Only in Denmark this situation was opposite, with greater falls in car travel, compared to public transport.

While reducing Europe's addiction to cars by changing people's travel behaviour, it is equally important to change the fuels that cars use in order to reduce emissions.

It is important to accelerate the electrification of the car fleet. EU regulations on CO_2 emission standards have already created the supply side conditions for the electrification of new cars. However, there is a rising overall number of cars and car journeys, resulting in higher GHG emissions from the whole car fleet. Nevertheless, many countries have created their own goals, such as incentives for buying electric cars, as well as disincentives for the use of internal combustion engine cars. While each European country has different levels of CO2 intensity per unit of electric energy, even in countries with the greatest CO2 electricity intensity, the roll out of battery electric vehicles will bring at least some emission reductions. For example, even on Poland's carbon intensive grids, electric vehicles emit around 16% less CO2 over their lifetime compared to conventional engine cars. The entire EU electricity grid should be powered by renewables by 2050 at least to ensure that electric cars emit zero emissions.

Better alternatives for short distance air travel is needed in Europe

Air transport is not covered by the modal split data, so there is a need to show the problem separately. It is already known that air passenger travel rose by record levels during the first two decades of the twenty-first century, even though it has the highest CO_2 emission intensity of all modes of transport. In addition to their CO_2 emission intensity, planes create an extra ⅔ of their climate change potential due

[8] Information from different national sources: IATA, DB AG, Mineral Ol Wirtschafts Verband e.V., Polish Railway Authority, Polish National Roads Authority, UFIP - UNION FRANÇAISE DES INDUSTRIES PÉTROLIÈRES, Danish Road Directorate, Statistic Denmark.

to the direct emission of other pollutants at high levels in the atmosphere[9]. Moreover, the shorter the flight, the higher the single trip emissions and about 40% of EU air travel emissions come from flights shorter than 1000 km.

Even in small European countries, aviation has become a means of relatively short distance domestic travel. For example, in Denmark, where it is not possible to fly further than 300 km, the share of passengers flying within the country reached 9% of the overall Danish air market in 2018, as shown in table 7. Both France and Germany, despite their relatively good offers of high speed railway lines, have also witnessed very high shares of domestic air passenger travel.

Table 7. Share (%) of domestic and European air passengers in EU-27 and in 5 analysed countries in 2018.

	Domestic	European
EU 27	20%	80%
Denmark	9%	91%
Germany	18%	82%
France	33%	67%
Poland	8%	92%
Portugal	16%	84%

The situation in domestic air travel demonstrates a policy failure that has allowed air travel to compete with rail travel. This might be detrimental to the achievement of goals to increase rail travel by 2030 and beyond. In each of the analysed countries, new domestic air connections opened in the last 20 years that might have impacted negatively on rail travel between the same destinations. Air travel tickets were frequently cheaper or of a similar price to railway tickets, but with some possible advantageous time savings on the following routes: Lisbon-Porto in Portugal (270 km), Berlin-Munich in Germany (550 km), Paris-Toulouse in France (650 km) or Warsaw-Krakow in Poland (300 km).

Short distance air travel is not only a matter of domestic travel, but many international flights might be even shorter than domestic ones, because **there are important missing links on the map of European international rail connections. Missing links occur in both Western and Eastern Europe, but the situation in Eastern Europe is far worse. Eastern Europe is not well connected to Europe with traditional railways, both passenger and freight. It also lacks any high speed railway connections that could at least compete with air travel on travel comfort.**

The poor railway infrastructure connections between European countries is not a good starting point from which to reach the doubling of high speed rail passengers in 2030 in the whole of the EU.

[9] Lee, D. S., Fahey, D. W., Skowron, A., Allen, M. R., Burkhardt, U., Chen, Q., … & Gettelman, A. (2020). The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018. *Atmospheric Environment*, 117834. cited in: https://ourworldindata.org/co2-emissions-from-aviation

Harmonised taxation measures tackling the external costs of transport are needed at EU level

As this report has already established, the external costs of transport are internalised to varying degrees in different European countries. However, this might not be the only reason the European transport system is unsustainable:.There are different approaches to **internalisation** measures in each country. CE Delft has proposed five different scenarios for the internalisation of external costs. The most promising of which is ensuring that taxes and charges are introduced that adhere as closely as possible to the external costs generated by the drivers (scenario 4: smart charging)[10]. This means that to internalise the external costs of the use of a transport infrastructure, taxes should be charged for the use of that infrastructure. Or, to internalise the external costs of burning fuels, the fuel should be taxed. Or, to internalise the external costs of time, congestion should be taxed, etc.

