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CLIMATE POLICY IMPLEMENTATION CHECK

# DECARBONISATION OF TRANSPORT

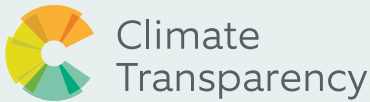
ARGENTINA

BRAZIL


COLOMBIA

MEXICO

EU



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# LIST OF ABBREVIATIONS

AFID	Alternative Fuels Infrastructure Directive
BTR	Biennial Transparency Report
ENME	Estrategia Nacional de Movilidad Eléctrica
ESG	Environmental, Social and Governance
ETF	Enhanced Transparency Framework
EU	European Union
EV	Electric Vehicle
GHG	Greenhouse Gas
ICCT	International Council on Clean Transportation
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
ITF	International Transport Forum
LGEEPA	General Law on Ecological Equilibrium and Environmental Protection
NDCs	Nationally Determined Contributions
NEDC	New European Driving cycle
PBEV	Brazilian Vehicle Labelling Programme
PROFEPA	Mexican Federal Attorney General's Office of Environmental Protection
R&D	Research and Development
RUNT	Unique National Traffic Registry
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America
WLTP	Worldwide Harmonised Light Vehicles Test Procedure

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# ABOUT THIS REPORT

2023 is the year of the first global Global Stocktake of the Paris Agreement. With the threat of overshooting the 1.5°C limit looming ever larger, all countries need to raise their ambition to curb their emissions effectively, to a degree that is fair to their development status. But ambitious targets are not sufficient on their own. Policies need to be implemented to keep the 2023 targets within reach.

Climate Transparency’s new Climate Policy Implementation Check has been designed to assess and rate the implementation status of policy instruments along four categories: legal status, institutions and governance, resourcing, and oversight.

Funded by the European Union (EU) through the EU Climate Dialogues Project, this report pilots the Implementation Check by assessing specific policy instruments for transport sector decarbonisation in Argentina, Brazil, Colombia, Mexico and the EU (see results table below).

The synthesis condenses the findings from the five country chapters. It presents learnings for policy design and the importance of implementation for the international process following 2023’s Global Stocktake.

## OVERVIEW OF POLICIES ASSESSED, OVERALL AND CATEGORY RATINGS

	ARGENTINA	BRAZIL	COLOMBIA	MEXICO	EUROPEAN UNION
<b>Ambition rating</b>	Medium	Medium	Medium	Low	High
<b>Implementation ratings 1</b>	<p>Strengthening of the railway mode in freight transportation</p> <p>MEDIUM</p>	<p>Rota 2030: Tax incentives for research and development</p> <p>FRONTRUNNER</p>	<p>National Electric Mobility Strategy (ENME)</p> <p>MEDIUM</p>	<p>NOM-163 (2017): CO<sub>2</sub> emissions standard</p> <p>MEDIUM</p>	<p>Regulation (EU) 2019/631: CO<sub>2</sub> emissions performance standards</p> <p>FRONTRUNNER</p>
<b>Implementation ratings 2</b>	<p>Integrated Non-Motorised Mobility Programme</p> <p>MEDIUM</p>	<p>PBEV: Standardisation and consumer information</p> <p>FRONTRUNNER</p>	<p>Law 1964 (2019): Promotion of electric vehicles</p> <p>STRONG</p>	<p>NOM-044 (2017): Hydrocarbon emissions standard</p> <p>MEDIUM</p>	<p>Directive 2014/94/EU: Alternative fuels infrastructure</p> <p>STRONG</p>

# INTRODUCTION

## THE TRANSPORT SECTOR IS KEY FOR ACHIEVING NET-ZERO TARGETS

The threat of overshooting the 1.5°C limit looms ever larger. To keep the goals of the Paris Agreement within reach, all countries need to raise their ambition to curb their emissions effectively (Intergovernmental Panel on Climate Change (IPCC), 2023).

Transportation is key to economic development, but it also contributes significantly to global emissions. In 2021, the transport sector accounted for 37% of the CO<sub>2</sub> emissions from end-use sectors (and 23% of the overall CO<sub>2</sub> emissions), which included an 8% increase, a heavy rebound after the first COVID-19 year (International Energy Agency (IEA), n.d.; IEA, 2022). This includes emissions from light-duty vehicles, two- and three-wheelers, buses, rail, heavy trucks, shipping, and aviation.

Since 1990, transport emissions have grown at an annual average of 1.7%. According to the IEA, this is in stark contrast to the need to achieve net-zero-emissions by 2050, which would need a reduction of 3% per year (IEA, 2022). To achieve this, the share of low-carbon fuels in the transport fuel mix globally must increase to between 40% and 60% by 2040, and between 70% to 95% by 2050 (Rogelj et al., 2018). This makes the transport sector one of the main priority areas where an increase in ambition and the effective implementation of low-carbon solutions must be achieved to a much greater degree.

Almost three-quarters of transport emissions stem from road transport (ibid), so reductions are especially urgent there. For this reason, countries will have to look at all options, be it low-carbon heavy-duty vehicles, alternative fuels, e.g. green hydrogen, or a complete phase-out of internal combustion engines. The electrification of road-going vehicles is a crucial step in this direction, if there is also a rapidly increasing share of renewables in the energy mix (ICCT, 2022a). Furthermore, shifts in transport modes are needed to keep fuel use for transport as efficient as possible. This includes, e.g., moving from private to public transportation as well as shifting freight from road to rail (Climate Transparency, 2022a).

## NEED FOR STRONG TARGETS AND DECISIVE IMPLEMENTATION

The urgent need to break the link between transport activities and emissions requires increased ambition and more international co-operation, to keep the 2030 targets within reach (ITF, 2023).

To deepen the learning within and between the Latin America region and the European Union (EU) on how to advance the decarbonisation of the transport sector, this publication focusses on four key countries: Argentina, Brazil, Colombia, and Mexico.

Advanced implementation of transport decarbonisation policies in these countries would serve as beacons of light within the region, inspiring others to follow. Showcasing successes and challenges in policy implementation to decarbonise transport in four countries in Latin America as well as in the EU, this publication invites learning from implementation successes, and further cooperation to increase impact in other cases.

Most cases in this publication focus on road transport, as it continues to not only be the subsector with the highest emissions, but also has a great potential for reductions. For Brazil, two well-established, connected policy instruments that incentivise the automotive sector to innovate and become more efficient were chosen. In Colombia, the electrification of public road transport with a specific law as well as a more general strategy towards electro-mobility was selected. In Mexico, two emissions standards were assessed, highlighting the need for public information. For the EU, the focus was on the pathway leading up to recent developments that will see full decarbonisation of cars and vans in Europe by 2035. However, for transport emissions to really fall sustainably, transport modes will have to change much more dramatically, towards fossil-free transportation. In Argentina, the analysis, therefore, focused on modal change towards railways in the cargo sector and options for non-motorised transport in private transport.

These cases by no means represent the full spectrum of transport or transport policies in any country. However, they show unique features of each country and may well lead to stronger cooperative efforts between the EU and Latin American countries.

## THE GLOBAL STOCKTAKE

The Paris Agreement (Art. 14) requires assessment of collective progress every five years as part of the regular process to increase the ambition of country climate commitments expressed as the Nationally Determined Contributions (NDCs). The purpose of the Global Stocktake is to be a living tool that continually informs countries' enhanced climate commitments. It will evaluate progress at the global level — not the individual country level — and identify overall trends that should inform countries' NDCs.

More specifically, the Global Stocktake will facilitate the assessment of global collective progress on three thematic areas: mitigation, adaptation, means of implementation and support, as well as efforts to minimise and address inevitable climate impacts that go beyond what people can adapt to, known as loss and damage (as agreed at COP24 in Katowice, Poland).

The first Global Stocktake kicked off in 2021 at COP26 in Glasgow and will culminate in 2023 at COP28 in the United Arab Emirates. It will inform NDCs to be brought forward in 2025.

## SUPPORTING THE FIRST GLOBAL STOCKTAKE

The first Global Stocktake under the Paris Agreement, to be concluded at COP28 at the end of 2023, will be a key milestone in this process by evaluating the collective progress of implementing the Agreement. With this, it will not only provide a solid foundation to empower countries to take bolder climate ambition steps, but also to guide non-state actors' policy- and investment decisions.

However, the Global Stocktake will assess collective progress at the global level — not the individual country level. Still, the interplay between climate targets and implementation is important in ratcheting up climate ambition in the next round of NDCs. Knowledge and evidence of what has been achieved in a previous period helps to set ambitious, yet attainable goals. In that sense, monitoring implementation progress on a country level is crucial for achieving an upward spiral of ambition. This is not covered by the official process.

This publication seeks to contribute to filling this gap by evaluating transport sector policies through the application of the Climate Policy Implementation Check (the 'Check'). It aims to support and complement the first Global Stocktake of the Paris Agreement.

The Check provides a concise framework to monitor whether policies are being implemented with a view towards achieving a country's NDC. The Check can be applied to climate policy instruments in any sector. This report uses the Check to assess the status of transport decarbonisation policies according to the four core categories: legal status, institutions and governance, resourcing, and oversight.

By taking this approach, the analysis offers insights into the status of implementation of the policies selected by country specialists. Being concise, comprehensive, and allowing for comparisons, it enables learning and exchange and can help deepen the understanding of good practices for the benefit of enhanced implementation.

## STRUCTURE OF THIS REPORT

This assessment presents five dedicated chapters on Argentina, Brazil, Colombia, Mexico, and the EU written by independent in-country experts, each assessing two selected transport decarbonisation policies or policy instruments.





The country chapters offer a short overview of the transport sector and national targets, as well as the current ambition of the domestic transport sector policies.

Each chapter then provides a summary and an overall rating of the implementation status of the assessed policies or policy instruments, followed by ratings per category of the assessment.

The report concludes with a summary and synthesis of results, containing an overview of the methodology used, cross-cutting findings for policy design, as well as some learnings for NDC enhancement after the Global Stocktake, with a view towards the interplay between ambition, implementation, and the international process.

