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BUILDING A CLEAN MOBILITY SYSTEM IN TIMES OF COVID-19

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INTRODUCTION ■

The COVID-19 crisis heavily impacts our economy. As the pandemic is likely to continue affecting our daily lives until at least 2021, EU policy makers need to better assess the potential consequences of the current crisis. **As the crisis disrupted how much we move and the way we move, the mobility system and the whole transport-related economy have been particularly hit.**

This paper takes stock of the immediate impacts of the COVID-19 crisis on our mobility and the first response provided by public authorities to support the economy, workers and citizens in this extraordinary situation. It reflects on the possible effects of a longer sanitary and economic crisis, in particular the potential longer term implications of the crisis for the transport sector.

Our current mobility system remains still very much the result of 20th century choices: growing demand for speed and long distance travel, cities built around large streets for individual cars, urban sprawl, increasing congestion, life-threatening levels of air pollution and greenhouse gas emissions making a scenario of catastrophic climate change probable. **The COVID-19 outbreak already triggered important changes** in businesses, infrastructure, practices and behaviours, **which can be geared towards making our mobility system more resilient to crises, fairer for all citizens and fit for the green transition.**

We therefore explore policies that can help build a clean mobility system in Europe in the wake of the health crisis. With their economic recovery plans, **the EU and its Member States should push for massive investments in clean mobility while the EU should align its State Aids rules with the European Green Deal and provide stronger signals for States, municipalities and companies to become greener.**

1 . THE UNPRECEDENTED IMPACTS OF COVID-19 ON THE MOBILITY SECTOR

When the Coronavirus started to impact Europe in the first months of 2020, EU Member States established travel restrictions to limit the spread of the virus. First limiting travel to the EU, they instituted border controls between Member States, thus limiting travel in Europe through the spring of 2020. Numerous countries experienced partial or full lockdowns halting all non-essential movement, and cultural and economic activities. Italy, France, Spain and Ireland, for instance, instituted national stay-at-home orders, ranging from two weeks to two months, with strict limitations.

1.1 . A crisis affecting both how much we move and the way we move

Stay-at-home orders: teleworking and limited daily mobility

Travel from home to work has sharply decreased due to restrictions linked to COVID-19. The lockdown measures forced many employers to put part of their workforce on short-term schemes while others shifted to teleworking when possible. A Eurofound survey conducted in April 2020 suggests that **nearly 36.8% of respondents across the EU have started to work from home** due to the pandemic[1]. To put this figure into perspective, in 2019, only 9% of employed people in the EU said they sometimes worked from home[2].

Public transport strongly impacted due to lower ridership and physical distancing needs

Stay-at-home orders, massive use of partial unemployment schemes and workplace closures **have strongly lowered public-transit ridership.** For instance, at national level, official data on Latvian passenger traffic by rail, bus, tram and trolley-bus shows that the traffic in the 2nd quarter of 2020 represented only one-third compared to the same period in 2019[3]. In several big EU cities, public transport might had fallen to less than 15 percent of the usual level between March and May[4].

Despite this drop in daily travels, **most European cities have maintained minimum service of public transport,** including in case of national stay at home orders[5]. However, with the end of the lockdown in most EU cities, public transport use has not returned to pre-COVID levels. While in Paris, public transport ridership peaked at 40% below its usual level in August[6], in Dublin, the latest figures show that public transport journeys have fallen by almost 60%[7].

The reduced use of public transport while maintaining a minimum transport service has also led to significant **economic losses for transport operators and providers.** In Italy, an early estimated drop of 50% of users in public transport is expected to result in a shortfall

1. Eurofound. 2020. Living, working and COVID-19 dataset, Dublin, http://eurofound.link/covid19data Survey carried out in EU-27 between April 9 and April 30, with 86,457 people aged 18 and over.
2. EUROSTAT [lfsa_ehomp], Last update: 01-09-2020.
3. Data on passenger traffic provided by the Central Statistical Bureau of Latvia, released on 02.09.2020, consulted on 08.09.2020.
4. According to weekly data from Citymapper, the transport planning smartphone app, monitoring the percentage of its users moving compared to usual.
5. International Energy Agency. 2020. Global Energy Review 2020: The impacts of the Covid-19 crisis on global energy demand and CO2 emissions.
6. Compagnon,S. Bontinck, J.-G., "Covid-19 : 40 % de voyageurs en moins dans les transports franciliens... Jusqu'à quand ?" *Le Parisien*, 24.08.20.
7. Data on passenger journeys by public transport per week in the city of Dublin provided by the Irish Central statistics Office, *Transport Bulletin*, 01 March 2020 to 22 August 2020, released on 31.08.20, consulted on 17.09.20.

of €1.5bn in farebox revenue in 2020[8]. For the German public transport company Deutsche Bahn, farebox revenues for regional and local passenger transport fell by 90% during the lockdown (March - May 2020) compared to 2019[9]. Since then, the German government announced that it will contribute 2.5 billion euros to the public transport sector as part of its recovery plan[10].

An increased reliance on walking and cycling

The pandemic encouraged the shift to individual transport modes such as passenger cars, bikes and walking. To limit the flow of travel in public transport and avoid increased reliance on cars, **many cities have developed alternatives and adapted infrastructure to shift towards soft modes**. They have temporarily reallocated road space for pedestrians and cyclists. Cities such as Paris, Berlin and Barcelona already have a large number of **"Corona lanes"**, *i.e.* temporary bike lanes deployed on roads emptied from cars**.** According to the European Cyclists' Federation, European cities have already implemented over 1,000 km of new cycling and walking infrastructure[11]. The city of Lisbon has even developed an entire bike friendly ecosystem post lockdown including bike lanes, parking spaces and subsidies[12].

Road transport decline

Transport strongly relying on oil, reduced demand for oil also shows the impact of global lockdown measures on mobility. The International Energy Agency forecasts a **9% drop in global demand for oil** in 2020 compared to 2019 (especially for gasoline and jet fuel)[13]. The IEA estimates that road passenger transport activity in Europe between mid-March and mi-April 2020 fell on average by 50 to 60% below 2019 activity (see figure 1).