This is not the case in the countries analysed in this report, especially for road transport. For example, in **Denmark,** there is high car ownership and fuel taxation, that results in a high coverage of external costs that is relatively not smart, as there are no road tolls. In **Germany,** there is relatively high fuel taxation with road tolling for heavy trucks, while there is relatively low car ownership taxation. In **Poland,** there is very low car registration tax, relatively low fuel fees and quite high road tolling, but not on the full road network. However, it may seem that in Poland the variety of taxes create the most sustainable transport system among the analysed countries, when considering the modal split shown in tables 6 and 7. These differences in taxation forms do not lead to significant differences in modal splits between countries, which questions the effectiveness of EU policy on the internalisation of external costs.

Harmonisation could also be applied to transport policies other than taxation. A comparison of national transport decarbonisation measures planned in National Energy and Climate Action Plans shows a variety of different actions that cannot be easily categorised. This report attempts to merge them into three main categories of measures: fuel shift, modal shift and reducing demand for travel. This revealed that there are many comparable measures between countries on fuel shift and modal shift, but measures on reducing demand for travel are almost non-existent.

The highest number of measures relate to the **promotion of electric or zero emission cars**, supporting a fuel shift in car transport. In Germany, the goal is to have 5 million electric cars on the road by 2030-. In Denmark, it is 1 million by 2030 and, in Poland it is 1 million by 2025. In every studied country there is a measure that makes it cheaper to purchase an electric car, be it financial support to purchase (Poland, Portugal, Germany) or lower taxation on the purchase of an electric car (all countries). There are also schemes that support the creation of new electric car charging points. In Denmark there is even cheaper electricity used by a car. Almost everywhere, converting the public transport bus fleet into an electric one is supported. France, Germany and Poland are actively working on schemes supporting innovation on hydrogen for transport. Less attention is given to the promotion of electric car sharing, with Portugal and Denmark barely supporting it. Measures to push out traditional cars from cities are not popular everywhere: Only Germany and France have measures in place, while Poland so far is preparing a scheme. There are some exceptional schemes including support for green mobility plans for

[10] H.P. van Essen, B.H. Boon, A. Schroten, M. Otten (CE Delft), M. Maibach and C. Schreyer (INFRAS), C. Doll (Fraunhofer Gesellschaft - ISI), P. Jochem (IWW), M. Bak and B. Pawlowska (University of Gdansk), Internalisation measures and policy for the external cost of transport, Delft, 2008

French companies. In Poland there is free parking for electric vehicles in paid parking zones and electric cars can use bus lanes.

A modal shift is currently not as widely promoted as a fuel shift.

Most of the countries support, in some way, the creation of more bicycle lanes or roads. For example, Portugal wants to increase the bicycle network by 1000km by 2030. Nevertheless, the creation of car-free streets or the promotion of pedestrianisation is not very visible in national policies. Every country supports the development or modernisation of passenger and freight rail, both fleet and infrastructure. **Germany** also has its own goal to double the number of rail passengers from 2020 to 2030. In every country, local authorities are creating separate bus lanes or Park&Ride facilities. Modal shift is promoted exceptionally well in Germany with a lot of different measures. Many of them are aimed at passenger travel, with a reduction of taxes on long distance railway tickets and additional taxation on air travel. There is also a reduced tax on public transport tickets bought by companies for their staff. These measures are not present in any other studied country. **Portugal and Poland** are working towards the countrywide integration of ticketing schemes. **Denmark** is preparing for a change in taxation of road freight transport: From 2025 tax on heavy vehicle transport will be changed to a kilometre-based and CO_2-differentiated tax. This approach is already active and effective in Germany and Poland for freight transport.

Measures on **reducing demand for travel** are scarce. Only France openly wants to work towards the optimisation of the freight vehicle load. Current national policies do not see any promotion of working from home as a reasonable solution, however there are some limited signs this may happen in Germany and Poland in the future. Strategies also do not pay attention to curbing the rise in travel demand caused by the construction of new transport infrastructures. The reduction of suburbanisation as a means to reduce commuting has also been disregarded on the transport policy agenda. However, spatial planning policy might change in Poland in the near future to support this kind of policy.