## ABOUT THE CLIMATE POLICY IMPLEMENTATION CHECK

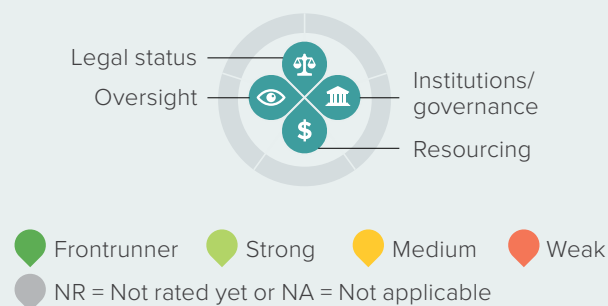
To meet the challenges of climate change, policies need to be both ambitious and implemented in a way that realises that ambition as a matter of urgency. To assess the status and quality of implementation, Climate Transparency has developed the Climate Policy Implementation Check. It assesses the implementation of policy instruments along several basic questions:

-  Does the instrument have a basis in law?
-  Has a suitable organisation been given the responsibility to implement the instrument?
-  Has the institution been given the resources to implement the instrument?
-  Is implementation being appropriately monitored to ensure success?

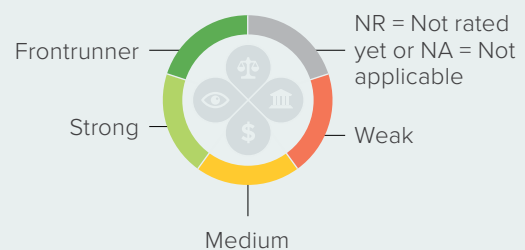
Accordingly, the assessment is grouped into four categories: legal status, institutions and governance, resourcing, and oversight. The framework can be applied to any policy in any country. This early check is important as policy outcomes and impacts on greenhouse gas (GHG) emissions are typically only measurable several years after implementation, leaving little time for course correction if implementation of the policy is weak.

For each of these categories, the framework includes specific questions that are designed so that the results are comparable across different countries. Depending on answers to the specific questions, the implementation of the relevant policy instrument in each category is rated as Weak, Medium, Strong or Frontrunner. These ratings are combined to produce an overall rating for the policy implementation. For more information, please visit our website: [www.climate-transparency.org/implementation-check](http://www.climate-transparency.org/implementation-check)

### The four categories



### Policy assessment rating (overall)







# ARGENTINA



A cargo ship at Puerto General San Martín on the Parana River, Argentina - August 2021. Photo by Juan Mabromata/AFP via Getty Images.

## ARGENTINA PLEDGES TO USE LOW-EMISSION MODES OF TRANSPORTATION

Written by Gabriel Blanco

The climate and environmental impacts of the transportation sector in Argentina are due largely to the road transportation sector, both in terms of freight and passengers.

The country has approximately 22 million motor vehicles, almost all of which operate on fossil fuels, making transportation the second largest contributor in terms of GHG emissions, reaching 50.22 MtCO<sub>2</sub> in 2018, which represents 13.9% of Argentina's total emissions (Balances Energéticos, n.d.).

At the urban level, it is estimated that 75% of passengers choose the automotive mode of transportation, which rises to 97% for interurban trips (67% private automobiles, 30% intercity buses). The preponderance of the automotive mode is also evident in the freight transport system, where it represents approximately 93% of trips, not only for long distances and interurban movements but also urban transport. Rail and river transport together only represent the remaining 7%.

In 2017, Argentina released its first action plan on climate change for the transport sector. An update was published in April 2023, with an ambition aligned with the objectives established in its NDC. This Plan mainly aims at the replacement of vehicle technologies.

According to the Plan, Argentina's goal for 2030 is to mitigate 15 MtCO<sub>2</sub>e from the transport sector. This will be accomplished by improving urban planning in its most important cities, implementing energy efficiency measures, and replacing the current fleet of public transport vehicles with low- and zero-emission ones. Within this assessment, the focus is on mobility planning and modal shift rather than on fleet renewal because, at the time of writing, Argentina has not yet implemented any technological replacement activities beyond the approval of the Plan.

Argentina is the world's eighth largest country by land area, so the distances that vehicles must travel are

very long. Thus, road freight transport accounts for most of the emissions of the transport sector in Argentina. For this reason, actions related to the improvement of intermodal efficiency through the increased use of railroads were selected as a relevant policy for the reduction of emissions in the sector.

The country does have a wide network of railways, with a potential that is still untapped. This provides an important opportunity to discourage the use of trucks over long distances where their efficiency is lower.

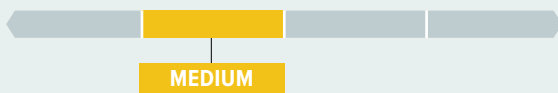
On the other hand, 92% of the Argentinian population is urban, well above the world average (54%), and above the average for Europe (75%), the United States of America (USA) (82%) and the region itself (Población Urbana en Argentina, n.d.). Despite this, very few cities

have mobility plans and, as mentioned, most of its inhabitants use private cars as the main mode of mobility.

Taking into account these two factors – long-distance freight road transportation and personal vehicle use in urban areas – reveals how significant of an impact a modal shift towards less polluting forms of transport could have on decarbonisation goals. This modal shift is already a central part of Argentina's Strategy for Resilient Development with Low Emissions in the Long Term to 2050 (ELP, 2022), is referenced in its NDC (Argentina, 2021), and incorporated in its National Plan for Mitigation and Adaptation to Climate Change (Argentina, 2022), prepared and approved in 2022 within the framework of the National Cabinet on Climate Change, created by Law No. 27520.

## AMBITION CHECK

### Modal shift



Argentina has established a path to reduce transport emissions by 2030 but does not have a clear long-term strategy for decarbonisation by 2050.

The sectoral commitments included in its National Plan of Adaptation and Mitigation to Climate Change, published in 2022, have a reasonable degree of

technical soundness, and appear to be adequate to meet the emissions reduction targets adopted by the country. However, the transition from defining goals to taking concrete action, so far, has been slow.

While the strengthening of the railroad system, with gradual increases in transported cargo, has achieved a tangible level of execution, the remaining measures aimed at promoting sustainable mobility, including Resolution No. 266/2022 passed by the Ministry of Transport, which creates an integrated non-motorised mobility programme seeking to discourage car use and promote more efficient public transport, still lack measurable implementation.

## UPCOMING DEVELOPMENTS

During 2023, with the cooperation of Cooperación Andina de Fomento (CAF), a pre-investment analysis will be conducted on the elements and instruments necessary to improve the operation and infrastructure of the C13 and C14 branches of the Belgrano Railroad that connects with Chile and with the Güemes Logistics Node in Salta.<sup>1</sup>

In addition, the World Bank will be supporting Argentina in the planning, design and implementation of sustainable urban transport systems. This initiative will encourage the adoption of international best practices to improve the affordability, quality and accessibility of low- and zero-emissions public transport, while promoting gender mainstreaming in urban transport.<sup>2</sup>

## IMPLEMENTATION CHECK SUMMARY

## LOW-EMISSION MODES OF TRANSPORTATION

## POLICY INSTRUMENTS

## Strengthening of the railway mode in freight transportation

## RATING

MEDIUM



One of the objectives in terms of mitigation in the transportation sector is for the Argentinian railroad to gain a greater share of the modal distribution by increasing its role in specific solid bulk niche markets, such as grains, minerals and sands as well as servicing the market for general containerised and non-containerised cargo. To do so, it is estimated that an investment of USD 1,450 million will be required by 2030, with the expectation of increasing the railroad's share in the modal matrix to 10.9% of total tonne-kilometres.

In 2015, Argentina declared the reactivation of passenger and freight railroads, along with the renewal and enhancement of railway infrastructure, and the adoption of innovative technologies and services aimed at improving the modernisation and efficiency of the railroad transportation system to be of national public interest and a top priority objective. At the same time, it created a robust new institutional and regulatory framework with greater strength and resilience as well as securing budget allocations, approved by the National Congress, to incorporate provisions for its implementation.

The information about progress to date is easy to access and understand: it shows the completion of works and the increase in loads transported by the railway system. However, there is no systematic data collection that makes it possible to measure its impact on emissions reductions.

## Integrated Non-Motorised Mobility Programme

## RATING

MEDIUM



Discouraging the use of automobiles through improved planning and the development of urban infrastructure for non-motorised mobility is one of the most relevant additions to Argentina's National Climate Change Mitigation and Adaptation Plan.

In 2022, through Resolution No. 266, the Ministry of Transportation created the "Integral Non-Motorised Mobility Programme" to provide technical, economic, and financial assistance to provincial and/or municipal governments for the purposes of mobility planning in an accessible, equitable, sustainable and gender-sensitive manner.

In particular, the programme focuses on the development of cycling infrastructure and the implementation of parking lots for private vehicles near city entrances or in transfer zones in downtown areas, in order to encourage users to integrate individual trips with the public transportation system. The implementation of such infrastructure, however, requires the participation of multiple stakeholders in charge of urban mobility planning in local governments. Progress of the implementation of the programme cannot yet be verified due to the lack of accessible data.

Likewise, although the National Government included budgetary provisions to implement the project, there is no information available regarding the progress in relation to the construction of infrastructure or the degree to which automobile use has been reduced.

## INSTRUMENT SUMMARY

# Strengthening of the Railway Mode in Freight Transport

RATING

MEDIUM



## OVERSIGHT

WEAK

The possibility of consistently monitoring progress in the implementation of the instrument under analysis is not always easy. On the one hand, it is important to ensure the breadth and timeliness of the information on investment in new railroad works and in the acquisition of rolling stock and other assets required to strengthen the system.

At the same time, it is often difficult to access information corresponding to the tonnes of cargo mobilised by trains.

However, Argentina does not have a solid system of indicators that would allow reviewing historical series of data and associating them with the objectives established in relation to the reduction of CO<sub>2</sub> emissions that would result from the implementation of this measure.



## LEGAL STATUS

STRONG

Law 27132 of 2015 declares “of national public interest and as a priority objective of the Argentine Republic the reactivation policy of the passenger and freight railroads, the renewal and improvement of the railway infrastructure and the incorporation of technologies and services that contribute to the modernisation and efficiency of the railway transportation system”.