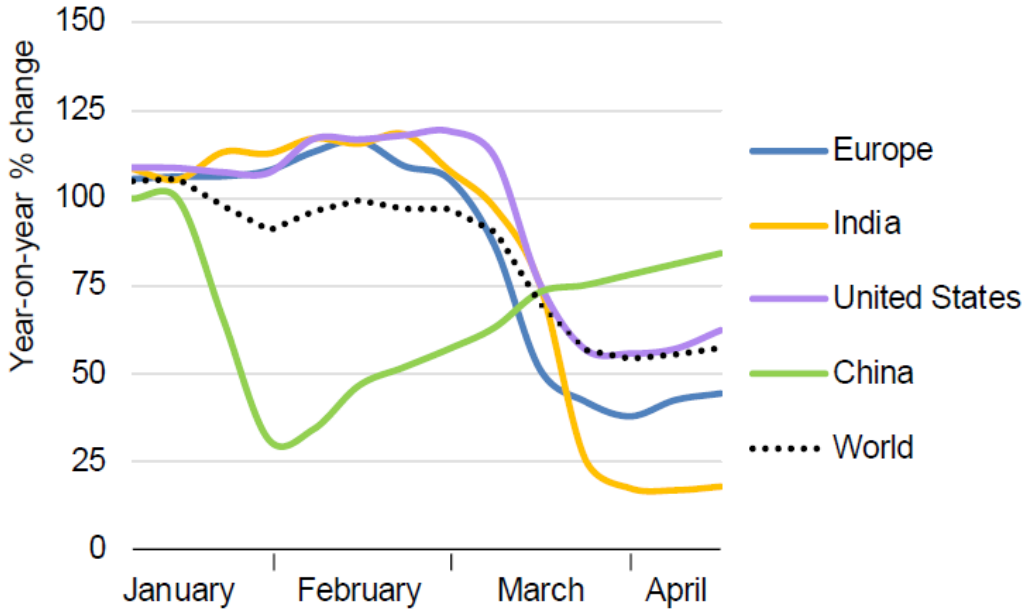
Impact on long distance mobility: the fall in the aviation and railway sectors

In the case of aviation, as a result of the partial closures of borders and international travel restrictions worldwide, **air traffic almost came to a halt in the spring of 2020**. The number of commercial flights operating daily declined in March-April **by up to 90% compared to the same period in 2019**. This shutdown resulted in heavy losses for European airlines, turnover of some operators decreasing by up to 84%in the second quarter of 2020[14] .

To save the industry, numerous **Member States committed to significant bailouts to support national airlines**[15]. For instance, the Air France-KLM Group got over €10 bn both in state-guaranteed and direct loans from the French and Dutch Governments, while Lufthansa will receive €9bn in equity and loans and the German government will take a 20% stake in the airline[16].

8. The farebox revenue refers to the value of cash, tickets and pass receipts given by passengers as payment for public transit rides. Figures from the International Railway Journal, "UITP projects €40bn hit for European public transport in 2020", 13.05.20.
9. Deutsche Bahn, *Competition figures 2019/2020*, last modified in June 2020.
10. German Federal Ministry of Finance, "Emerging from the crisis with full strength" 04.06.20.
11. Data from the European COVID-19 Cycling Measures Tracker released by the European Cyclists' Federation; consulted on 16.09.2020.
12. POLIS, "Lisbon launches new measures to put people first post-lockdown", 05.07.20.
13. IEA. 2020. Global Energy Review 2020, IEA, Paris.
14. *e.g.* -84.3% for Air France KLM and -80% for Lufthansa.
15. See Transport & Environment's Bailout Tracker, updated 27 August 2020, consulted on 08.09.2020.
16. Deutsche Welle, "Lufthansa bailout package overwhelmingly backed by shareholders", 25.06.20.

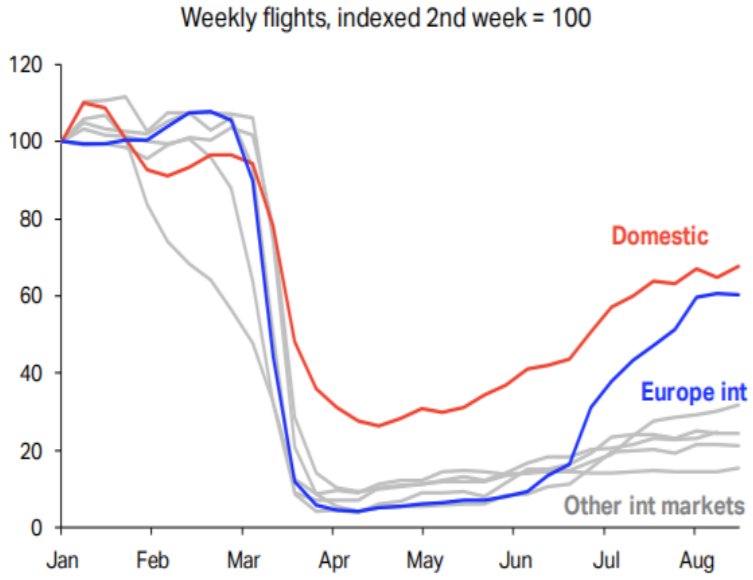
FIGURE 1 ▪ Evolution of road transport activity in 2020 relative to 2019



Source: IEA analysis based on Apple Mobility, Rystad Energy and OAG data in IEA's Global Energy Review 2020

July marked an inflexion point, with both the European and international market showing signs of recovery. Lifting lockdown restrictions and the holiday period led to the fast resumption of flights but remaining 40% below usual summer seasons (see figure 2).

FIGURE 2 ▪ Domestic and international weekly flights Jan-July 2020 (world data)



Source: IATA Air Passenger Market Analysis July 2020, Economics analysis, based on data provided under license by FlightRadar 24. All rights reserved[17].

17. IATA "Air Passenger Market Analysis July 2020".

While less visible in the crisis, rail travel has similarly suffered from the crisis. Due to lockdown or travel limitations between March and May 2020, demand fell by 40% in Sweden, where the measures were less restrictive, and by over 90% in more affected countries like France and Italy[18]. After the lockdown, rail traffic remains very affected by the progression of the pandemic in some European regions. Thus, in Spain, a country particularly affected by COVID-19, train ridership fell by over 54% in July 2020 compared to the previous year[19]. However, similarly to air traffic, railway companies might experience a smaller decline than expected in the number of travellers thanks to the summer holidays (*e.g.* the French main rail operator SNCF expects -15% compared to 2019)[20]. A study led on the global rail market predicts that the number of rail passengers worldwide (all distances combined) could fall by 35% in 2020 and should only fully recover by 2023[21].