There is a need to strengthen the modal shift approach and to create measures that curb the growth in transport demand in EU and national transport policy. The COVID-19 pandemic has shown that there is a higher than expected elasticity in all types of travel including road transport. In many European cities, people became less reluctant to work from home or exchange their car or public transport for bike travel in 2020. Many European cities have realised this and supported citizens with additional bicycle lanes or car-free streets. This trend should continue beyond the pandemic, supported by measures that preserve it.

5. Recommendations for the EU and Member States

The overarching recommendation for EU transport policy given the climate crisis is that **each country should be responsible for reducing its transport emissions**. Transport emissions should remain a national responsibility under the Effort Sharing Regulation. The EU should demand Member States to draw-up transport policy targets and plans that could be set in the NECPs allowing emission reductions and progress towards other policies to be easily monitored. EU carbon pricing cannot be the only instrument, because there are quite a few non-market barriers to overcome, which are pointed out in other recommendations.

The more specific five main recommendations to EU policy-makers are as follows:

1. **Take into account all external costs of transport in a standard way across the EU:** Currently, fuel powered cars are still the most popular means of transport, whereas electric rail and mass transit is the least popular. This is in part due to very different means and levels of taxation on transport in each EU Member State. The internalisation measures need to be harmonised for the whole of the EU and internalisation for each impact should be made through the most appropriate fiscal measure using smart solutions. The smart measures should balance social impacts and use EU and domestic funding to help the transition of those in need and help them meet their transport needs in a sustainable way. The level of internalisation should reach 100%. The best internalisation pathway for each EU country should be path 4 according to CE Delft's internalisation scenarios: smart taxation. This means that Germany and Denmark should apply tolls to road traffic, while Poland should introduce serious car registration taxes. Air travel should be taxed with a fuel tax in the whole of the EU, while in some countries, especially France or Poland, railways should be more equally taxed compared to other means of transport.

2. **Accelerate electrification of all road transport:** The pandemic has shown that car transport will never be fully avoided and it needs to be made fully low-carbon – at best electrified. Only zero emission technologies should be used, excluding, for example, natural gas. Current EU policy on **emission standards** for the production of cars is proving to be efficient, resulting in a substantial number of new potentially zero emission cars on roads. But because the level of electric energy emission intensity in European countries is very different (it might be very low as in France, but might be very high as in Poland), electrification policies should address these discrepancies. In particular, in more emission intensive countries, the electrification of transport should be a driver for the production of more renewable electricity such as the building of charging stations accompanied with the building of new renewable power capacity. According to the PAC scenario[11], all cars should be zero emissions from 2040, but there is a gap between current EU policy and national policies and Paris agreement expectations. Therefore, we call on the EU to include, in the forthcoming revision of the car CO2 standards regulation, an increase of the 2025 and 2030 targets, to include an intermediate target and to introduce an EU-wide ban on sales of new internal combustion engine cars from 2030 onwards. Such EU-wide measures should be accompanied with

[11] https://www.pac-scenarios.eu/

incentives to buy new electric cars, but with a cap on new purchases, as cars are not needed everywhere and because there simply needs to be fewer cars in the transport system. Efforts should be taken to repower existing cars with new electric engines in line with the circular economy concept, especially in less wealthy countries. The policy should target high mileage fleets, such as company cars or taxi services preferably with subsidies. They could be all electric by 2030.

3. **Ban short distance flights across the EU:** An approach should be taken to ban passenger airplane flights under 300 km long and to seriously curb flights up to 1000 km long through taxation, with reasonable exceptions for flights across seas. This requires the creation of an EU-wide monitoring scheme for the air travel distances. The EU and each Member State should create plans to shift short-haul flights to rail connections, especially high speed rail. There is a strong need for EU influence in these measures, because a lot of short-haul flights are taken between European countries and are not purely domestic. To introduce this type of measure, the development of infrastructure is needed to give an **alternative** to air travel. The use of Recovery funds for transport should be conditional on setting modal shift targets and plans.

