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A Practical Framework for Aligning NDC Enhancement and COVID-19 Recovery: Detailed Transport Sector Approaches

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Background

Linking recovery programs to NDC enhancement offers a significant opportunity for raising ambition to address climate change while promoting sustained economic recovery. Transport comprises roughly 23 percent of global energy-related carbon dioxide (CO_2) emissions and 14 percent of total greenhouse gas (GHG) emissions (SLoCaT 2018). Without direct intervention, transport's share of energy-related CO_2 emissions could reach 40 percent by 2030 (ITF 2020a). Even after sharp cuts to transport and power use due to COVID-19 lockdowns, countries will soon see a rebound in emissions as economic activity resumes post-pandemic, including in transport.

Meeting global climate goals to reduce transport emissions will require a comprehensive Avoid-Shift-Improve approach: avoid unnecessary vehicle travel; shift to sustainable modes such as public transport, bicycling, and walking; and improve vehicle efficiency through technology and innovation (Dalkmann and Brannigan 2007). Enhanced NDCs can support each pillar of this approach. Earlier guidance on NDC enhancement in transport also highlights key opportunities such as accelerating electrification in the transport sector and other vehicle efficiency technologies; amplifying avoid and shift measures like public transport, walking, and cycling, as well as land-use policies that reduce unnecessary travel; and creating more robust strategies to address freight (Fransen et al. 2019).

As countries revise their NDCs, there is an opportunity to incorporate green recovery investments that contribute to more ambitious NDCs or bolster NDCs that were already submitted in the transport sector. This may include vehicle electrification programs, increased funding to public transport and active mobility, clean research and development, and more.

In this expert note, we provide a review of the pandemic's impact on the transport sector, a rationale for economic recovery through transport, NDC-related measures captured in economic recovery discussions, and guidance for NDC and recovery alignment. While the guidance provided here does not encapsulate all potential links between economic recovery and NDC enhancement, it provides key thematic areas that governments may find most practical in shaping policies and finance packages.

Impacts of COVID-19 on Transport

The global pandemic had a profound impact on transport. One of the clearest challenges was in public transport, as ridership plunged by up to 90 percent in the first half of 2020 across G20 countries. By the end of 2020, ridership was still roughly 20 percent lower than pre-COVID levels (Google 2020). The drop in fare revenue threatens the sustainability of a major lever to address urban equity and climate change in the sector. While some governments have injected cash into struggling public transport systems and instituted measures to limit the spread of disease, many essential workers and low-income communities will struggle to access core services should these systems not recover and improve. Evidence from the United States and Chile shows low-income and essential workers are leaving public transport in far lower numbers than high-income users (Bliss et al. 2020; Tirachini and Cats 2020). Meanwhile, in cities like Nairobi and Bogota, more than half the population relies on public transport, the vast majority of which is provided by a highly-fragmented network of privately-owned, demand-driven minibuses that operate without any fiscal safety net (Venter et al. 2019). Cuts to public transport may also disproportionally impact women, as women often take more trips and rely more on public transport than men (European Commission 2013).

Other research points to growing tendencies to own and drive private vehicles due to the pandemic. In one global survey, 60 percent of respondents in growing economies such as Brazil and Nigeria claim they prefer private vehicle travel over other modes of transport, including public transport, due to COVID-19 contagion concerns (Watts 2020). Meanwhile, home deliveries have become a lifeline for millions and freight carriers are reporting record shipments. Should public transport systems not recover, the increase of private vehicles on the road would have significant negative impacts on climate.

Though there are many troubling signs, others show promise. Walking and bicycling, referred to as active mobility, is surging as cities provide for more protected bicycle infrastructure and expanded sidewalks. Bicycle sales and bikeshare rides have skyrocketed in cities like New York, London, and Beijing (Bliss et al. 2020; IEA 2020). Paris is adding 650 kilometers (km) of bicycle lanes and Lima is adding 50 km of bicycle lanes (Cities4Health 2020; Reid 2020). Other cities are closing streets entirely to motor vehicles to provide more space for people to abide by social distancing recommendations and be outside (ITF 2020a).

Although public transport has been severely impacted by the pandemic, governments need to respond by planning for contingencies and investing in the least commute-disruptive measures that cater to all aspects of equity and provide greater and more reliable coverage. Because active transport has increased since the start of the pandemic, earmarking investments to facilitate continued growth in these non-motorized forms of travel can serve as a win-win for mitigating the impacts of COVID-19 on the transport sector and the effects of the transport sector on global emissions. Expanding active transport infrastructure and services, like bikeshares, can complement and help improve access to public transport. For instance, one survey conducted across a dozen Chinese cities found that almost half of the users of dockless bikeshares used these bikes to connect to public transport (Jiang et al. 2020). Accomplishing this next step can be made possible by aligning short-term recovery investments with medium-term NDC commitments.