1.2 ▪ A crisis that affects the transport manufacturing industry

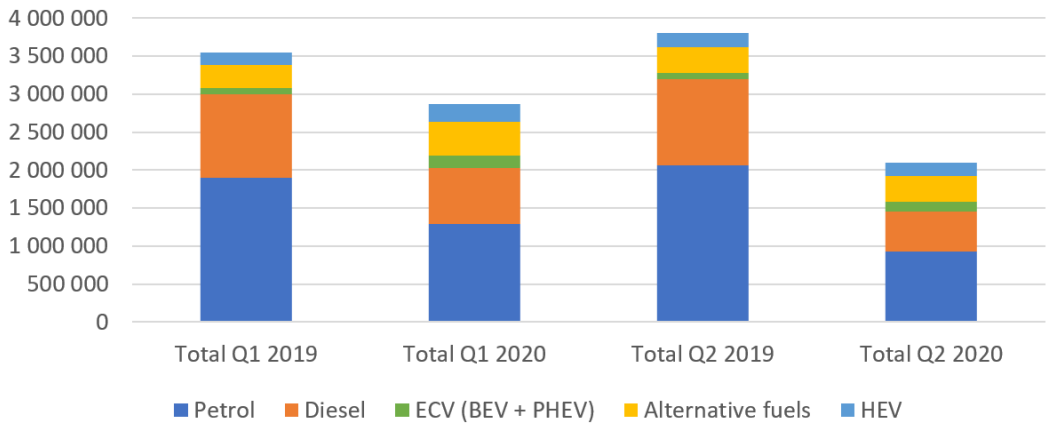
The COVID-19 crisis has very diverse impacts on the economy: for instance, the tourism sector collapsed while sectors such as digital might have even benefitted from the crisis. **Strongly affected, transport services and the transport equipment manufacturing industry** (*e.g.* aircraft and car manufacturers) **represent key economic sectors for the EU.** In 2017, the transport and storage services sector employed around 10 million Europeans, which represents 4.5% of EU total employment[22]. This includes services related to road (*e.g.* buses, trams), rail, pipelines, waterways, air transport, and warehousing related to transport. Meanwhile, over 3 million Europeans worked in the manufacture of motor vehicles and other transport equipment[23].

Aircraft manufacturers have implemented significant measures when the crisis began. In France, major aircraft and equipment manufacturers Safran and Airbus put respectively almost 50% and 20% of their workers on the government's short time work scheme. Furthermore, in order to "resize its activity in commercial aviation"[24], the world market leader Airbus plans to cut around 10% of its workforce worldwide by the summer of 2021, including 5,100 jobs in Germany and 5,000 in France. The American manufacturer Boeing also announced plans to reduce its workforce by 10%[25].

In the car industry, factory shutdowns concerned almost 1 in 2 workers in automotive manufacturing by the end of April[26] and resulted in EU-wide production losses. Meanwhile, while the European market already struggles with overcapacity, **demand for new passenger cars and commercial vehicles fell respectively by 38% and 33%** in the first semester of 2020, with some signs of recovery starting from June 2020 (see figure 3 for passenger car sales)[27]. Many European governments increased subsidies for the purchase of new cars.

18. Rail pro news, "Railways are badly damaged by the coronavirus pandemic", 7 May 2020.
19. Data on passenger traffic provided by the Spanish National Institute of Statistics, Consulted on 10.09.20.
20. Challenges, "La SNCF limite la casse cet été avec plus de 20 millions de voyageurs dans ses trains", 24.08.20.
21. SCI Verkehr study presented in International Railway Journal, Covid-19 hurts global rail market growth, 8 September 2020.
22. *EU Transport in figures - Statistical Pocketbook 2019*; this excludes postal and courier activities.
23. Eurostat, Manufacturing statistics - NACE Rev. 2, 2017 data.
24. Airbus press release "Airbus plans to further adapt to COVID-19 environment" 30.06.20.
25. Doug Cameron and Andrew Tangel, The Wall Street Journal, "Boeing to Cut 10% of Workforce as Coronavirus Puts Brakes on Air", 29.04.20.
26. ACEA, Interactive map: Employment impact of COVID-19 on the European auto industry, 20 April 2020, consulted on 04.09.2020.
27. Data from ACEA, 2020 for passenger cars and commercial vehicles.

FIGURE 3 ▪ New passenger car sales in the first quarters of 2019 and 2020 by fuel type



Notes:
Electrically-chargeable vehicles (ECV) represent Battery electric vehicles (BEV - also including fuel cell electric vehicles) and Plug-in Hybrid vehicles (PHEV –including extended-range electric vehicles). Hybrid electric vehicles (HEV) are non-rechargeable and include full & mild hybrids. Alternative fuels include natural gas vehicles, LPG-fuelled vehicles and ethanol vehicles.

Source: Jacques Delors Institute with ACEA data on passenger car registrations for the first half of 2019 & 2020

On the other hand, **the cycling industry has experienced a growing demand** in 2020 so far. UK cycling provider Halfords saw a growth of 114% in new cycling products' sales, with a particularly significant boom in the sales of electric bicycles and scooters[28]. Taiwanese bike manufacturers saw a growing demand from Europe, especially in Germany and Italy, when the lockdown measures eased in Europe[29].

While careful re-openings were led before the summer, September shows that we are not returning to "normal", as the increasing number of cases in August led to the reintroduction of restrictions to the free movement of European citizens from areas where the epidemic is progressing (*e.g.* flight cancellations, border closing and imposed quarantines)[30] and numerous European workers are still on short-time work schemes[31]. This unusual situation raises questions about the future of our mobility system and how to make it cleaner and more resilient to future crises.