4. **Increase railway connections and invest in infrastructure:** Curbing car travel and air travel needs to be accompanied with a strong push in rail infrastructure and connections upgrades on the journeys now competing with air and car travel. An ambitious goal in boosting the number of rail passengers by 2030 is not enough. This goal must be accompanied with a strong increase in both domestic and international rail connections. For this purpose, the EU can use funds earned from new air travel taxation (or from the EU ETS) and finance new international railway connections in the form of European Public Service Obligations. This can be achieved with a promotion of TEE 2.0[12] with a strong extension to Central and Eastern European (CEE) countries and the Baltic Sea Region. This requires the introduction of a Swiss-style railway system[13] in every European Country and the serious redevelopment of regional railway connections. In CEE, international railway connections for passengers and freight need to be redeveloped mostly through the Carpathian regions, as is currently the case in the Alps (railway tunnels, railway transit). European railways need a serious improvement in passenger service and experience, as well as a raising of environmental awareness where needed.

5. **Develop stronger policies to reduce travel demand:** The pandemic has led to substantially low levels of travel on the European and international level. Some of this travel does not need to return and EU measures could support this. Business and administration activities, that do not require a physical presence (such as giving opinions, consulting, exchanging knowledge) should be promoted in an on-line form, eg. through favourable taxation for on-line software and equipment. The promotion of an Industry 4.0[14] should also give preference to industries that supply the European market that are

[12] https://www.bmvi.de/SharedDocs/EN/Articles/K/EU-Council-Presidency/innovative-rail-transport-2020-09-21.html
[13] A system, where construction and modernisation of railway infrastructure is directed by the timetable requirements, which are based on the principle of "takt": a train running from stations at the same minute of an hour, each hour or multiplicity of an hour.
[14] https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/support-measure/industry-40

located in Europe. This would reduce international freight traffic that is frequently made by the most environmentally harmful modes of transport: sea and air.

6. **Promote zero emission travel in cities:** Changing from car to public transport (trams, busses, metro, bike) creates significant reductions in emissions. There should be a strong push for the promotion of this type of transport including the extension of infrastructure for individual transport (bikes, scooters, powered two-wheelers).

   These measures should be supported with restrictions on car use in city areas such as internal combustion engine-bans, green/low-emission transport zones, extended paid parking zones, car-free streets and areas. There is no perfect EU-level measure that could be implemented here. However, local policies could be supported and effectively promoted, encouraged by an increase in national climate targets in line with the new EU-wide target of at least 55% emissions reductions.

COUNTRY ASSESSMENTS

FRANCE

Transport emissions in France

The French NECP does not foresee a decrease in the overall transport demand. Conversely, it plans for a 26% increase in the overall transport demand between 2015 and 2050 (for all modes of transport combined) and a 40% increase for freight transport in the same period.

The transport sector is currently the largest greenhouse gas emitting sector in France (30% of national emissions in 2015). As all of these emissions are energy-related, the National Energy and Climate Plan (NECP) aims for a 28% reduction in emissions in 2030 compared to 2015, and a complete decarbonisation of transport by 2050. This assumes an average annual decrease in emissions of 3.8 Mt CO2 eq/year between 2015 and 2050, whereas on average annual emissions increased by 0.5 Mt CO2 eq/year between 1990 and 2015, and decreased by only 0.8 Mt CO2 eq/year over the most recent period 2005-2015.

French transport policies and measures [15]

The French transport system is dominated by road transport for both passengers and goods, like most EU countries. This is especially the case for freight transport for which road transport represents 89.1% of the modal share whereas rail transport represents only 9% and river transport 2%. It is important to highlight that the French rail freight modal share is especially low compared to the EU average of around 18%. The passenger modal share situation is similar as the car accounts for 80.6% of the modal share.

The French transport system is influenced by a very poor environmental tax policy that does not encourage a shift from polluting road and air transport. On the contrary, tax shelters benefit the most harmful means of transport such as road freight, which benefits from a gasoil tax break. Additionally, to their environmental costs, these tax breaks also have an important economic cost. In 2019, Climate Action Network France estimated that transport tax breaks cost the French economy more than 14 billion euros[16].

Last but not least, transport demand management is a blind spot in French transport policy as the French NECP ignores this parameter and predicts a 26% increase in passenger demand between 2015 and 2050.