Likewise, the National Plan for Mitigation and Adaptation to Climate Change, prepared by the National Cabinet on Climate Change and approved by Resolution No. 146/2023 of the Ministry of Environment and Sustainable Development, pursuant to the provisions of Law 27520, establishes the strategic guidelines of the Argentine Government on sustainable mobility and the specific goals related to the strengthening of the railway system. Since 2006, the import of goods for the railway system has benefited from a special import regime, with strong tariff exemptions.



## RESOURCES

MEDIUM

The amount of investment in railroads has made consolidated progress since the middle of the last decade. In particular, it should be noted that the National Budget for fiscal year 2023 foresees specific allocations aimed both at sustaining the institutional framework and providing resources for the development of new infrastructure and the purchase of rolling stock.



## INSTITUTIONS &amp; GOVERNANCE

STRONG

The institutional framework of the railway system has been strongly consolidated since 2015, with the enactment of Law No. 27132. This Law set the stage for organising the competences of the various actors in the system, through the establishment of four state companies: the Railway Infrastructure Administration SE (ADIFSE) in charge of managing everything related to the development of railway infrastructure works; the Sociedad Operadora Ferroviaria Sociedad del Estado (SOFSE) and the firm Belgrano Cargas y Logística in charge of the operation of the passenger and cargo system, respectively; and, as general coordinator of the system, the company Ferrocarriles Argentinos Sociedad del Estado.

The consolidation of this governance framework has played a crucial role in being able to secure financing and investments from multilateral organisations and public banks, which is essential for strengthening the system.

## INSTRUMENT SUMMARY

# Integral Non-Motorised Mobility Programme

RATING

MEDIUM



## OVERSIGHT

WEAK

There are no reports on the degree of progress of the Programme in question, nor is there any information available on the official websites of the application authority.

It has only been possible to access newspaper articles on the development of some infrastructure works, without mentioning the progress made with respect to the committed goals.

Likewise, the National Climate Change Adaptation Plan does not include specific indicators that are scientifically and solidly established with respect to this policy and its impacts on emissions reduction.

Finally, it should be noted that there are no reliable data on automobile use that would make it possible to demonstrate the disincentive to use automobiles, which is one of the objectives of the instrument.



## LEGAL STATUS

STRONG

In 2022, the Ministry of Transportation issued Resolution No. 266. This Resolution states that the objective of the Integral Non-Motorised Mobility Programme will be to adapt spaces to provide complementary services in areas suffering from congestion problems and where high motorisation rates and the provision of public transportation services offer the possibility of promoting a modal shift to discourage the use of automobiles.

Likewise, the National Plan for Adaptation and Adaptation to Climate Change, approved by Resolution No. 146/2023 of the Ministry of Environment and Sustainable Development, as established by Law 27520, defines the strategic guidelines and goals of the Argentine Government regarding sustainable mobility planning.



## RESOURCES

WEAK

In the most recent financial years (2021 and 2023), the Programme has had a budget for the implementation of bikeway infrastructure approved by the National Congress.

However, given that effective implementation of policies and plans requires the existence of a relevant counterpart in the local jurisdictions, most local governments lack offices in charge of mobility planning as well as the sufficient resources to do so. In this regard, it is important to note that the Ministry of Transport, with the support of the EU within the framework of the Euroclima Programme, is assisting a select group of cities to strengthen their mobility planning capacities.



## INSTITUTIONS &amp; GOVERNANCE

MEDIUM

The Secretariat of Interjurisdictional Articulation of the Ministry of Transportation was designated by Resolution No. 266/22 as the implementing authority of the Integral Non-Motorised Mobility Programme.

Likewise, the National Directorate for the Development of Transportation Works will be responsible for assisting in the development, agreement, control, and execution of the project, in coordination with local jurisdictions. The Directorate will be responsible for the analysis of preliminary projects, management control, and accountability for each of the actions implemented.

In theory, the procedures established for project selection and implementation provide for transparency mechanisms. However, there is insufficient information available to ensure their proper functioning.

# BRAZIL



A woman uses an electric charging station in a parking garage in Brazil. Photo by Anderson Coelho via Getty Images.

## TRANSITION TO ZERO-EMISSIONS CARS

Written by Daniel Schmitz, George Goes, William Wills

In September 2016, Brazil ratified the Paris Agreement, taking the initiative to reduce carbon emissions by 37% by 2025 and 43% by 2030 from 2005 levels (Brazil, 2022). Subsequently, the country introduced or continued to implement instruments aimed at addressing climate issues in the transport sector. Examples include promoting the production and consumption of biofuels, improving energy efficiency, and expanding high-capacity transport infrastructure.

Launched in 2018, the RenovaBio Programme aims to increase the contribution of biofuels to the national energy balance. This programme follows a framework of 10-year targets, emissions certification standards, and decarbonisation credits allocated to biofuel producers and importers. In conjunction with previous policy instruments, this initiative has played a part in the gradual increase in biofuel blending rates. Currently, the biodiesel-diesel blend is at 12% by volume, and it is expected to increase to 15% by 2026. On the other hand,

the gasoline-ethanol blend has remained at 27% since 2015, although an increase to 30% is being considered.

The Cabotage Transport Stimulation (2021), Advance (2017), and Investment Partnerships (2016) programmes were introduced with the aim of promoting public and private investments in critical infrastructure projects, essentially replacing the Growth Acceleration Programme (PAC) (2007). These initiatives have primarily targeted regional transport, with a strong emphasis on high-capacity modes such as cabotage and inland navigation.

The application of these policy measures has led to significant progress in certain domains, particularly in the biofuels industry. Nonetheless, the Brazilian transport sector is still heavily dependent on mineral diesel, at 45% of total energy demand (Energy Research Company (EPE), 2022). The dependence is acutely relevant with respect to freight transport (84%). While liquid biofuels

account for 23% of the energy consumed in the sector, electricity represents only 0.3%.

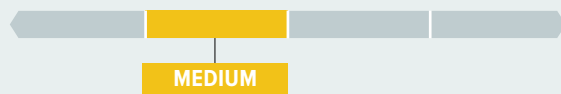
Therefore, energy security is one of the biggest challenges for the coming decades in the Brazilian transport sector, especially in relation to dependence on diesel. Supply instability<sup>3</sup> suggests that the biofuels market cannot represent the only alternative.

Despite the need to diversify transport options that are not reliant on fossil fuels, Brazil does not yet have an official electric vehicle (EV) strategy. Nevertheless,

a set of measures has recently been released that can help accelerate the adoption of EVs. Standards and regulations<sup>4</sup> have been specifically developed to define the minimum requirements for the installation, operation, or maintenance of EV charging infrastructure. Federal, state, and local governments are expected to provide support in a range of ways, such as phase-out regulations,<sup>5</sup> purchase incentives, interest rate subsidies,<sup>6</sup> registration fee exemptions,<sup>7</sup> and tax benefits, to make EVs more affordable for consumers.

## AMBITION CHECK

### Phase-Out of Fossil Fuel Cars



Transport emissions account for almost half of the energy-related carbon emissions in Brazil (Brazil MCT, 2022). The main government policy to reduce the use of fossil fuels is RenovaBio, which was launched in 2016 and updated in 2022.

Ethanol, primarily derived from sugarcane but also from corn, is the most significant biofuel locally produced. Currently, the country is considering increasing the ethanol-gasoline blend from 27% to 30%. Biodiesel, on the other hand, is primarily derived from soybean and animal fat, and there are plans to increase the biodiesel-diesel blend from 12% to 15% by 2026.

Incentives for EVs are also gaining momentum, with a reduction in import duties and a lower tax rate on industrial products associated with their production. Furthermore, there is a bill in progress that would exempt these vehicles from import duties until the end of 2025. Despite recent incentives to promote EV adoption, the government has not announced any strategic plan to phase out fossil fuel cars.

Heavy-duty vehicles have been included in the Rota 2030 programme, which established goals for improving their energy efficiency. However, the Brazilian Vehicle Labelling Programme (PBEV) remains limited to light-duty vehicles. Between 2021 and 2022, the stocks of natural gas-powered and battery-electric urban trucks increased by 200%, partly due to the expansion of sustainable logistics programmes and Environmental, Social and Governance (ESG) initiatives. Although a few cities, such as São Paulo, have successfully introduced battery-powered electric buses, these cases are still rare. The government has not announced any strategic plan to phase out fossil fuel buses.

## UPCOMING DEVELOPMENTS

In the upcoming cycle of the Rota 2030 programme (June 2023 to December 2027), an update is expected to be launched, establishing the target for energy efficiency gains ranging from 8% to 12% and/or incorporating carbon reduction targets through a well-to-wheel approach. At this stage, the rules are still under development. A bill (No. 403/2022) to exempt EV and hybrid vehicles from import tax by 2025 is currently under consideration. The PBEV is studying improvements in the testing procedure for electric cars, as well as the inclusion of motorcycles.

## IMPLEMENTATION CHECK SUMMARY

## TRANSITION TO ZERO-EMISSIONS CARS

## POLICY INSTRUMENTS

## Rota 2030: Tax incentives for research and development

## RATING

FRONTRUNNER



The Rota 2030 programme is a tax incentive instrument aimed at promoting Research and Development (R&D) projects within the Brazilian automotive industry. Its main focus is to enhance energy efficiency, structural performance, and the availability of assistive technologies. The Research Development Foundation (FUNDEP), a non-profit private institution accredited by the Ministry of Development, Industry, Commerce and Services (MDIC) coordinates the programme.

The programme incorporates well-defined criteria and implementation mechanisms. In essence, there are three obligations for those who join the programme: (i) enrolment in the PBEV; (ii) verification of a minimum level of energy efficiency; and (iii) verification of a minimum level of structural performance and incorporation of safety-focused assistive technologies. Programme monitoring results are verified and made public in five-year cycles. The aim of the initial cycle of the programme (until 2022), to attain an average fuel consumption of 1.67 MJ/km for new vehicles sold by participating companies, was successfully accomplished.

Incentives provided by the government include income tax reduction for companies that invest in R&D, as well as complete exemption from import tax for parts without a comparable alternative in the local market. For the latter case, the automaker must invest 2% of the total value of imports in research, development, and innovation projects through qualified institutions.