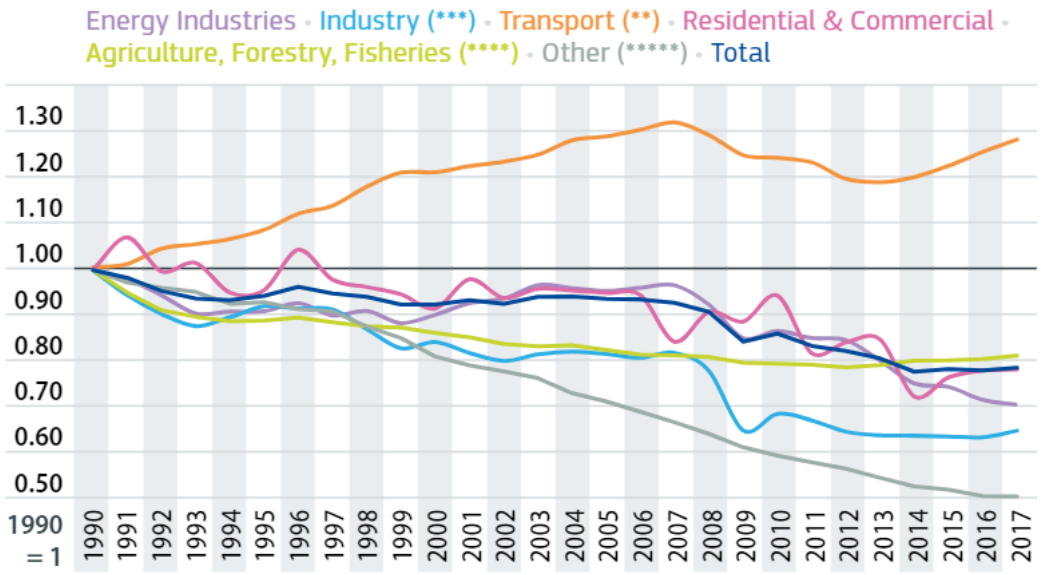
28. Halfods group, Trading update for the last 20-week period until 21 August 2020.
29. Bike Europe, Giant starts production at Hungarian factory as European sales rise, 9.06.20.
30. Real-time information on national measures within the EU is available online.
31. ETUC, "60m workers depend on EU recovery fund", Press release, 15.07.20.

2 . THE CHALLENGES OF BUILDING A CLEAN MOBILITY SYSTEM IN TIMES OF COVID-19

2.1 . Transport is a sector that requires major changes to make our society more resilient, fairer and cleaner

The transport sector is a major contributor to climate change. Since 1990, emissions from the transport sector have been rising in the EU, while overall EU emissions decreased by more than 20% thanks to decreasing emissions in non-transport sectors (figure 4). While emission standards for road transport have been more stringent and the energy efficiency of vehicles has been improving, this trend has been overcompensated by the increasing weight of new cars and the uptake in SUVs[32], and the rising demand for air travel (figure 5), which are among the biggest contributors to this rise in CO2 emissions lately.

FIGURE 4 . GHG Emissions in EU-28 by sector (in million tonnes CO2 equivalent)



Notes:

(*) Excluding LULUCF (Land Use, Land-USe Change and Forestry) emissions and international maritime, including international aviation and indirect CO2.

(**) Excluding international maritime (international traffic departing from the EU), including international aviation.

(***) Emissions from Manufacturing and Construction, Industrial Processes and Product Use.

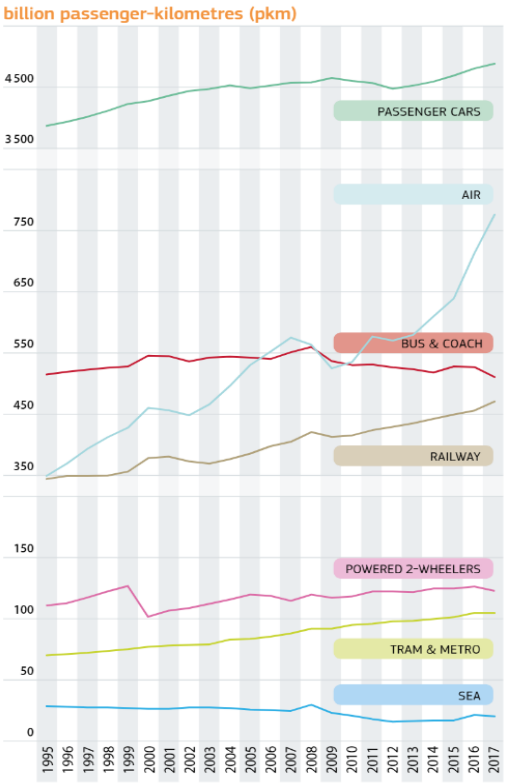
(****) Emissions from Fuel Combustion and other Emissions from Agriculture.

(*****) Emissions from Fuel Combustion in Other (Not elsewhere specified), Fugitive Emissions from Fuels, Waste, Indirect CO2 and Other.

Source: EU Transport in figures - Statistical pocketbook 2019

32. IEA. 2019. Growing preference for SUVs challenges emissions reductions in passenger car market, IEA, Paris; European Environment Agency, Average CO2 emissions from new cars and new vans increased again in 2019, 26 June 2020.

FIGURE 5 ▪ EU-28 Performance for Passenger Transport 1995-2017 - By mode



Source: EU Transport in figures - Statistical pocketbook 2019

Additionally, transport significantly contributes to **air pollution which is a severe problem for public health**, as it causes around 400,000 premature deaths in the EU each year[33]. According to the European Centre for Disease Prevention and Control, 184,000 people have died from COVID-19 in the EU, as of 14 September 2020[34], and several studies have highlighted links between COVID-19 mortality and high air pollution levels[35]. **While air pollution generally decreased over the last years in the EU, aviation emissions of air pollutants have been increasing, numerous diesel cars have been found to emit above the European pollution limits,** and many countries regularly experience very poor air quality[36]. Building a clean mobility system would therefore also bring benefits from improved air quality on Europeans' health, well-being and on the economy[37].

Our current **mobility systems moreover have not yet delivered a speedy and comfortable access to mobility:** congestion, noise, overcrowded trains and buses, increasing distances

33. European Environment Agency. 2020. Healthy environment, healthy lives: how the environment influences health and well-being in Europe, EEA Report.
34. European Centre for Disease Prevention and Control, COVID-19 situation update for the EU/EEA and the UK, as of 14 September 2020. Data includes the UK
35. European Environment Agency. 2020. *Op. Cit.*
36. European Environment Agency, Indicator assessment, Emissions of air pollutants from transport, last modified on 17.12.19; European Commission, Air quality: Commission takes action to protect citizens from air pollution, Press Release, 17.05.2018.
37. Air pollution has also economic costs due to health expenditure, lower labour productivity and absenteeism of individuals whose health is affected by air pollution. It also has impacts on agricultural yields. See Dechezleprêtre, A. *et al.* (2019) "The economics of air pollution: evidence from Europe", OECD Economics Department Working Papers, OECD Publishing, Paris.

to essential services, unequal access to transport modes depending on location and individual situation, reliance on the car as the only available option, safety, etc.[38]

During the lockdown period, CO2 emissions, air pollution and congestion have decreased[39]. These are the consequences of a dramatic health situation and should not be used to argue for a full stop of our activities. This however underlines the capacity of our societies to make radical choices to save human lives, and shows the benefits we could get from transforming our mobility system. While we experience this unprecedented situation and authorities put significant money and resources on the table, **it is the right time to reflect on how European societies deal with such crises and what they can do today to be more resilient and better face future crises**.