The European Commission has set out various milestones to show the European transport system's path towards achieving objectives of a "sustainable, smart and resilient mobility". The Commission considers that reducing the current dependence on fossil fuels by replacing existing fleets with low and zero emission vehicles, and boosting the use of renewable and low-carbon fuels, is key. It also considers that decisive action to shift more activity towards more sustainable transport modes, notably by increasing the number of passengers travelling by rail and commuting by public transport and active modes, as well as shifting a substantial amount of freight onto rail, is needed. Finally, the internalisation of external

[15] https://reseauactionclimat.org/wp-content/uploads/2020/02/contribution-du-reseau-action-climat-a-la-consultation-sur-la-snbc2.pdf
[16] https://reseauactionclimat.org/subventions-energies-fossiles-2020/

costs is also required, by implementing the ‘polluter pays’ and ‘user pays’ principles, in particular through carbon pricing and infrastructure charging mechanisms.

Regarding modal shift, according to the French NECP's assumptions, rail freight must grow to reach 20% of freight traffic in 2030. However, this goal is far from being achieved, and the ability to reach it by 2030 appears to be challenging. In its 2019 report, the French Transport Regulatory Authority noted that, over the 2017-2019 period, rail freight did not see its modal share increase. On the contrary, its modal share has decreased by 0.3 percent since 2018, despite an overall growth in freight transport of 2.6% over the same period.

This shift in trajectory and ambition results, more broadly, from poor management and insufficient funding for the rail sector. In this regard, the French High Climate Council stressed that projects financed as part of the French recovery programme were not sufficient as "projects of modernization of the rail network were already planned before the health crisis", and also that “the modal shift towards rail freight is little supported by the recovery plan as a whole”.

Regarding **car energy efficiency improvement** objectives, the French objectives set in the NECP were downgraded from an initial 2L per 100 km to a 4 L / 100 km target in 2030. Although France has set an internal combustion engine phase out date in 2040, this time horizon is too far away to meet France’s climate objectives and contribute to the decarbonization of the European car fleet.

Regarding **carbon pricing,** France is not following EU guidelines as it still provides fiscal exemptions for fuel taxation for freight. It also lacks efficient pricing of aviation emissions, with an eco-contribution on tickets of only 1 to 18 euros.

Recommendations for the French transport sector and policies

Better management of transport demand: The french NECP predicts a 26% increase in passenger demand between 2015 and 2050, whereas it should aim to reduce transport demand. In particular, trips such as the commute to work could be reduced by developing working from home policies and bringing places of residence and places of work closer together with a more holistic policy on transport and town planning.

Strengthen investments in order to assure a modal shift from the most harmful means of transport to active, collective shared mobility: France should strengthen its investment policy in favour of low emission means of transport. At the moment, rail investment policy does not fit with the NECP objective to increase passenger rail transport by 27% between 2015 and 2030 and by 79% between 2015 and 2050. The cycling policy also needs growing investments to quadruple its modal share between 2015 and 2030 - from 3% to 12%.

Reduce emissions from new vehicles and tackle air traffic: CO2 emissions from new vehicles have increased in France between 2016 and 2018 due, in part, to growing sales of SUVs. In order to counter this trend, it is necessary to strengthen the ecological malus and to include criteria based on vehicle weight. The internal combustion engine phase out date must be moved from 2040 to 2030. It is also necessary to tackle air traffic emissions by avoiding new airport capacity extensions, promoting train over plane when there is a satisfactory alternative and promoting a growing eco-contribution as well as a kerosene tax.

GERMANY

Transport emissions in Germany:

German transport policy does not aim to reduce demand for transport but it does aim to reduce emissions from the transport sector by 40-42% by 2030 (compared to 1990 levels).

The key question now is how the 2019 climate protection law (Klimaschutzgesetz) will be strengthened following a Federal Court decision in April 2021. The Court stated that climate change is real and the government must act to mitigate it. It also remains to be seen how the climate law will increase emissions reductions targets for the German transport sector.

Decreasing transport emissions in Germany

Germany has a big car industry which employs a large workforce. It also has high levels of car ownership. The car industry makes a remarkable contribution to the tax income of the Federal Government and the car lobby, pushing for favourable conditions for (more) car use, is very influential.

The influence of the car industry in Germany has been very high for decades which has led to the building of more roads and highways. If roads are built, a rise in transport demand follows (with increasing greenhouse gas emissions). The modal share of motorized individual cars in Germany is high. Recent trends show an increase in vehicle size (e.g. more SUVs) as a result of the car industry's aggressive marketing campaigns.