By choosing to obtain the tax benefits and incentives associated with the programme, the company becomes responsible for meeting specific obligations, which are subject to penalties. As R&D funds come from the private sector, benefiting from tax exemptions, the programme has a low-risk profile for those involved. Although monitoring results have been made public, dissemination to wider audiences has not been successful.

## PBEV: Standardisation and consumer information

## RATING

FRONTRUNNER



The PBEV aims to measure, standardise, and record the energy efficiency and atmospheric emissions of light vehicles available for sale in Brazil. The programme serves as a benchmarking tool for potential buyers and is a crucial instrument for tracking the progress of the Rota 2030 programme. The instrument is regulated by federal law and was launched on a voluntary basis in 2008. The responsibility for implementing the programme lies with the National Institute of Metrology, Quality, and Technology (INMETRO), which operates under the Ministry of the Environment (MMA).

The PBEV targets all automakers that sell light vehicles in Brazil. Since 2017, all new light vehicles sold in the Brazilian market are covered by the programme. The primary reason for this result was that automakers who decided to participate in either the Inova-Auto programme or the Rota 2030 (which offer attractive tax and other benefits) were obliged to also comply with PBEV.

Automakers must perform tests based on “city” and “highway” driving cycles and report the results to the programme. Energy consumption is reported in MJ/km, while CO<sub>2</sub>, NO<sub>x</sub>, and CO emissions are expressed in g/km. As the number of plug-in hybrid and battery EVs offered in the local market continues to increase, the criteria for achieving a high score in the programme are becoming increasingly stringent. Benchmarking results are widely disseminated and are considered by individuals and companies when upgrading their vehicles. Although the programme does not demand improvements in energy efficiency, the competition between automakers tends to improve the average scores over time.



## INSTRUMENT SUMMARY

# Rota 2030: Tax incentives for research and development

RATING

FRONTRUNNER



## OVERSIGHT

STRONG

Participating companies have pursued different strategies within the programme, with some achieving success through increased sales of plug-in hybrid and battery EVs, and others focusing on improving the efficiency of internal combustion engine vehicles. Programme monitoring results are verified and made public in five-year cycles. Despite the transparency, it is failing to reach a wider audience.



## LEGAL STATUS

STRONG

Although tax incentive regulations in Brazil often involve prolonged discussions, the Rota 2030 was promptly endorsed by Brazilian regulators (Chamber of Deputies and Senate) in 2017. The programme was established shortly after the end of Inovar-Auto, which had a similar aim and was operational from 2013 to 2017. The programme will be in effect until 2032, but there is high confidence that an updated version will be released after that period.



## RESOURCES

STRONG

The cost recovery mechanism of the Rota 2030 programme is clear. The programme's resources come from the private sector, which benefits from tax exemptions. The implementing bodies are well-resourced, and the associated risk is low or, at least, controlled. Despite this, the decline in sales of new motor vehicles in Brazil may reduce the programme's attractiveness and increase the risk in the coming years.



## INSTITUTIONS &amp; GOVERNANCE

STRONG

The programme is coordinated by the Research Development Foundation (FUNDEP), which operates under the authority of the Ministry of Development, Industry, Commerce, and Services (MDIC), whose representative currently holds the position of Vice President of Brazil. The criteria and implementation mechanisms are clear, including penalties for non-compliance with the programme's rules. However, by allowing improvements in internal combustion engines as a form of progress, the programme may not be adequately addressing the complete transition to more efficient energy sources, beyond liquid fuels.

## INSTRUMENT SUMMARY

## PBEV: Standardisation and consumer information

RATING

FRONTRUNNER



## OVERSIGHT

STRONG

Benchmarking results are widely disseminated and taken into consideration by individuals and companies when renewing their fleet. Currently, all new light vehicles available in the market are included in the PBEV, meeting its initial goal. The programme is based on the principle that competition among automakers will lead to higher average scores over time. Hence, no assessment process to evaluate the programme's quantitative outcomes is employed.



## LEGAL STATUS

STRONG

In 2008, the programme was introduced on a voluntary basis. The number of companies participating in the programme increased over time, leading to the inclusion of all new light vehicles in the Brazilian market by 2017. This commitment was partly influenced by the Inovar-Auto and Rota 2030 programmes, which stipulated that participating companies must comply with the PBEV.



## RESOURCES

STRONG

The automakers are responsible for conducting and financing the tests, while the government assumes the expenses related to programme management and result dissemination. The implementing bodies are well-resourced, thereby ensuring that any associated risks are either low or controlled.



## INSTITUTIONS &amp; GOVERNANCE

STRONG

The INMETRO, which is controlled by the MMA, is the institutional body responsible for implementing the PBEV. The programme's regulations, which are transparent and well-defined, play an indirect role in phasing out fossil fuel cars. Although the programme does not mandate improvements in energy efficiency, competition among automakers tends to improve average scores over time. With an increasing number of plug-in hybrid and battery EVs available in the local market, achieving a high score in the programme is becoming more challenging as the criteria for success become more stringent. Overall, the PBEV has made great strides, although there is still room for improvement by expanding its scope to include motorcycles, buses, and trucks, which would lead to greater efficiency gains in the sector.

# COLOMBIA



Electric public buses in Bogotá, Colombia in September 2022. Photo by Raul Arboleda/AFP via Getty Images.

## COLOMBIA BOOSTS SUSTAINABLE MOBILITY: ELECTRIFICATION OF PUBLIC TRANSPORT

Written by Álvaro Pinzón Velásquez, Gian Fava Caceres, Verónica Valencia Hernández, Giovanni Pabon Restrepo, Juan Parra Rodas

One of Colombia's transport sector's main challenges is the inefficiencies caused by the composition of its national vehicle fleet, which is dominated by diesel internal combustion engine vehicles (UPME, 2019). The transport sector is responsible for 37.7 MtCO<sub>2</sub>e per year (12.48% of Colombia's total emissions) (Institute of Hydrology, Meteorology, and Environmental Studies (IDEAM), 2022) and demands approximately 40% of the total generated energy (Ritchie, 2022). The adoption of EVs is an important part of Colombia's strategy to reduce emissions and meet international climate objectives.

In the sectoral NDC for the transport sector, the main strategic line of mitigation is the promotion of electric mobility, which is expected to reduce 4 MtCO<sub>2</sub>e through expanding the vehicle fleet, to reach 600,000 registered EVs by 2030 (Estrategia Nacional de Movilidad Eléctrica (ENME), 2020; MinAmbiente, 2021). To achieve

sustainable mobility, Colombia's decarbonisation policy has focused on four axes, including incentives for zero- and low-emissions technologies; specific market approaches; charging infrastructure; and regulatory, political, and institutional frameworks (ENME, 2019). For mass public transportation systems, the government has set targets for the purchase of new EVs (at least 10% by 2025; 20% by 2027; 40% by 2029; 60% by 2031; 80% by 2033; and 100% by 2035) (Ley 1964, 2019). The goal for mass public transport, therefore, is that from 2030 the percentage of the total new zero-emissions fleet for that year must be at least 40%, and from 2035, that 100% of new vehicles purchased must be zero-emissions vehicles (Law No. 1964 of 2019). Moreover, the government has begun to formulate regulation for the operation and marketing of public charging infrastructure, recognising that charging infrastructure planning is crucial to ensure

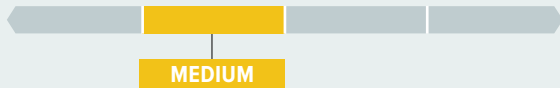
the success of the transition to low-carbon transport, since EVs require an adequate network of charging stations.

Although current Colombian policy covers both public and private transport, there are more specific objectives and controls focused on the public sector.

In the Colombian Policy Check, the public transport sector is viewed as a pioneer in sustainable transport, and the electrification and regulation of public charging infrastructure is one of the main fronts of the government's efforts to advance towards low-carbon transport.

## AMBITION CHECK

### Phase-out of fossil fuel cars



Law 1964 of 2019 promotes sustainable mobility through tax reductions, special parking spots and other benefits for EVs. Starting in 2025, at least 30% of the new cars purchased or rented for the official fleet (not including public transport) are required to be electric. For public transport systems, cities are required to increase the share of the electric buses in their overall bus purchases from 10% in 2025 to 100% in 2035 (the share increases gradually in the period). By 2023, all the major cities are required to have at least five public fast-charging stations regardless of whether there is demand or not for such infrastructure (Bogota is required to have at least 20 stations). At the time of writing (April 2023) there were about 1,586 public electric buses (CEPAL, 2022), located in the

main cities of Colombia: Bogotá 1,485 (15.7% of total buses), Medellín 65 (1.6% of total buses), and Cali 36 (<1% of total buses).

The ENME, a national electric mobility strategy, marks the first comprehensive strategy outlined in the roadmap to facilitate the entry and operation of EVs in Colombia. Its purpose is to identify measures that will accelerate the transition towards electric mobility and to facilitate the integration of 600,000 EVs by 2030. The ENME provides an overview of the current situation, the challenges faced, the instruments and investments needed to decarbonise transportation in Colombia, and specific objectives that reflect a long-term perspective. The ENME has established a regulatory and policy framework that will ensure the promotion of electric mobility in Colombia, as well as the evaluation and development of economic and market mechanisms necessary for its promotion. However, although the strategy is comprehensive, there is no ambition and clarity on how it will be implemented, the costs and schedule of its implementation, or how it will be monitored.

## UPCOMING DEVELOPMENTS

There are plans by the government to update these strategies and there is an ongoing project to modify and enhance Law No. 1964 of 2019 (Proyecto de ley No. 170, 2020). In addition, there are plans underway to further implement public EVs, such as the railroad master plan, the third line of Medellín's subway, the construction of the Regional Norte (suburban train), the development of Bogotá's territorial arrangement planning (POT) which includes the deployment of five subway lines, the construction of seven cable railways, and the setting up of the North and West Regiotram (suburban train), among others.