2.2 ▪ The long-term impact of COVID-19 on the transport system will depend on policy and societal choices

We have seen significant impacts of the COVID-19 health and economic crises on our mobility and the transport industry. **Initial measures taken by authorities** in early 2020, such as short-time work schemes and industry bailouts, **have been taken considering a wave of contagions and economic impacts in 2020 while still expecting high-levels of GDP growth in 2021**. In September 2020, the OECD forecasted for the Euro area a 7.9% GDP decline in 2020 and a growth of 5.1% in 2021, assuming sporadic local outbreaks and available vaccination at earliest in late 2021[40]. However, considering the growing number of infections in September 2020 and the unknown length of the pandemic, **a second wave and/or several years of disruptions linked to COVID are credible scenarios**[41].

To strengthen the resilience of EU societies and economy, **EU policy makers should reflect on the effects of a longer crisis, especially on the mobility sector and affiliated industries** that have so strongly suffered over the last months. Governments took so far extraordinary measures to support the whole economy, companies and workers, without much conditionality arguing that recovery needs to happen fast for companies to survive. If the crisis were to last, unconditional support for all parts of the economy will become increasingly costly both in political and economic terms, and risks becoming more and more inconsistent with the need to build resilience and to achieve EU climate objectives.

In the case of aviation for instance, a reduction in GHG emissions requires both a massive reduction in air traffic and technological and fuel improvements. By August 2020, EU Member States planned to provide €32bn to airlines, with little to no conditions[42]. **Giving money to airlines that keep on emitting more GHG emissions without commitments to sustainable development is inconsistent with both EU and national climate policies**. From an economic perspective, it is unclear how much public support the aviation sector would need, especially if the impact of the pandemic on air travel were to continue for the next two to three years. More strategically-planned and conditioned public support (incl. measures to support workers) is essential to guide future investments in the direction of climate-neutrality and to help and encourage businesses to become greener. Furthermore, as academic

38. European Commission, European Urban Mobility: Policy Context, Luxembourg: Publications Office of the European Union, 2017.
39. European Environment Agency (2020), Air quality and COVID-19, EEA Article 04.04.20.
40. OCDE. 2020. *OECD Economic Outlook, Interim Report September 2020*, Éditions OCDE, Paris.
41. WHO, "COVID-19 Emergency Committee highlights need for response efforts over long term" News release, 01.08.20.
42. See NGO Transport & Environment's Bailout Tracker, updated 27 August 2020, consulted on 08.09.2020.

Stefan Gössling rightly put it, this raises questions such as "whether a return to business-as-usual, supported by very significant State aid payments, is desirable" as the "volume growth model championed by industry and aviation proponents may have to be replaced with an alternative model of a slimmed air transport system that is economically less vulnerable and accounting for its environmental impacts"[43].

When it comes to road transport, the transition to cleaner vehicles has accelerated this year despite the collapse in car sales. As seen since the beginning of the year, the drop in car registration is not affecting all types of vehicle equally. While registrations of new passenger cars have significantly decreased in absolute numbers compared to last year in the EU between April and June 2020, with diesel and gasoline cars being most affected, the number of electric vehicles registered has increased over the same period (see table 1). These increases might be linked to pre-COVID trends as well as the various incentives created to support electric vehicles[44]. When supporting car buyers and carmakers, the EU and Member States should ensure that their policy choices amplify this positive shift from fossil-fuel powered cars to electric cars[45].

The transport sector has been one of those most importantly hit by the crisis. While it is still very much uncertain how the next months and years will look like for the sector, **today's policy and societal choices will play a major role in how the transport sector recovers and contributes to a resilient and clean future.**

TABLE 1 ▪ New passenger car registrations in the EU

TYPE OF CARS	Q2 2019	Q2 2020	% CHANGE
Petrol	2 065 054	929 309	-55
Diesel	1 129 724	526 645	-53,4
Hybrid electric vehicles (non-rechargeable)	185 592	172 149	-7,2
Alternative fuels (other than electric)	70 066	34 656	-50,5
Battery electric vehicles (BEV)	56 094	63 216	+12,7
Plug-in Hybrid vehicles (PHEV)	28 273	66 128	+133,9
Total electrically-chargeable vehicles (BEV+PHEV)	84 367	129 344	+53,3

Note: Electrically-chargeable vehicles (ECV) represent Battery electric vehicles (BEV - also including fuel cell electric vehicles) and Plug-in Hybrid vehicles (PHEV - including extended-range electric vehicles). Hybrid electric vehicles (HEV) are non-rechargeable and include full & mild hybrids. Alternative fuels include natural gas vehicles, LPG-fuelled vehicles and ethanol vehicles.

Source: ACEA, quarterly data on alternative fuel vehicle (AFV) registrations.

43. Stefan Gössling, Risks, resilience, and pathways to sustainable aviation: a COVID-19 perspective, *Journal of Air Transport Management*, October 2020.
44. ACEA, Interactive map: Electric vehicle purchase incentives per country in Europe (2020 update), 09.09.2020.
45. Depending on how electricity is produced, electric cars in Europe today emit between 80% less (in Sweden) and around 20% less (in Poland) than diesel and gasoline cars over their life cycle. See Transport & Environment, Does an electric vehicle emit less than a petrol or diesel? 21 April 2020. See also the comparative life cycle analysis of a gasoline car and an electric car in Magdalinski, E. and Pellerin-Carlin, T., Electric vehicles: European mobility and industrial leadership at stake, Policy brief 14 May 2019.
Additionally, the European Battery Alliance is setting up to manufacture batteries more sustainably in Europe and electric vehicles are becoming increasingly cleaner as the share of renewable electricity grows in the electricity mix.

2.3 ▪ Acting today to shape the future

Timing is important in policy-making. Since World War II, Europe has not known such a shock to its economy and to its citizens' daily lives. A crisis situation leads authorities to take decisions and adopt measures that would otherwise not be accepted or would take a long time to get through, as the EU is doing with its *Next Generation EU* recovery plan (*Cf*. Box 1). While this raises essential issues of democracy, it also creates a **space for fast positive action that would otherwise be prevented** by a lock-in created by existing infrastructures and lobbies.