As a big part of the population owns a car, a majority of these car owners vote for a policy which makes car driving easy. It is difficult to create majorities which favour restricting car use.

Germany is still quite an industrialized, export-focussed economy. Since the 1950s the state owned German Railway company (Deutsche Bundesbahn) has continually lost its market share in freight and has not been very innovative. Therefore, the proportion of exported freight transported by road has continually increased, accompanied by a rise in greenhouse gas emissions from road freight.

Recommendations for the German transport sector

The majority of companies in the German car industry have accepted that there is no future for fossil fuels in the transport sector – for passenger transport as well as freight. Many are strong in the electrification of cars, but there are still voices which favour and hope for combustion engines with (carbon neutral) synthetic fuels.

The current German Government has decided to carry out Deutschland-Takt[17] (as a means to make rail travel more attractive) and to double demand in passenger rail by 2030 (for long distance trains as well as for regional trains).

At the local level, in COVID-19 times, we are seeing many cities make improvements for (and an increase in) bicycle use.

[17] A timetable system, where train is running from stations at the same minute of an hour, each hour or multiplicity of an hour

POLAND

Transport emissions in Poland:

Poland's transport emissions have increased by 205% since 1990. This is mainly due to a strong modal shift towards road transport in both passenger and freight, but also because of a general growth of the transport sector. If Poland wants to achieve climate neutrality in its transport system, it needs to reduce about 65 $MtCO_2eq$ by 2040. So far, official plans to reduce emissions are set out in the National Energy and Climate Plan: A reduction of around 8 $MtCO_2eq$ (-13%) in 2030 and around 12 $MtCO_2eq$ (-20%) in 2040 from current levels. This is far from the Paris Agreement Compatible scenario and even far from the somewhat less ambitious European Commission expectations. There are no scenarios that allow for a 1.5°C compatible pathway for the Polish transport sector. Both Low-emission Poland 2050 (2012) and the Center for Climate and Energy Analyses (2019), foresee a greenhouse gas reduction of only 40-60% by 2050. So far, there are no other relevant scenarios that would raise the bar and show that deeper reductions are within Poland's reach. This is especially because Poland has a high level of fossil fuels in its energy mix. Even with a 100% electrification of the transport fleet, it may miss the neutrality goal by 2050 as the energy sector will not be able to deliver electricity at 0.093 $kgCO_2eq/kWh$ by that time.

Barriers to sustainable transport policies in Poland

Poland has a few obstacles in its path to a low carbon transport policy. Firstly, it is still building its transport infrastructure system from communist times when it was underdeveloped to make it compatible with EU TEN-T requirements. This is mainly boosting car transport due to a massive extension of the road system and, unfortunately, undermining railway transport. Secondly, it is a victim of the EU open market for used cars, which has caused a massive import of cheap, old cars since 2004. However, due to political reasons, Poland has not decided to progressively tax the registration of old cars or to introduce other measures to curb the use of old cars. Thirdly, many Polish regions are too sparsely populated to provide enough public transport for a reasonable price under current transport market conditions. Therefore, many people have become dependent on cars and would be against tax rises or other conditions on using their car. This has become a politically sensitive topic as has road transport which is supported by a strong political lobby.

Decreasing transport emissions in Poland

Just as in other European countries, road transport dominates the sector, however, its share is not as high as some other EU Member States. In recent years, railway transport has started to grow again, as has public transport, mainly in bigger cities. Bicycle transport is a newcomer to Polish local transport systems It is not always welcomed and has rather weak infrastructure.

The railway system has, for many years, been unevenly distributed with a relatively high density in the West, and a low density in the East. Over the last 30 years, the density of railways has dramatically dropped while other regional modes of transport went into crisis, possibly worsened by COVID-19 limitations on public transport capacities. Poland also has underdeveloped international rail services, which helped air travel to grow very fast by 2019. Poland is a transit country and a border country for many transport routes to the EU, especially for East-West business relations. It is not so for North-South relations, because less favourable geographic conditions have prevented the fast development of transport infrastructure, mainly through the Baltic Sea and Carpathian Mountains. Inland waterways have always been underdeveloped due to low water levels in Polish rivers, which has helped them to become important areas for nature protection.