## IMPLEMENTATION CHECK SUMMARY

## ELECTRIFICATION OF PUBLIC TRANSPORT

## POLICY INSTRUMENTS

## Law 1964 (2019): Promotion of electric vehicles

## RATING

STRONG



Law No. 1964 of 2019 is a national regulation with the mandate to be implemented throughout Colombia to promote the use of EVs. This Law was approved by the National Congress on 11 July 2019. The legal basis for the implementation of the policy has been established, and there are institutional bodies responsible for implementing the policy instrument and its regulations such as the Ministry of Transportation, the Ministry of Mines and Energy, the Ministry of Environment and Sustainable Development and the Ministry of Commerce. The regulations and objectives are clear and transparent, with the law containing a schedule of minimum share of EVs in new public transport, reaching up to 100% by 2035 from 10% in 2025, to 20% in 2027, 40% in 2029, 60% in 2031, and 80% in 2033. However, the policy lacks exit dates for internal combustion public vehicles and goals for the share of EVs in the national fleet in the short, medium, and long term.

The policy instrument is purely a regulation and, therefore, does not have budgetary implications. Associated costs are managed at a regional level, but there is no clarity on the allocation of resources. So far, there is no evidence of publicly available monitoring results, but the National Comptroller's Office is expected to oversee and monitor compliance with the acquisition of public EVs as stated in the 8th article of the law. Despite the lack of an official evaluation process to measure the policy instrument's quantitative results, reports published by the National Association for Sustainable Mobility (ANDEMOS) and the data available on the Unique National Traffic Registry (RUNT) web page suggest that the policy's objectives will be achieved within the established time frame.

## National Electric Mobility Strategy (ENME)

## RATING

MEDIUM



The ENME is considered to be the official roadmap policy for the implementation of national electric mobility in Colombia. The ENME's goal is to acquire 600,000 vehicles (taxis, passenger, light-duty, light-trucks and government vehicles) by 2030, and it is aligned with the electrification of public transportation. The policy instruments that support the ENME are clear and transparent, but there is no study by the government that explains how the policy will reduce GHG emissions or energy demand.

While the ENME establishes that the necessary resources will be allocated to carry out the plans and projects contemplated in the strategy, there is also no clarity on the cost implications of the policy, the mechanisms for financing, or if budget allocations have been established and how this will be done to meet the goals established in the strategy. There is no evidence to suggest whether the implementing bodies are well-resourced, and no official monitoring reports have been published. While there are different sources where results on the deployment of EVs in Colombia are published, no periodic publication of an integrated results report evaluating indicators on progress in meeting the objectives of the ENME has been published. Additionally, there is no evaluation process set up or communicated clearly to measure the quantitative result of the implementation of this policy instrument.

## INSTRUMENT SUMMARY

# Law 1964 (2019): Promotion of electric vehicles



RATING

STRONG



## OVERSIGHT

MEDIUM

The degree of transparent monitoring and oversight of the implementation of Law No. 1964 of 2019 is medium. Regarding the publication of results, there are no official follow-up reports from the government side. The government follows the progress to meet the established goals through reports by the RUNT and Andemos, but there has not yet been an integrated report published with the outcomes. Regarding the evaluation of the quantitative result of the policy instrument, no formal evaluation process has been reported to date.



## LEGAL STATUS

STRONG

This law, also known as the Electric Mobility Law, is a clear instrument that establishes incentives and goals for the promotion of EVs. The law has a robust legal foundation and is supported by other provisions related to environmental protection and sustainable mobility.



## RESOURCES

MEDIUM

The management of the resources required for the implementation of Law No. 1964 of 2019 is medium. The law does not have a publicly available budget or information regarding the costs associated with its implementation. Furthermore, there is no specific strategy for managing the necessary resources for successful execution, nor are there details on cost recovery mechanisms.



## INSTITUTIONS &amp; GOVERNANCE

STRONG

The rules and regulations related to institutions and governance established by Law No. 1964 are strong, clear, and credible enough to meet the objective of promoting the adoption of EVs in Colombia and developing the necessary charging infrastructure. The Law establishes responsibilities related to various public institutions in charge of its implementation and monitoring, such as municipalities, the Ministry of Transport, the Ministry of Environment and Sustainable Development, and the RUNT.

## INSTRUMENT SUMMARY

## National Electric Mobility Strategy (ENME)



RATING

MEDIUM



## OVERSIGHT

WEAK

Through the RUNT, the government has published data of the number of EVs that have entered Colombia. However, there are no periodic integrated reports published by the government with the accountability required for follow-up related to goals set on EV adoption, infrastructure expansion load and other key indicators. No evaluation process has been reported to date.



## LEGAL STATUS

STRONG

The legal status for the implementation of the ENME in Colombia is strong. The ENME sets specific objectives to promote the adoption of EVs across different sectors and for the development of electric charging infrastructure throughout the country. The ENME is also supported by other provisions that represent a legal basis, among them Law No. 1964 of 2019.



## RESOURCES

MEDIUM

The management of the resources required for the implementation of the ENME is medium. The ENME does not establish a clear strategy for managing the necessary resources for implementation, and the level of resources required remains uncertain due to the lack of publicly available information to monitor it.



## INSTITUTIONS &amp; GOVERNANCE

MEDIUM

The governance of the ENME in Colombia is partially well-structured to achieve the objectives established in the national electric mobility policy. The rules and regulations established in the ENME are clear and credible. However, there is no transparency with regard to the processes for achieving these policy goals, even though there is clarity and certainty about who is responsible for its implementation, which includes local authorities, the Mining-Energy Planning Unit, the Ministry of Mines and Energy, the Ministry of Transport, the Ministry of Environment and Sustainable Development, among others.

# MEXICO



A person observes air pollution over Mexico City in 2021. Photo by Gerardo Vieyra/NurPhoto via Getty Images.

## EMISSIONS PERFORMANCE STANDARDS FOR CARS

Written by Mariana Gutiérrez Grados, Analuz Presbítero, Jorge Villarreal

At COP27, Mexico announced an increase of 13 percentage points in its NDC concerning the previous NDC (presented in 2016), thereby advancing from 22% to a 35% GHG emissions reduction by 2030. The transport sector emits almost 20% of Mexico's GHG emissions (148 GgCO<sub>2</sub>e in 2019 as per last inventory) (SEMARNAT-INECC, 2022). Therefore, increasing the efforts to decarbonise is critical.

Advancing the decarbonisation of the transport sector in Mexico is particularly challenging considering that natural gas and oil make up 99% of the energy mix in the transport sector (Climate Transparency, 2022b) and that enabling conditions, such as regulation or public policy to achieve Mexico's climate commitments in the transport sector, need to be made more stringent and updated. Transformational changes, such as limiting urban growth, development-oriented transport, and greater coordination amongst the housing, urban, climate change and health agendas, should be implemented; however, cost-effective actions are also required.

In the transport sector, the automotive subsector is the leading emitter with 92% of the sector's emissions, followed by aviation (6%), maritime transport (1%) and, lastly, rail transport (1%) (Semarnat-INECC, 2022). The automotive subsector, which depends on oil and diesel, consists of commercial and light passenger vehicles representing 63% of its emissions, followed by heavy freight and passenger vehicles emitting 32%, and motorcycles with 5% (Gutierrez et al., 2020). This shows that light passenger vehicles and heavy freight transport are key contributors to the automotive subsector's GHG emissions and the primary source of outdoor air pollution in Mexican cities. The measures to advance decarbonisation and reduce emissions in the transport sector can also deliver significant socio-environmental benefits for citizens (such as better air quality and road security). Finding ways to counteract fossil-fuel dependence and seek energy efficiency through policies that discourage the use of motorised transport, increase efficiency in freight transport and light vehicles, and



accelerate the introduction of new technologies such as hybrid and EVs are urgently needed.

However, strengthening automotive vehicle regulations, like the NOM-163 and the NOM-044 is a necessary first step, as both instruments offer the most cost-benefit measures to comply with Mexico's NDC. In particular, NOM-163 is the measure with the highest mitigation potential of the entire portfolio of NDC measures to reduce emissions, at up to 19.5 MtCO<sub>2</sub> by 2030 (ICM, 2022). Therefore, it is essential to make it more stringent and advance its implementation.

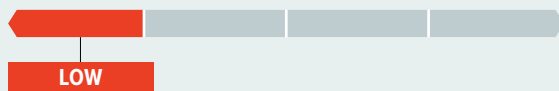
Both the fuel efficiency standard, which limits CO<sub>2</sub> emission levels in the new light vehicle fleet and

improves the average fuel efficiency of new vehicles sold in Mexico (NOM-163), and the emissions standard to reduce air pollutants,<sup>8</sup> including black carbon from heavy vehicles (NOM-044), have not been upgraded since the last decade. This has resulted in a high opportunity cost of not making the regulation more stringent.

This analysis focuses on both regulations, part of the measures included in Mexico's NDC that the government submitted in 2022. It also takes a closer look into improving transparency and accountability mechanisms across decision-making to guarantee the upgrade, implementation, and compliance of both norms to achieve Mexico's NDC mitigation targets.<sup>9</sup>

## AMBITION CHECK

### Phase-out of fossil fuel cars



NOM-163 is based on the General Law on Ecological Equilibrium and Environmental Protection (LGEEPA), the General Law on Climate Change (LGCC), and the Paris Agreement. Also, NOM-163 is mentioned in Mexico's 2022 NDC as one of the key policy mitigation measures despite not including details on how it contributes to achieving mitigation efforts or the plans to advance its implementation. NOM-163 aims to increase fuel efficiency in new automotive vehicles, to reduce fuel consumption on average (by improving kilometres travelled per litre), and to

decrease GHG emissions from the transport sector. However, the flexibility of its goals and the facilities provided to the automakers included in this standard to guarantee compliance reduces the effectiveness of NOM-163 itself and, instead, discourages the private sector from innovating technological change and implementing ambitious measures (Jimenez and Pineda, 2022).

NOM-044 is also based on the LGEEPA due to its objective in reducing hydrocarbon emissions from heavy-duty vehicles in the transport sector. Mexico, in its 2022 NDC, committed to reducing its black carbon emissions by 51% by 2030. Adopting NOM-044 would contribute to achieving Mexico's pledge, also established by the General Law on Climate Change (LGCC), and will contribute to reducing the negative health and environmental impacts of heavy-duty diesel vehicles.