In the wake of the COVID-19 outbreak, we accepted to make temporary changes to our pre-crisis lifestyle - for instance, how and how much we travel for/to work, where we go on holiday, how families and friends meet and spend time together. For millions of Europeans, this represents a moment when new mobility behaviours can be tested and entrenched[46]. Research shows that mobility behaviours are particularly anchored in routines and life changes can be moments to reconsider them[47]. **The policy challenge is twofold: (1) assess which current changes are negative for the green transition (*e.g.* fall in carpooling) and implement measures to restore pre-crisis positive trends; and (2) assess which changes are positive for the transition – such as a modal shift from cars to bikes – and implement measures that keep these positive trends going.**

While some constrained behaviours (*e.g.* limited group activities) will be abandoned as soon as the crisis ends, **public authorities should build on this transition time to support behavioural changes that are sustainable and positive in our daily lives.** They should do so by establishing the conditions conducive to maintaining such behaviours (*e.g.* incentives for sustainable goods, adapted infrastructure, availability of sustainable alternatives). This paper now turns to what EU policy makers can do during the next two years to ensure that the European mobility system emerges cleaner and stronger from this crisis.

46. Thompson, S., Michaelson, J., Abdallah, S., Johnson, V., Morris, D., Riley, K., & Simms, A. 2011. 'Moments of change' as opportunities for influencing behaviour: A report to the Department for Environment, Food and Rural Affairs. Defra, London.
47. Thøgersen, J. 2012. The importance of timing for breaking commuters' car driving habits. The habits of consumption, 12, 130-140; Verplanken, B., & Wood, W. 2006. Interventions to break and create consumer habits. *Journal of Public Policy & Marketing*, 25(1), 90-103.

3 ▪ BUILDING A CLEANER MOBILITY SYSTEM: WHAT EU POLICY MAKERS CAN DO DURING THE COVID-19 CRISIS

When facing an economic crisis, companies reduce their investments, including in research and innovation. As private investments are becoming scarcer, it becomes even more important for policy makers to send clear signals to companies, so they can focus their cuts on some investments (*e.g.* those that are incompatible with the European Green Deal) while protecting or even expanding investments in other areas (*e.g.* clean mobility solutions that are essential to the success of the European Green Deal). In the best case scenario, the current recession could be seized as an opportunity for transport companies to reorient to disruptive technologies[48], business models and innovations. To increase the chances of such a best case scenario and provide clear signals to all companies and public authorities, **we recommend the EU to act on three existing policy tools: EU and national recovery plans, state aid and EU regulations**.

3.1 ▪ Recovery money needs to massively support clean mobility infrastructure

To recover from the crisis, the European Union is about to adopt a historic €750 billion recovery plan that can provide a significant stimulus and accelerate the green transition (see box 1). Yet, the proposal remains broad in terms of concrete objectives and the current conditions for money allocation are not precise enough yet to ensure that these investments are green[49]. The co-legislators should now ensure that this money stimulates the green investments that are needed for a resilient future and that can on their own help the economy recover[50].

Infrastructure represents the largest investment needs in the transport sector towards the green transformation[51]. The EU and Member States need to ensure that the recovery money is channelled to clean transport infrastructure and fleets to make the transport system more sustainable and more resilient to future crises. It should thus **give priority to infrastructure such as bike lanes, railways and charging stations for electric vehicles**. Such investments will help provide the adequate environment for clean transport modes, give investment certainty and opportunities to companies, support changes in behaviours, while pursuing the long-term transformation of our mobility. Such investments also make sense from economic and social points of view – *e.g.* a recent analysis of cost-benefits estimates that a kilometre by car has an *external cost* of €0.11 per rider while the same distance cycling or walking brings respectively a *benefit* of €0.18 and €0.37 as they reduce health related expenditure (*e.g.* sick leave, insurance)[52].

48. Archibugi, D., A. Filipetti and M. Frenz (2013), The impact of the economic crisis on innovation: Evidence from Europe, Technological Forecasting and Social Change, Vol. 80/7, pp. 1247-1260, https://doi.org/10.1016/j.techfore.2013.05.005.
49. The European Commission must indeed assess the contribution of national recovery and resilience plans to the green transition to allocate EU funds, but this analysis presents several challenges: in order to ensure that European funds do not subsidise polluting transport modes and fossil fuels, it must 1) distinguish between measures that support the green transition and those which support the digital transition, 2) define which investments are considered "green" and 3) clarify which investments must be excluded from national plans so as not to "significantly harm the environment".
50. Lamy, P., G. Pons *et al.* Greener After: A Green Recovery Stimulus for a post-COVID-19 Europe. Europe Jacques Delors, Policy Paper, 2020.
51. SWD(2020) 98 final - Commission Staff Working Document: Identifying Europe's recovery needs
52. Gössling, S. 2020. Why cities need to take road space from cars-and how this could be done. Journal of Urban Design, 1-6.

BOX 1 ▪ A historic budgetary deal at EU level to respond to the coronavirus pandemic and its economic consequences[53]

Unlike the 2009 public debt crisis, the COVID-19 crisis affected all EU countries and is not the result of perceived lack of budgetary discipline. For the EU economy to recover after its GDP contracted by 11.9% in the second quarter of 2020[54], **the European Council agreed for a joint borrowing at EU level of €750bn** (4.7% of EU GDP). If backed by the European Parliament, this would finance €390bn in new grants and €360bn in new loans over the next three years (2021-2023). The so-called Next Generation EU (NGEU) recovery plan will provide a sizable stimulus allowing the EU for the first time to act as a macro-economic stabilizer. It is also **the first time that the EU will borrow money in its own name** in the long term. This new money is expected to be repaid only starting in 2028 and for 30 years until 2058[55]. Moreover, European Commission President von der Leyen wants 30% of the EU Bonds to be issued in the form of Green Bonds and to earmark 37% of NGEU money to Green Deal objectives.[56]

Within NGEU, €312.5bn will be channelled to Member States *via* a Recovery and Resilience Facility (RRF). Each Member State will have to submit a national Recovery and Resilience Plan (RRP) that should be approved by the European Commission before RRF money is granted to the Member State. The Commission will assess each RRP according to several criteria, especially the RRP's contribution to: 1) address the challenges identified in the European Semester[57], 2) strengthen the growth potential and resilience of the Member State and strengthen cohesion, and 3) tackle the green and digital transitions. Additionally, no measures from those RRPs should have adverse effects on the climate and the environment. Another €47.5bn are allocated to REACT-EU, a recovery assistance initiative that aims to hand out financial resources to Member States quicker in order to contribute to crisis mitigation by supporting for instance job maintenance, SMEs and health care systems.