Recommendations for the Polish transport sector

To support the EU's goal of doubling high speed railway passengers and providing zero emission passenger travel up to 500km by 2030, Poland should strongly invest in its railway system. There should be an emphasis on fast electrification supported by renewable energy development and a renaissance of some previously closed regional railway connections. Polish railways should, in the near future, benefit from the crisis in air travel and the need to curb the expansion of car transport, especially in areas surrounding big cities. This requires highly efficient and fast investments in both high speed lines and city railways. Special attention should be given to upgrading international passenger and intermodal freight railway services from Poland to Germany (and beyond to Western Europe) as well as to Czech Republic and Slovakia (and beyond to Southern Europe). Instead of promoting highly uncompetitive inland waterway connections to Czechia, Poland should promote a substantial upgrade of existing railway connections southbound, for example, by establishing tunnels under the most geographically problematic mountains, just as is the case in the Alps.

Given the strong development of the road system, and safety concerns due to COVID-19, the development of public transport as it was before 2020 will not be enough to curb the anti-ecological growth of car transport in Poland. Measures that increase environmental pressure on road users and raise the internalisation rate of external costs of transport must be increased. Clean transport zones in cities, higher taxation on the registration of old cars, more environmental taxation on toll roads and the expansion of toll roads are also needed.

The environmental and societal pressures caused by car traffic in cities and tourist regions, as well as possible difficulties for public transport due to COVID-19, should result in greater efforts to persuade more Poles to ride their bikes and walk. Cycling and pedestrian infrastructure construction should also be prioritised due to persistently high numbers of traffic deaths on Polish roads. New investments should include measures to raise the safety of non-car road users.

PORTUGAL

Transport emissions in Portugal:

In Portugal's NECP, CO_2 emissions reduction for the transport sector are set at 40% by 2030, in line with an economy-wide emissions reduction of 45 to 55% by 2030, both targets compared to 2005 levels. These targets comply with the national long term strategy to reach carbon neutrality by 2050.

In Portugal, the transport sector contributes to about 25%[18] of GHG emissions and most of these emissions are due to individual road transport. The proportion of individual road transport in the country's passenger transport modal split has risen over the years, from approximately 82% in 2000 to 89%[19] currently, higher than the European average and one of the highest in the EU.

This is partially due to a lack of investment in railways over the years. According to the same data, the proportion of rail passenger travel is about half the EU average. The railways in Portugal are not a viable alternative in most cases, since the coverage of Portuguese territory is limited and the quality of the service is poor, with a long time of travel and costs that do not compete with road transport alternatives.

Another reason is the insufficient and poor quality public transport in cities. The results of the Survey on Mobility in the Metropolitan Areas of Lisbon and Oporto (IMob 2017) confirmed the car is the main means of transport used by residents in metropolitan areas, representing approximately 68% of trips in the Oporto Metropolitan Area and 59% of trips in The Lisbon Metropolitan Area. Softer modes of mobility (pedestrian or bicycle) represent the second most used means of transport, respectively 18.9% in Oporto (only 0.4% using a bicycle) and 23.5% % in Lisbon (only 0.5% using a bicycle). Public and/or collective transport, as the main means of transport, accounted for 11.1% of the trips in Oporto and 15.8% in Lisbon.

Recommendations for Portuguese transport policy

The EU recommendations for a strong rail push and to ban short distance flights are strongly interconnected. In Portugal, growing rail travel would help decrease short distance flights. It is not feasible to ban short distance flights, for instance between the two main cities of Lisbon and Oporto, until there is a viable railway alternative which is competitive both in terms of cost and time of travel. However, if there was a viable railway alternative both between these two main Portuguese cities, and between Lisbon and Madrid, short distance flights would substantially decrease. Therefore, investment in railway infrastructure should be prioritised in order to follow EU recommendations. Recently, the Portuguese Infrastructure Minister communicated the intention to start developing Lisbon-Oporto-Vigo (ES) railway infrastructure to be ready by 2030, and to stop flight connections between Lisbon and Oporto.[20] Moreover, the minister supports stopping all European flights that are less than 600 km.