## UPCOMING DEVELOPMENTS

Recent governmental statements demonstrate an acknowledgement of the significance of advancing the decarbonisation of the transport sector. At COP26, the federal government announced plans for the electrification of vehicles, including consolidating a National Electric Mobility Strategy. In 2022, the Foreign Affairs Ministry also convened a multi-stakeholder initiative for the electrification of transportation, and formed the USA-Mexico Working Group on Transportation Electrification, in which further progress on the transport sector is expected before COP28.

Nonetheless, transitioning to more efficient vehicles by making the efficiency and emission standards more stringent for light passenger vehicles and freight transport is the first step to guaranteeing compliance with Mexico's NDC sectoral mitigation targets and leaving behind fossil fuel dependency. Moreover, due to their cost-benefit, upgrading both standards (NOM-163 and NOM-044) is particularly urgent to incentivise technological change in the transport sector and improve air quality in Mexican cities.

## IMPLEMENTATION CHECK SUMMARY

## DECARBONISING THE AUTOMOTIVE SECTOR

## POLICY INSTRUMENTS

NOM-163 (2017): CO<sub>2</sub> emissions standard

## RATING

MEDIUM



The NOM-163-SEMARNAT-ENER-SCFI-2013 (NOM-163) was published in 2013, aiming to regulate vehicular CO<sub>2</sub> emissions and fuel efficiency, applicable to new motor vehicles up to 3,857 kg. NOM-163 also names the USA and Canada as references for new vehicles marketed from 2017 to 2025.

After a series of administrative extensions, the latest public version corresponds to 2018, containing standards in effect as of 2016. Light passenger vehicles should reach 23.7 km/l by 2025, starting from 15.5 km/l in 2016 (a 53% fuel efficiency increase). The draft amendment to update NOM-163 in 2018 included fuel efficiency standards for vehicle model years 2017-2025, but it was not approved.

However, the delays on the upgrade of the NOM-163 and the flexibilities introduced to facilitate compliance, reduce the requirement for annual limits, with a potential loss of effectiveness of up to 30% of Mexico's GHG reductions in 2030, despite its cost-effectiveness for NDC compliance and accelerated decarbonisation in the transport sector (ICM, 2022).

The Ministry of the Environment and Natural Resources, through the Federal Attorney General's Office of Environmental Protection (PROFEPA), oversees the implementation and compliance of NOM-163; however, the implementing bodies are not well-resourced, limiting its capabilities to monitor, report and verify compliance. There is no public evaluation of the performance and results of NOM-163 that allows a periodic evaluation of progress. In addition, the working group to modify NOM-163 stopped holding sessions in late 2021. New drafts of the standard are not public due to a confidentiality clause.

Providing timely information to the consumer concerning new vehicles' fuel efficiency and CO<sub>2</sub> emissions would contribute to increased awareness and more responsible consumption. Thus, having a publicly accessible register of the emissions of vehicles marketed in Mexico is a crucial step towards transparency and accountability.

## NOM-044 (2017): hydrocarbon emissions standard

## RATING

MEDIUM



The Mexican official standard NOM-044-SEMARNAT-2017 (NOM-044) was first published in October 1993 (Mexico DOF, 1993), and has been continuously updated since then,<sup>10</sup> aiming to limit hydrocarbon emissions<sup>11</sup> of new heavy-duty vehicles. In 2018, the standard limits emissions were updated to Euro V, and proposed to be updated later in 2022 to align with the standards implemented by the USA and the EU (EPA 2010 and Euro VI standards). However, in 2020, due to an administrative extension, the implementation of these higher standards was delayed and postponed until 2025, leaving the continued implementation of the Euro V standard in place.

Since then, NOM-044 has included two standard limits available for its implementation: the Euro V standard is the obligatory minimum requirement to comply with the NOM, and the highest standard Euro VI is valid for the commercialisation of new vehicles, but it does not mandate compliance. Despite being one of the key policy instruments with the possibility to comply with Mexico's NDC, accelerate decarbonisation in the transport sector, and provide health and social benefits, its full implementation continues to be delayed, thereby minimising the emissions reduction contribution of both NDC and NOM-044's goals.

PROFEPA oversees the implementation and compliance of NOM-04. Its implementing bodies face the same limitations as under NOM-163. Even though there is an official registry of the certifications and technical test results, the information is not public, preventing a transparent and systematised evaluation of the performance and results of implementation, and also hampering any periodic review of progress by third actors and civil society.

## INSTRUMENT SUMMARY

NOM-163 (2017): CO<sub>2</sub> emissions standard

RATING

MEDIUM



## OVERSIGHT

WEAK

Although the first stage of NOM-163 (2014-2016) has already finished, no official analysis is available from which to confirm compliance. Moreover, there is no official, public or systematised monitoring mechanism of the performance and results of NOM-163 that allows a periodic review of progress.

In addition, the General Information Protection Law on the protection of corporate information on vehicle emissions states: “the register of their technical specifications, the greenhouse gas emissions, particles, and noise of vehicles marketed, are confidential and it is restricted only to public representatives with the faculties to access industrial information”. However, these clauses hinder citizens’ access to clear and understandable information on the operation and performance of new cars as a first step to promoting a culture of energy efficiency and lower generation of pollutants and GHGs.



## LEGAL STATUS

MEDIUM

NOM-163, which sets a fuel efficiency standard and CO<sub>2</sub> emissions for light vehicles, was published on 21 June 2013 and applies to vehicle model years 2014-2016. As the NOM-163 references the regulation of the American Environmental Protection Agency, it was decided to extend the norm and align its standards to those of the USA and Canada.

After the first stage of NOM-163 (2014-2016) was finalised, an update to the standard had to be published. However, due to the administrative extensions promoted by the government since 2019, the vehicle fleet has been subject to 2016 standards, with no update to newer standards now in use in the USA and Canada, thereby reducing its effectiveness.



## RESOURCES

MEDIUM

According to Causa Natura independent analysis, the federal budget assigned to PROFEPA, the organ in charge of overseeing compliance of environmental regulation (including NOM-163), has been halved since 2012, ranging from MXN 1,091 million to 517 million (CN, 2022). The budget reduction has diminished the number of environmental inspectors in the field from 714 in 2012 to 602 in 2022, of which 126 are concentrated in Mexico City (ibid.).

Moreover, PROFEPA’s annual report of activities (2021) states PROFEPA issued 1,520 certificates of compliance with five official Mexican standards, but it does not mention compliance with NOM-163 specifically (PROFEPA, 2021).



## INSTITUTIONS &amp; GOVERNANCE

MEDIUM

The Ministry of the Environment and Natural Resources, through PROFEPA, oversees the compliance of NOM-163. However, the standardisation process involves agreement and discussion amongst the Energy, Economic and Environmental Ministries and their respective decentralised bodies, demanding complex political negotiations that are difficult to track by civil society, with limited opportunities for open and transparent discussion on its design and implementation.

Due to the flexibilities included in the Draft Amendment to update the NOM-163, the policy objective of increasing fuel efficiency in light passenger vehicles cannot be fulfilled and leads to a potential loss of effectiveness of up to 30% of the total GHG reductions estimated for 2030 (ICM, 2022). For instance, NOM-163 includes excessive credits for selling hybrids and plug-in vehicles (up to 10 times higher compared to other vehicle markets), which reduces the incentives to sell EVs while increasing the rentability of selling internal combustion engine vehicles.

## INSTRUMENT SUMMARY

# NOM-044 (2017): Hydrocarbon emissions standard

RATING

MEDIUM



## OVERSIGHT

WEAK

Due to the last modification of the validity period, its full implementation has been delayed, and no official monitoring process has been implemented nor made public. The PROFEPA, responsible for overseeing and implementing the environmental standards, must have a certification database including information from the National Association of Bus, Truck and Tractor-Truck Producers (ANPACT). Currently, the ANPACT shares statistics on sales, production and exports of heavy vehicles by brand, segment, class and fuel type with the National Institute of Statistics and Geography (INEGI) monthly but no indication of vehicle models is provided. This complicates the verification of the standards of the vehicles sold since the classes included are general.<sup>12</sup> Moreover, this information is not available or open to the public (INEGI, n.d.).

There is no public information on an existing standard evaluation process. With the implementation of the updated standards (EPA 2010 and Euro VI), better outcomes on emissions reductions and air quality can be expected.



## LEGAL STATUS

MEDIUM

The NOM-044 SEMARNAT-2017 is a mandatory norm of the transport sector regulations. The standard limits to a great extent (31% more efficient than those presented in the current marketed fleet) the emission of pollutants from new heavy-duty vehicles in Mexico and requires new diesel engines to comply with the Euro V standard. Since 2006, the standard was intended to keep updating the emissions limits in a progressive manner to achieve the Euro VI standard in 2011, and the Euro V standard was expected to be temporary. Several modifications have delayed the mandatory implementation of the Euro VI standard, and the latest amendment for it only starts in 2025. In essence, the implementation of a strict and environmentally effective standard has been postponed by 14 years.



## RESOURCES

WEAK

The federal government allocates the annual budget for PROFEPA's performance, according to its legal responsibilities, including the compliance of environmental standards such as NOM-044. Nonetheless, there is no specific amount labeled for the implementation of the standard in PROFEPA's budget.



## INSTITUTIONS &amp; GOVERNANCE

MEDIUM

The Ministry of the Environment and Natural Resources, through PROFEPA, oversees compliance with the official standard. PROFEPA is the institution responsible for the observance and correct implementation of the norm, being the agency that provides the certification to new engine types that will be marketed in the country to comply with the maximum permissible limits for gas emissions established in the NOM.

New heavy-duty diesel engines shall apply and obtain a positive NOM-044 PROFEPA certification after performing an engine test complying with the maximum permissible emission limits provisions under the American EPA and European standards (EPA 2010, Euro VI).

# EUROPEAN UNION



Construction of a Charging Park for electric cars on a highway near Middelfart, Denmark on March 2023. Photo by Mads Claus Rasmussen/Ritzau Scanpix/AFP via Getty Images.