The European Council also agreed on a **€1,074bn EU budget**[58] **for the next 7 years to support the recovery plan for Europe.** 30% of this money (€550bn) is earmarked for climate[59]. Compared to the initial proposal of a € 1,100bn EU budget[60] made by the European Commission in 2018, EU agricultural and regional funding was largely preserved, while several programmes were significantly cut, including aid to development and defence. Forward-looking programmes that support sustainable mobility are particularly affected, with a significant reduction in the research and innovation programme Horizon Europe, a cut in the budget allocated to EU transport infrastructures through the Connecting Europe Facility (CEF), and a decrease of the InvestEU Programme, including its Strategic Investment Facility.

Investments in public transport are threatened by the impacts of the crisis. The fall in frequency during lockdowns and the current physical distancing requirements make it difficult for the sector to recover. While it is perceived as a high infection risk place, some studies led in Austria, France, Germany and Japan found no COVID-19 clusters to be connected to public transport[61]. Public transport remains essential as it is a key transport mode in cities, contributes to territorial cohesion and supports the decarbonisation of mobility. A deteriorated service raises the risk of increasing use of individual cars and of leaving behind a share of the population that relies on public transport with no other options for their commute. **As it is both a matter of social justice and environmental sustainability, public authorities need to devote recovery money to public transport**, such as Germany that already announced €2.5bn of its €130bn stimulus package[62].

53. The authors would like to thank Andreas Eisl and Eulalia Rubio for their valuable comments on this box.
54. According to EUROSTAT July 2020 Inclusion of GDP estimates for Member States.
55. Although the European Council's agreement foresees the possibility to start repaying before 2028, using amounts not used for interest payments.
56. Ursula von der Leyen, State of the European Union Address, Brussels, 16 September 2020.
57. To understand what is the European Semester, the reader may refer to: Amy Verdun & Jonathan Zeitlin (2018) Introduction: the European Semester as a new architecture of EU socioeconomic governance in theory and practice, *Journal of European Public Policy*, 25:2, 137-148, DOI: 10.1080/13501763.2017.1363807.
58. *i.e.* the 2021-2027 Multiannual Financial Framework.
59. The 30% target was part of the European Council's Agreement in July. However, after Ursula von der Leyen announced the Commission's will to increase to 37% the share of NGEU earmarked to climate, the EU budget target might also be reviewed.
60. European Commission, The EU budget powering the recovery plan for Europe, COM/2020/442 final.
61. Sandra Lima "COVID-19 and Public Transport: Regaining passengers' trust", EPF, 17.08.20.
62. German Federal Ministry of Finance "Emerging from the crisis with full strength" 04.06.20.

Considering that many transport investment decisions are taken at the regional or local level[63], it is important that Member States give recovery funding to local authorities, such as municipalities, which are in charge of mobility infrastructure and solutions at their level. At the same time, cities must prepare bold climate plans and apply for EU/national funding whenever necessary. In this regard, several European cities and civil society organisations suggested possibilities to support local authorities in mitigating the impacts of the crisis and greening their transport systems, including through the green public procurement with grants to accelerate the roll-out of fleets of zero-emission vehicles[64].

Public authorities should also target investments in the rail sector. While there are increasing calls for putting an end to short-distance air connections (*e.g.* such a reduction is a condition of Air France bailout), this needs to be counterbalanced by the availability of high-speed train lines that can provide a credible alternative to aviation. Some national plans already promised to invest in railways: *e.g.* Germany plans €7bn for DB and national railways, France allocated €4.7bn to make the railway sector more attractive and efficient. Additionally, the relaunch of night trains is underway in Austria, Sweden and Switzerland, and in the French recovery plan. Investment in rail is also important for freight, where investments can support a modal shift from the road to rail to move goods, an objective supported by the EU with promising developments in Central Eastern Europe[65]. Investments throughout the EU in railways and train technologies improvements will thus have an important role to play in decarbonising the transport sector.

3.2 ▪ Making EU State Aids fit for the European Green Deal

State aid is a key public policy tool. By granting an advantage, such as a subsidy or a guarantee, public authorities shape society and help companies to innovate. When such advantages are conferred on a selective basis by a national public authority of a Member State of the EU, such 'state aid' over a certain amount must be first authorised by the European Commission.

Under EU law, **the European Union has a *duty* to integrate environmental protection requirements as part of all its policies, including EU State Aid rules**[66]. Even if the EU officially started considering this in 2001[67], it led to few concrete policy decisions that could ensure that national public money was not used to finance projects that are inconsistent with the green transition.

In this crisis, Member States are putting hundreds of billions of euros of public money on the table to help companies overcome the first impacts of COVID-19, with lots of this money going to the transport sector (see part 1). With the continuous progression of the pandemic

63. See Box 1.1. of the OECD, "The territorial impact of COVID-19: Managing the crisis across levels of government", Policy Responses to Coronavirus (COVID-19), 16.06.20.
64. Open letter to Vice-President Timmermans and Transport Commissioner Valean, "EU Recovery Package must ensure significant support to public transport", 22 May 2020.
65. Railfreight.com, "Rolling highway from Germany to Lithuania a new success for modal shift", 20.05.2020.
66. Article 11 of the TFEU states that "Environmental protection requirements must be integrated into the definition and implementation of the Union's policies and activities, in particular with a view to promoting sustainable development".
67. The 2001 Community guidelines on State aid for environmental protection concluded that "When the Commission adopts or revises other Community guidelines or frameworks on State aid, it will consider how those requirements can best be taken into account. It will also examine whether it would not be expedient to ask the Member States to provide an environmental impact study whenever they notify it of an important aid project, irrespective of the sector involved."

in the EU in the summer of 2020, it becomes increasingly likely that new national state aid plans will be put forward in 2021[68]. For both these reasons, **it is now urgent for the EU to ensure that EU State Aid rules become fit for the European Green Deal.** While we cannot provide the details of such reform in this policy-paper, we here provide a few guidelines and publications[69] that can contribute to the revision of the EU State Aid rules. The European Commission should:

- Assess the consistency of state aid measures with the European Green Deal, especially the forthcoming EU Climate Law. This is not only necessary to ensure the political coherence of the von der Leyen Commission, but also a legal obligation under the EU Treaties (Art. 11 TFEU).
- Propose a clear exclusion list of activities that, in principle, cannot be supported by public aid because of their impact on the environment or reliance of fossil-fuels.
- Require any large company (*i.e.* >250 employees)[70] that benefits from such state aid to provide, in the next 12 months, its strategy to contribute to the EU climate objectives, including the objective to make the EU climate-neutral in 2050. Such strategy should include clear company-level targets and key performance indicators. The EU should moreover ensure that Member States do properly sanction any company that would not put forward or implement such a strategy.