Rationale for Economic Recovery and NDC Alignment

Uniting NDCs and green transport not only helps achieve long-term climate and sustainability ambitions, but can also drive an inclusive economic recovery. This is largely because investments in sustainable, low-carbon mobility show high promise for job creation, improved health, and equity. Research from previous economic recovery packages highlights some examples where public transport, road maintenance, and active transport investments had higher job creation potential than investments that prioritize carbon-intensive mobility, such as highway building. For instance, South Korea's investment in mass transit

and rail after the Great Recession created an estimated 138,000 jobs—just 15 percent of the total jobs created under their entire green stimulus program (Robins et al. 2009). A study from the United States found that each $1 million spent on bicycle and pedestrian projects created 11.4 and 10 jobs, respectively, including direct, indirect, and induced jobs, compared to only 7.8 jobs per $1 million spent on road-only projects (Garrett-Peltier 2011). Another study from the United States showed that public transportation yielded 70 percent more job hours per stimulus dollar spent than the same dollar spent on building new highways (Smart Growth America 2011). Public transport investments, such as procuring new buses, are usually faster to disburse than new highway construction, which has longer implementation and environmental review timelines, and therefore creates more jobs faster (Mallett 2020). Public transport and active mobility infrastructure also require less upfront capital and real estate and boast lower long-term maintenance costs, meaning a higher fraction of that stimulus dollar goes directly to labor rather than land acquisition.

Green transport investments also benefit several global sustainability and development targets, including the 2030 Sustainable Development Goals (SDGs). Improving affordable public transport, curtailing motorized travel demand, decarbonizing and electrifying vehicles, improving the safety of road infrastructure, and promoting more active lifestyles through cycling and walking all impact the health, equity, and economic development of our cities. These impact areas include:

- Climate action. Decarbonizing transport plays a central role in fighting the climate crisis. According to one scenario analysis, a green recovery could slash GHG emissions by more than half by 2030, as opposed to a business-as-usual scenario; to meet that target, 22 percent of the emission savings would derive from the transport sector (C40 2020). Another study estimated that countries could feasibly avoid 3.2 billion tons of carbon dioxide equivalent (CO_2e) emissions by 2050 through ambitious low-carbon transport-related stimulus measures, such as vehicle electrification and investments in mass transit and active mobility (Gulati et al. 2020).
- Better urban access and improved equity. Increasing sprawl and lack of affordable and accessible mobility options have left essential services too far or too costly for the most underserved or discriminated communities (Venter et al. 2019). Cities that prioritize highway building over public transport and compact development disproportionately benefit wealthier residents while leaving poorer residents most impacted by poor air quality, unaffordable transport options, dangerous walking infrastructure, and exclusion from opportunities (Lucas et al. 2016).
- Improved road safety. Traffic accidents kill 1.35 million people every year (WHO 2018a). Deaths disproportionally occur in low- and middle-income countries, which account for over 90 percent of the world's road deaths despite having only 48 percent of the world's registered vehicles (WHO 2018a). The World Bank estimates that halving traffic deaths could add 7–22 percent to gross domestic product (GDP) per capita over 24 years to select lower-middle income countries (World Bank 2017). Saving this many lives will require a Safe Systems Approach that prioritizes people-oriented (not car-oriented) road design and transport investments (Welle et al. 2018).
- Cleaner, healthier air. Globally, ambient air pollution kills 3.5 million people every year (Anenberg et al. 2019). Transport is a major contributor. Transport sources account for 30 percent of particulate air pollution (PM 2.5) in cities under the Organisation for Economic Co-Operation and Development (OECD) and as much as 60 percent in cities of the developing world (C40 2014). Moreover, the urban poor are disproportionately exposed to traffic pollution and experience higher rates of pollutant-related morbidity (Pratt et al. 2015; Hajat et al. 2015). According to C40 analysis, a reduction of just 20 percent of global, transport-related PM 2.5 would avert 86,000 deaths and create $76–224 billion in economic impact every year (C40 2019).

Latest Key Developments on NDC Sectoral Actions in Transport

In 2015, when governments submitted their first NDCs, 76 percent of the 166 submissions highlighted the transport sector as a mitigation source, but only 8 percent included transport-specific GHG mitigation targets (SLoCaT 2018). In terms of Avoid-Shift-Improve strategies, the majority (65 percent) of mitigation measures mentioned in NDCs represented improve strategies such as zero-emission technologies and fuel efficiencies. Although critically important, electrification alone is not enough to meet ambitious net-zero and sustainability goals; additional measures are needed to reduce unnecessary vehicle travel and shift to more environmentally friendly modes (de Blas et al. 2020). However, only 28 percent of proposed mitigation measures mentioned a shift to low carbon transport, and 7 percent focused on efforts that avoid unnecessary vehicle travel. Amplifying the priority of avoid and shift measures would greatly benefit public transport and active mobility. Furthermore, only 16 percent of NDCs included transport adaptation, despite the need for mobility to support resilience in response to increasing natural disasters and rising temperatures (SLoCaT 2020).