## TRANSITION TO ZERO-EMISSIONS CARS AND VANS

The EU brings together 27 Member States in a unique political and economic union, with common strategic goals and policies dealing with climate change, and open borders that facilitate trade and mobility throughout the Union. Road transport accounts for the largest portion of emissions in the EU, with 26% of all emissions EU-wide in 2020 (Statista, 2023). Per-capita emissions from transport in the EU have decreased by 9.2% between 2016 and 2021, to approximately 2t/CO<sub>2</sub> per capita. In comparison, China's per-capita emission have risen by 10.1% in the same time period, to 0.8t/CO<sub>2</sub> per capita, whereas transport emissions in the USA have declined by 12%, to 4.8t/CO<sub>2</sub> per capita. After a sharp downturn of emissions during the COVID crisis, emissions from transport have shown a strong rise again in 2021 in most countries, including the EU (Climate Transparency, 2022a).

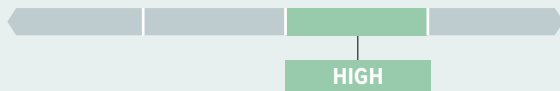
The EU has pursued an international leadership role in the fight against climate change since the start of international negotiations in 1992 (Oberthuer and Dupont, 2021). At COP25 in 2019, the President of the

European Council set the objective to make Europe the first climate neutral continent by 2050 (Michel, 2019). This objective is also reflected in the EU Long Term Strategy submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2020 (EU LTS, 2020). As a step towards climate neutrality, the European NDC (EU, 2020) set an EU-wide emissions reduction target of at least 55% against 1990 levels by 2030.

Since 2021, the EU has enshrined its 2030 and 2050 targets in its Climate Law (Regulation (EU) 2021/1119). The EU's Climate Law codifies the "European Green Deal" that was presented by the European Commission in 2019 (European Commission, 2019).

As part of the European Green Deal, the European Commission launched the Sustainable and Smart Mobility Strategy in 2021. Consisting of 82 initiatives for new EU laws on all transport sub-sectors, the Strategy lays out targets for 2023, 2035, and 2050, with the goal to cut overall transport emissions by 90% compared to the 2021 base year by 2050, with nearly all cars and vans

## AMBITION CHECK



In its “Fit for 55” package, the EU commits to revised CO<sub>2</sub> standards for cars and vans, resulting in a fleet-wide EU CO<sub>2</sub> reduction target of 55% for new cars and 50% for new vans in 2030. From 2035, the target is 0 g/km: a de facto phase-out of the combustion

engine. The implementation of these policies form the basis for the ambitious transport goals that have now been enshrined in EU law. However, there are barriers that will slow the full transition to EVs, chiefly a continuation of subsidised prices for hybrid vehicles, and the potential inclusion of e-fuels as a zero-emissions fuel source. In addition, availability of, and payment systems for, charging stations still varies widely across Member States despite EU-wide requirements (Climate Transparency 2022c, updated).

(i.e., light commercial vehicles) to be zero emission. Later in 2021, the European Commission launched its “Fit for 55” package that, for cars and vans, sets goals of 55% compared to 2021 for cars and 50% for vans in 2030, to reach 100% emissions reduction for cars and vans by 2035. This goal has recently been adopted by the European Council.

However, these new paradigms need to be grounded in the successful implementation of preceding regulations in order to be effective, which is why this assessment focuses on policies that have already been implemented in the EU in the last years, and now form the basis for the new laws that have been adopted in 2023.

To achieve carbon neutrality in passenger vehicles, combustion engines must not only be made more efficient, but at the same time, and even more crucially, the vehicle fleet must eventually transition from fossil fuels to renewable electricity completely. Three aspects are key to a complete transition to fully EVs (European Commission, 2021):

- a clear signal to manufacturers on emissions reductions within the vehicle fleet;
- the expansion of charging/re-fuelling infrastructure; and
- incentivising the purchase of zero-emissions vehicles for end users.

The EU has policies in place to target the first two directly. Incentives to purchase zero-emissions vehicles, on the other hand, are mainly subject to national incentive schemes by EU Member States (ibid). This assessment focuses on EU-level implementation alone. The following analysis will, therefore, concentrate on the first two aspects mentioned above.

Two important policies stand out as key to decarbonise passenger transport within the EU:

- CO<sub>2</sub> performance standards for cars and vans (Regulation (EU) 2019/631), which first set emissions

reduction targets of 37.5% for cars and 31% for vans in 2030, with the goal to increase the uptake of hybrid and fully electric cars;

- the increased number of charging stations as part of the EU’s alternative fuels infrastructure (Directive 2014/94/EU) that is needed to make electric cars a viable option for all EU citizens.

In force since May 2019, Regulation (EU) 2019/631s sets CO<sub>2</sub> emission performance standards for new cars and vans, with targets for the EU fleet-wide average CO<sub>2</sub> emissions. The implementation of the CO<sub>2</sub> standard is key because the target emissions value of 95g CO<sub>2</sub>/km for passenger vehicles and 147g CO<sub>2</sub>/km for vans also sets the baseline for the EU’s mid-term vehicular reduction targets. In order to stay compliant with the targets set in the standard, manufacturers need to introduce more and more zero-emissions vehicles to their fleet. The regulation offers incentives for car manufacturers to introduce very low-emitting vehicles and technologies early, by introducing super-credits for especially low-emitting cars in the first years of the regulation’s lifetime, and additional bonus credits for developing low-emission technologies. At the same time, national governments have also used various incentives for customers to buy low-emissions vehicles (beyond the scope of this study). As a result, sales of EVs in the EU have been consistently strong in previous years despite an overall dip in the European automotive market during the COVID-19 pandemic. Between 2019 and 2021, the number of electric cars in Europe tripled to 5.5 million, about half of them purely electric (IEA, 2022). The number of electric light commercial vehicles is considerably lower, at about 62,000 registrations between 2015 and 2021, but rising very quickly in recent years. Almost all of these are purely electric (ibid).

A second crucial element to further strengthen the uptake of zero-emissions vehicles within the EU is the establishment of a sufficient network of alternative fuels infrastructure throughout the EU, including, crucially, EV

charging stations. Directive 2014/94/EU, adopted in 2014, therefore establishes a unified framework of measures for the deployment of alternative fuels infrastructure in the Union. It also introduces minimum requirements for the development of alternative fuel infrastructure, among them requirements for user information, common technical specifications for recharging points, and refuelling points for natural gas (LNG and CNG) and hydrogen, to be implemented through Member States' national policy frameworks. The policy recommends a minimum of one publicly accessible charging station for every 10 EVs in every Member State. Member States

must also give users clear information about where and whether there are charging stations nearby, including through the use of digital maps and navigation tools.

It should be noted that the Directive does not set mandatory targets for the deployment of recharging stations for EU Member States. The new Regulation for the deployment of alternative fuels infrastructure, adopted in March 2023, now requires all Member States to develop recharging stations in parallel with the growth in EV numbers, and to install recharging stations every 60 km along the trans-European transport network (TEN-T) (EC, 2023).

## UPCOMING DEVELOPMENTS

Key elements of the “Fit for 55” package have been adopted by the European Council and have, therefore, entered into EU law. Crucially, the revised EU-wide CO<sub>2</sub> performance standard now requires manufacturers to reduce emissions from cars by 55% (50% for vans) by 2030 compared to the 2021 baseline year, and 100% by 2035. This essentially means that the production of internal combustion engines will have to be phased out by that date, with very few exceptions.

Complementing this, the revised Alternative Fuels Infrastructure Regulation now includes EU-wide mandatory targets for the deployment of recharging stations. The aim is to grow these stations at the same pace as the growth of electric-battery vehicles, and to install recharging points for both cars and vans as well as heavy-duty vehicles at least every 60 km along the TEN-T. To track the installation throughout the EU, the Alternative Fuels Infrastructure Observatory is being expanded. Furthermore, there are new reporting requirements to guarantee that Member States are providing accurate and up-to-date information regarding the deployment of alternative fuel infrastructure.

## IMPLEMENTATION CHECK SUMMARY

## TRANSITION TO ZERO-EMISSIONS CARS AND VANS

## POLICY INSTRUMENTS

Regulation (EU) 2019/631: CO<sub>2</sub> emissions performance standards

## RATING

FRONTRUNNER



In force since May 2019, Regulation (EU) 2019/631 sets CO<sub>2</sub> emissions performance standards for new cars and light commercial vehicles, with targets for the EU fleet-wide average CO<sub>2</sub> emissions. Average CO<sub>2</sub> emissions from new passenger cars and vans registered in the EU are mandated to fall by 37.5% up to 2030, with the limit of 95g CO<sub>2</sub>/km (based on the older NEDC testing procedure; about 115 g CO<sub>2</sub>/km in the new WLTP testing method) as the baseline. Emissions of new vans need to fall to 31% by 2030 (from a baseline of 147 g CO<sub>2</sub>/km in 2021 based on NEDC testing). The regulation offers clear rules and outlines institutional responsibilities, and includes flexible compliance mechanisms to promote early adoption while still retaining a firm target for 2021. The European Environment Agency collects and publishes detailed data on newly registered cars and emissions obtained from EU Member States' designated authorities. The recent change in testing procedures from NEDC to WLTP gives much more realistic results, even if the baseline for reductions after 2021 will now have to be set at the level of individual manufacturers. Due to the detailed information that already needs to be submitted annually to the European Energy Agency (EEA) by the EU Member States, progress in further reducing emissions will be readily trackable.

## Directive 2014/94/EU: Alternative fuels infrastructure

## RATING

STRONG



Directive 2014/94/EU, in effect since late 2014, lays out a general framework for the deployment of alternative fuels infrastructure within the EU, with an indicative target of one electrical charging station for every 10 EVs within the EU. Member States must create national policy frameworks and set specific goals for the deployment of infrastructure for alternative fuels, including such charging stations for EVs. While its governance is generally strong, the wide variety of stakeholders involved in fuel infrastructure make cooperative efforts complicated. The Directive achieves its goal to provide information on alternative fuel development, and the Alternative Fuels Infrastructure Observatory offers a plethora of publicly accessible information on the availability of alternative fuels and underscores implementation successes. However, since the deployment of alternative fuel infrastructure needs high investments, while EU Member States are free to design their own set of financial incentives or direct support, they also need to include a budget in their policy frameworks. The EU offers financial support to Member States through dedicated funding mechanisms such as the Connecting Europe Facility.