3.3 ▪ Policy makers need to send the right regulatory signals for States, municipalities and companies to go green

The EU has already shown leadership, demonstrating how policy certainty around climate action can drive innovation and investment[71]. To provide such policy certainty, the EU should set a clear direction for all stakeholders, mainly companies and authorities at different levels, by enshrining into law ambitious CO2 reduction objectives (*i.e.* new 2030 target and climate neutrality by 2050), taxing the most polluting activities in a way that is aligned with this climate direction and encouraging the development of sustainable transport modes.

The comprehensive strategy on "Sustainable and Smart Mobility" that the Commission should publish by the end of 2020 is expected to provide the policy framework for the EU to reduce its transport GHG emissions by 90% by 2050. This will require ambitious policy measures that will be presented later. While this process will take time, before the Commission proposes concrete measures accompanied by their impact assessments and before these proposals are enacted into law, we highlight several policy components that could feed into these proposals to accelerate the transition to cleaner mobility and send the right signals to public authorities and companies to go green.

68. This will likely build on recent changes made by the European Commission in March-May 2020: see European Commission, Communication on the temporary framework for State aid measures to support the economy in the current COVID-19 outbreak, as well as three specific documents on State aid for air, land and maritime transport. Adopted on 19 March 2020, OJ C(2020).
69. Client Earth & Agora Energiewende (forthcoming, 2020): A State Aid Framework for a Green Recovery: Mainstreaming climate protection in EU State aid law; AgoraEnergiewende's webinar: "The role of State aid in the EU's green recovery", 30 June 2020; Matthias Finger, Juan Montero-Pascual and Teodora Serafimova, Manifestor for a post-COVID-19 recovery towards smarter and more sustainable transport, Florence School of Regulation, Policy Brief, June 2020.
70. See Eurostat's breakdown by size-class.
71. Business and investor CEO letter on EU 2030 GHG emissions targets, September 2020.

As the EU 2030 climate target will likely be increased from 40% to at least 55% of GHG emission reduction[72], this will necessarily require a review of all related objectives, including in the transport sector. CO2 standards for road vehicles for 2030 will thus also need new targets to align with this new ambition. **Currently aiming to reduce the average CO2 emissions from new cars by 37.5%, this target should be revised upward** and made stricter to ensure that highly emitting cars are progressively taken out of the market while zero-emission cars are mainstreamed in car manufacturing so that the European fleet can become clean by 2050. Setting a clearer timeline for the end of diesel and gasoline car sales could also send a strong signal to companies to fully embrace the transition towards clean vehicles. This will also require that further progress is made on the production of batteries in the EU and on charging infrastructure.

As seen in part 2, emissions from aviation remain an important issue to reduce the impact of transport and the lack of adequate taxation in this sector still leads to very low fares that do not reflect its impacts. If the European Commission wants to act seriously on these emissions, **kerosene should be subject to taxation** at least like fuels for other modes, **and it should be a priority in the planned revision of the Energy Taxation Directive by next summer**.

To support industries in COVID-19 times when demand for some goods plummeted, **authorities can provide incentives to encourage the purchase of green goods**. Many member states have for instance implemented or improved incentives for the purchase of electric cars[73]. However, for these incentives to be efficient – *i.e.* used by citizens and contributing to climate targets, Member States should ensure that such incentives only cover clean vehicles[74], include commercial fleets (as they represent a large share of new vehicles' purchases), and last for more than a few months[75].

Finally, to show its commitment to developing clean mobility, **the EU should show that walking and cycling are considered as competitive and desirable transport modes for short trips.** In addition to better funding for urban planning and for cycling infrastructure, the European Union should also improve the collection and visibility of statistics related to walking and cycling: *e.g.* kilometres of bike lanes, kilometres travelled by Europeans while walking and cycling, share of modal split, bike sales, employment. Current EU statistics do include such data on urban transport and motorcycles for instance[76]. This could give policy makers more visibility on developments in these soft modes and their growing importance in daily mobility. The Commission could also require Member States to **provide quantitative targets for cycling and walking infrastructure** deployment in their National Energy and Climate Plans.

72. The final decision of EU policy makers will depend on the outcomes of the negotiations between the Council of the European Union and the European Parliament.
73. See ACEA's overview.
74. While Germany and Austria's recovery packages provide subsidies for the purchases of electric cars only, many countries like France, Italy and Spain also included support for some diesel and gasoline cars in their schemes. See: Sandra Wappelhorst, "Economic recovery packages in response to COVID-19: Another push for electric vehicles in Europe?" ICCT, (3.08.20).
75. Currently, many COVID-19 induced incentive schemes for clean car purchase are only planned as a short-term programme for sales to recover, while research shows that incentives need to be maintained in time to have a significant impact on CO2 emission reduction. See Axsen, J., Plötz, P. & Wolinetz, M. Crafting strong, integrated policy mixes for deep CO2 mitigation in road transport. Nat. Clim. Chang. (2020).
76. EU Transport in figures - Statistical pocketbook 2019.

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CONCLUSION
MAKING THE EUROPEAN GREEN DEAL THE COMPASS FOR THE RECOVERY OF THE EUROPEAN MOBILITY SECTOR

The health crisis disrupted how much we move and the way we move. In the troubled seas that lie ahead, EU and national policy makers must work together towards shared goals. One such shared goal is to make the EU economy climate-neutral by 2050. The European Green Deal provides the right compass to sail towards this direction and must guide all policy decisions, including - and importantly - those taken during the current crisis.

This is why policy makers need to analyse which crisis-induced changes are negative and which ones are positive for the green transition. Based on this assessment, to which this paper contributes, **EU policy makers need to adopt decisions that anchor and amplify the positive trends while countering the negative ones.** This notably requires to ensure that EU and national economic recovery plans effectively support a shift towards clean mobility, that EU State Aid rules become fit for the European Green Deal and that EU institutions quickly set new rules for the transport sector in order to help EU States, municipalities and businesses set their own course towards a green future.

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