Seventy-one countries have updated their NDCs so far. Some updated NDCs outlined transport-related targets that can be further advanced by recovery programs. Rwanda's updated NDC, for example, included both conditional and unconditional measures to enact emissions standards for vehicle fleets through tax incentives and car scrappage schemes, public transport and active mobility investment, and electric vehicle programs (Antonich 2020). To achieve 2030 targets, Rwanda estimates $190 million in investment for vehicle emissions standards, $50 million for public transport and active mobility, and $900 million for electric vehicle and charging infrastructure (Republic of Rwanda 2020). Both domestic spending and international aid or finance can advance these existing plans, such as through Bus Rapid Transit (BRT) or investments in charging infrastructure.

Some of the largest economies in the world have submitted NDCs in the 2021 round. The United Kingdom, submitting its first NDC and set to assume the presidency of the upcoming Conference of Parties (COP) 26 in Glasgow, has referred to a ten-point plan for decarbonization, with three points on transport: promoting public transport, cycling, and walking; banning combustion engine sales by 2030, with grants for electric cars and funding for charging stations; and supporting greener energies in the aviation and maritime sectors, with £20 million committed to the latter (Walker and Elgot 2020). China has indicated it will reach carbon neutrality before 2060 and ensure its GHG emissions peak in the next decade, calling for a green recovery from the current economic crisis (Harvey 2020).

With the United States on track to re-enter the Paris Agreement and submit a new NDC, the country will need a significantly more comprehensive approach to transport decarbonization and green recovery at national and subnational levels. In addition to strong vehicle efficiency standards, one study finds that the United States can reach 80 percent reduction in transport emissions by 2050 through significant scaling of electric vehicle sales, along with reducing unnecessary vehicle travel by approximately 25 percent through public transport, active mobility, and integrated land-use planning (Tonachel 2017).[1]

Coverage of NDC Measures Captured in Transport-Related Stimulus

In a WRI analysis of tracked stimulus policies, transport is identified as a major component of recovery packages outside of healthcare and unemployment. However, most transport-related spending prioritizes a fossil fuel status quo over a rapid green recovery (Fried et al. forthcoming). Rhodium Group found that, at their lowest points, climate-related priorities accounted for just 1.1 percent and 0.3 percent of the overall funds of the United States and China, respectively, the largest stimulus spenders (Larsen et al. 2020). In fact, both countries have committed substantial support to automotive manufacturing while simultaneously weakening vehicle emission standards (Rott and Ludden 2020; Bloomberg News 2020). The largest category of global energy- and transport-related investments, $125 billion, went to bailout the

aviation sector. Of these funds, only 20 percent ($24 billion) was conditional on the implementation of modest environmental improvements (Energy Policy Tracker 2020).

However, there are many examples of green transport investments across countries that strive to reduce emissions, stabilize access to essential services, improve public health, create jobs, and boost the economy. Energy Policy Tracker, a consortium of 14 academic and research institutions, evaluated a sample of $298 billion in national, transport-related stimulus spending. Through that analysis, they identified five key areas for green transport spending that connect to raised NDC ambitions. These include:

- Public transport investments that stabilize agency liquidity, service operations, and worker livelihoods.
- Active transport investments that support infrastructure and initiatives that promote walking, bicycling, and road safety.
- Electric vehicles (EVs) and zero-emission fuel investments that support the shift to low- and zero-carbon vehicles, including private vehicles and public and commercial fleets. Initiatives include subsidies and tax rebates for EV purchases, electric bus procurement, installation of charging infrastructure, manufacturer bailouts with EV mandates, and research and development (R&D) grants and loans for next-generation fuels, such as hydrogen.
- Rail construction and service investments that support the transition away from carbon-intensive, long-distance passenger and goods travel to more energy-efficient rail travel.
- Green aviation and maritime support, which primarily include bailouts with environmental strings attached and/or provisions for clean R&D that accelerate decarbonization within this sector.

Important Recommendations for NDC and Recovery Alignment

Countries, and the cities within them, are now at a critical juncture to reimagine and build mobility systems back better. While this paper provides an overview of some inspirational best practices now shaping green recovery and sustainable transport across a number of key action areas, long-term GHG emissions savings have a high potential to be counteracted by global fossil fuel investments and subsidies.