Public transport in the cities also needs more investment since the service is still insufficient for the needs of the population. A substantial improvement was made with the recent introduction of a multimodal public transport pass. This had an immediate positive outcome in the number of people who

[18] EUROSTAT, 2018

[19] Portugal 2020 National Inventory Report (NIR)

[20] https://observador.pt/2021/04/20/ministro-garante-que-ligacao-ferroviaria-lisboa-porto-vigo-e-estrategica/

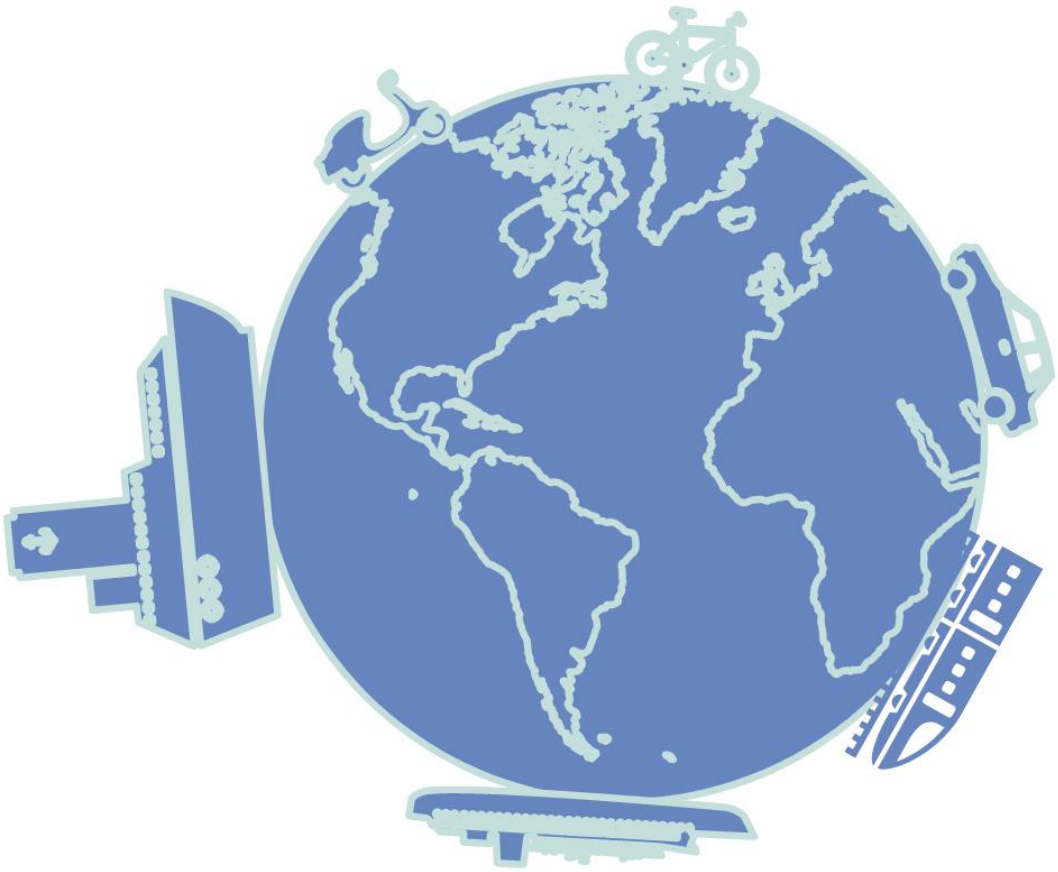
use public transport. However, both the coverage and the frequency of service in metropolitan areas still needs to be improved.

As a main recommendation for Portugal, it is important to highlight the need for ramping up investment in railways, both in new infrastructure and for a better coverage of the territory, to represent a viable alternative to road and air transport. In particular, it is essential to have a viable alternative to the Lisbon-Oporto route and Lisbon-Madrid, since it would significantly decrease air transport and associated emissions. In 2017, the air connection Lisbon – Madrid was the 37th most used European connection, producing around 110 thousand tonnes of CO_2 per year.

In addition, taxation on air transport should be higher than the level suggested in the 2021 state budget.

The country should also increase the level of supply and the quality of public transport at local, regional and national level to promote a shift from individual modes of transport to public transport.

Lastly, Portugal must start promoting sustainable mobility through the introduction of electric vehicles and the progressive elimination of combustion engine vehicles. It should introduce low emission zones in cities, promote environmentally-friendly mobility such as bicycles, while also preparing both cities and people for this challenge.



INSTYTUT NA RZECZ EKOROZWOJU

ZERO

GERMANWATCH

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CAN
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Unify

Life