Previous WRI guidance on enhancing NDCs in the transport sector cites three key opportunities: accelerate vehicle electrification and efficiency; amplify avoid and shift solutions in avoiding unnecessary vehicle travel and shifting to public transport and active mobility; and more robustly address freight (Fransen et al. 2019). This and other guidance has highlighted the need to address climate mitigation, reimagine finance and governance, and implement multimodal integration through long-term urban transport planning. NDCs for the aviation and maritime sectors, areas often neglected, should also be included.

WRI provides five key areas for governments to consider in linking recovery and climate, based on lessons from today's recovery. These areas overlap with the aforementioned NDC enhancement opportunities and targets (as shown in Table 1):

- Stabilize and strengthen public transport within metropolitan areas.
- Avoid investments in large highway projects aside from maintenance, and instead build further momentum in active mobility infrastructure and promotion.
- Fund and incentivize vehicle electrification.
- Invest in intercity passenger and freight rail and bus facilities.
- Drive demand and careers in zero-emission fuel and technology, especially in so-called harder-to-abate areas such as aviation, maritime, and long-distance freight.

Without adequate green recovery measures, raised NDC ambitions will be more challenging to meet. For instance, long-term cuts to public transport operations limit urban access for vulnerable communities and shift travel to private vehicles for those that can afford it. Government incentives, mandates, and public charging will be critical to accelerating zero-emission vehicle adoption, which needs to accelerate 22-times faster than 2018 baselines if we are to achieve 2050 net-zero emission goals (Lebling et al. 2020). Meanwhile, stronger active mobility policies at both national and subnational levels may provide the only way to build on the momentum of growing bicycling and walking during and after the pandemic.

Strong responses to the global pandemic have often been found on the subnational level, including states and provinces, cities, and regional governments. Subnational action is of ever-growing importance if governments aim to raise ambition on climate actions. Either of their own volition or with support from national governments, these subnational governments are often the ones implementing such items as fleet electrification, supporting public transport, and implementing active mobility infrastructure. There should be clear communication between these levels so that subnational actions can provide means for NDC enhancement at the national level.

Though they address difference challenges, economic stimulus spending and NDC ambitions are closely linked. Economic recovery measures sustain jobs and economic activity to prevent severe economic contraction. NDCs, on the other hand, are commitments to address and adapt to climate change through 2030. However, synergizing these two initiatives offers a critical opportunity to simultaneously create green jobs, improve health and well-being, mitigate climate emissions, and improve equitable access to opportunities. Sustainable transport must play a central role.

Table 1. Transport Sectoral Actions that Link Recovery Measures and NDC Targets

Recovery Recommendation	Corresponding NDC targets
Support public transport through stabilization of operations from pandemic-induced shortfalls; and invest in revived systems that can regain and grow use away from private vehicles.	Modal shift targets Targets for km of high-quality public transit National public transport policies and finance programs
Harness momentum from the pandemic response with investments in bicycling and walking	Modal shift targets Targets for km of protected and safe bicycling and pedestrian infrastructure National funding programs for active mobility or dedicated funding requirements for allocations to subnational governments
Scale up recovery spending in the technologies linked to the electrification of transport, particularly in large vehicle fleets such as school and public transport buses and freight	Vehicle electrification targets Phase-out targets for internal combustion engines Charging infrastructure targets Charging infrastructure policies
Invest in intercity passenger rail and bus services	Modal shift targets for intercity travel (e.g., from air to rail or bus) Targets for km of rail, either new or reinvested
Drive demand and careers in zero-emission fuel and technology, especially in areas such as aviation, maritime, and long-distance freight	Establish fuel efficiency requirements for aviation and consider research implementing maritime mitigation Investments into fuel cell and hydrogen technologies, and other key research and development opportunities

Source: WRI Authors.

Looking Ahead

2020 was on track to be a "super year" for climate action with countries submitting enhanced NDCs, but many countries have postponed their submission to 2021 in light of the global pandemic and delayed climate negotiations. As this note has demonstrated, integrating economic recovery with NDC planning offers opportunities to maximize development and economic objectives, while also reducing the emissions contributions attributed to the transport sector. In sum:

- If a country has an economic recovery plan but not an updated NDC: Governments should revise and design NDCs to embrace strengthened climate action through environmentally-relevant economic recovery. There is increasing pressure and political will for aligning NDCs with national green recovery packages as a mechanism for job creation and an engine for rejuvenating the economy.
- If a country has an updated NDC but not an economic recovery plan: The recovery plan can consider the updated NDC as one of the inputs to the recovery planning process, meeting climate objectives while securing jobs, investing in new and existing transportation infrastructure, promoting active mobility, and growing the economy.
- If a country has both an economic recovery plan and an updated NDC: Some process of implementation alignment should follow, coordinated by the environment, planning, and finance ministries, among others.

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Endnote

1 Recent announcements by the Biden administration pledged to set the United States on the path to net-zero GHG emissions by 2050 with an interim target of decarbonizing the power sector by 2035.