## INSTRUMENT SUMMARY

# Regulation (EU) 2019/631: CO<sub>2</sub> emissions performance standards

RATING

FRONTRUNNER



## OVERSIGHT

STRONG

The regulation requires countries from the full European Economic Area to submit detailed annual information for each new registered passenger car and van. All data is made public via the European Energy Agency's website. Furthermore, the EEA provides annual special reports on various transport and environment topics. Both independent sources and the EU's own analysis have indicated that the target set for 2021 has been met fully by cars, and almost by vans. This is important, as the 2021 emissions value for cars and vans forms the baseline against which further reductions under the "Fit for 55" package will be measured.



## LEGAL STATUS

STRONG

Regulation (EU) 2019/631 is based on a proposal made by the European Commission in November 2017. The proposal was referred to the European Parliament's ENVI committee and adopted with amendments by the Parliament in October 2018. The European Council adopted its (weaker) proposed version at the same time, and trilogue negotiations between the three EU institutions started shortly thereafter. In December 2018, negotiations concluded with the agreement now reflected in the regulation. After formal approval by all three EU institutions, the regulation entered into force on 15 May 2019, and has applied to the whole EU since January 2020.



## RESOURCES

STRONG

As a standard, the policy does not have direct budgetary implications. Data monitoring is mostly relegated to national organisations or is part of the general mandate of the Commission and the EEA. All institutions involved are well-resourced to fulfil their duties under the regulation. The resulting data is of high quality, with low error margins.



## INSTITUTIONS &amp; GOVERNANCE

STRONG

The rules and institutional responsibilities for implementing all aspects of the regulation are very clear and transparent. The European Commission is responsible for the overall development of rules, fulfilment of and compliance with CO<sub>2</sub> standards, and the central register of registered vehicles. Data on the registration of new vehicles is provided by the respective national authorities of EU Member States. The EEA collects and annually publishes data on the CO<sub>2</sub> performance of cars in the EU digitally, via its Transport and Environment Reporting Mechanism.

The inclusion of flexible compliance mechanisms offers incentives and flexibility to manufacturers while stating a firm target for 2021. Due to the recent change from NEDC to the more stringent WLTP testing method, the baseline for reductions after 2021 will now have to be set at the level of individual manufacturers. This will make public scrutiny of compliance more difficult, as there is no longer an easy-to-gauge target figure to compare against.

## INSTRUMENT SUMMARY

# Directive 2014/94/EU: Alternative fuels infrastructure



RATING

STRONG



## OVERSIGHT

STRONG

The European Commission oversees the implementation of the Directive. The European Alternative Fuels Observatory collects and publishes data on the deployment of alternative fuels infrastructure. Every three years, Member States are required to submit progress reports to the Commission. The Commission notes progress made toward achieving the Directive's goals as well as implementation difficulties and makes suggestions for further action.

The European Commission evaluated the overall progress of the Directive in 2020. The report summarises the steps Member States have taken to meet the minimum infrastructure standards, including the installation of EV charging stations. In the EU, there were approximately 225,000 public charging stations as of the end of 2020, which is less than the indicative goal of at least one station for every 10 EVs. However, some countries, such as the Netherlands, have exceeded the target.



## LEGAL STATUS

STRONG

Directive 2014/94/EU came into effect in late 2014, after approval by the European Parliament and the Council of the EU in 2014. The Directive creates a common framework for the establishment of alternative fuel infrastructure in the EU, including infrastructure for electric car charging. Member States are responsible for carrying out the Directive and its related laws and regulations. Member States must create national policy frameworks and set specific goals for the deployment of infrastructure for alternative fuels, including charging stations for EVs.



## RESOURCES

STRONG

The addition of electric car charging stations to the EU's infrastructure for alternative fuels needs considerable investment, but also offers high potential for profitable returns. Every Member State is mandated to create a national policy framework for the deployment of infrastructure for alternative fuels, which includes a budget for its execution. Policy priorities as well as particular needs and national circumstances, therefore, result in different cost recovery approaches. Public finance is occasionally needed to fund infrastructure development, for example, in rural regions with lower demand for public charging. The EU supports alternative fuels infrastructure development with additional funds, in particular through the Connecting Europe Facility and the European Regional Development Fund.



## INSTITUTIONS &amp; GOVERNANCE

MEDIUM

The European Commission's Directorate-General for Mobility and Transport (DG MOVE) oversees the implementation of the Directive. Each Member State is responsible for implementing the Directive nationally, following national priorities. The policies governing the use of charging stations as a component of the EU's infrastructure for alternative fuels are generally transparent and credible in achieving the policy goal of encouraging sustainable transportation. However, the number and variety of stakeholders involved in alternative fuel infrastructure across the EU complicates cooperative efforts. The interoperability of charging stations and the accessibility of charging infrastructure in remote or rural regions still need to be resolved.

# SYNTHESIS

## OVERVIEW

This report represents the first application of Climate Transparency's Climate Policy Implementation Check as a stand-alone tool. The purpose of this assessment has been to gain insights on the implementation status of selected transport policies in Argentina, Brazil, Colombia, Mexico, and the EU, with a view towards strengthening future implementation efforts for effective climate policies.

With this, the report aims to complement the wealth of existing knowledge on countries' (historical) progress in mitigating emissions (c.f. Climate Transparency, 2022a; Climatewatch, n.d.; UNEP, 2022), and their (future) ambitions through their NDCs and individual

climate policies, by adding knowledge on current policy performance. This type of knowledge is highly valuable to enhance countries' NDCs after the 2023 Global Stocktake. Collating and sharing information not only about the successes, but also the challenges in implementing policies in key emitting sectors makes it possible to set new, ambitious, and attainable goals. With only a few countries assessing the progress of their domestic policies, and civil society as well as the wider public debate focusing on the need to strengthen countries' climate ambitions, much less attention has been paid to an evaluation of how well already adopted policies have been achieved.

## LEARNINGS FOR NDC ENHANCEMENT AFTER THE GLOBAL STOCKTAKE

### Ambition first

The current round of NDCs will not be sufficient to keep global temperatures below 1.5°C (Climate Transparency, 2022a; UNFCCC, 2022). In the wake of the Global Stocktake, national governments, therefore, need to set ambitious targets and define implementation plans with clear and trackable steps. Neither fully implemented yet unambitious policies, nor highly ambitious yet not-well implemented policies will aid in reaching the Paris Agreement goals.

### Implementation for Ambition

Policy implementation is a learning process that helps to inform what can be enhanced and what needs to be changed, but only if it generates useable information. Monitoring and evaluation of the policy process is, therefore, indispensable to enable policy learning, to keep track of implementation plans, and ultimately to set ever more ambitious yet attainable and implementable climate goals.

### Ambitious NDCs and effective implementation

Starting from 2025, all countries are required to report on their progress in achieving their NDCs under the UNFCCC's Enhanced Transparency Framework (ETF). However, NDC progress depends on successful implementation of ambitious sectoral policies. Tools like the Climate Policy Implementation Check help to identify challenges and opportunities early, and can maximise the impact of climate policies.

## METHODOLOGY

The Climate Policy Implementation Check framework has been developed by Climate Transparency as an easy-to-use tool to evaluate the implementation status and progress of specific policies and policy instruments, in particular by stakeholders in civil society and the research community. The framework checks different characteristics of policy implementation, grouped into four categories.

- 1. Legal status:** This category checks if the policy instrument is based in law, as most policy instruments require a legal basis for implementation.
- 2. Institutions and Governance:** This category checks if suitable institutions have been given responsibility to implement the policy instrument, if its processes are transparent, and if the policy instrument is suited to achieve its objective or goal.
- 3. Oversight:** This category checks whether a system for monitoring the implementation of the policy instrument is in place, examines if it is generating publicly accessible results, reviews whether the monitoring results show progress towards achieving the established goals, and determines if the instrument includes provisions for evaluating the effectiveness of implementation.
- 4. Resources:** This category checks whether the policy instrument, should it need one, includes a clear budget in its setup or if it includes mechanisms to recover potential costs, and if the implementing bodies have the human and financial resources needed to implement the policy instrument.

### THE CHECK IN A NUTSHELL

#### Oversight

**Q6:** Have any monitoring results been made public?

**Q7:** Does the latest monitoring report indicate that the policy's goal will be achieved on time?

**Q8:** Is there a process of evaluation to assess the quantitative outcome of the policy instrument?

#### Legal Status

**Q1:** Is there a legal basis for the implementation?



#### Institutions & Governance

**Q2:** Are there institutional bodies tasked with implementation of the policy instrument and its laws and regulations?

**Q3:** Are the rules and regulations clear and credible to meet the policy objective?

#### Resourcing

**Q4:** If the policy instrument has budgetary implications, does the budget include it and/or is the cost recovery mechanism clear?

**Q5:** Are the implementing bodies well-resourced and existing at the appropriate level?

#### KEY

- Frontrunner
- Medium
- NR = Not rated yet or NA = Not applicable
- Strong
- Weak

Overall ratings:



Category ratings:



For each of these categories, the framework includes specific questions that are designed so that the results are comparable across different countries. Depending on answers to these questions, the implementation of the relevant policy instrument in each category is rated as weak, medium, strong or frontrunner. These ratings are combined to produce an overall rating for the implementation status of a specific policy or policy instrument. By repeating this process annually, the implementation check can, in theory, also be used to monitor the implementation progress of a policy or policy instrument.

It is important to note that this assessment does not put a value on the effectiveness of any given policy to mitigate GHGs, or to adapt to climate change. The assessment results are relevant for improvements in policy design, not in policy objective. Therefore, this report also includes an ambition rating of each country's transport sector policies, adapted from the Climate Transparency Report (2022a). Both parts are needed for policy progress: Neither fully implemented yet unambitious policies, nor highly ambitious yet not-well implemented policies will aid in reaching the Paris Agreement's ultimate goal, to keep global warming below 1.5°C.

## OVERVIEW OF ASSESSED POLICIES

The transport sector is key to economic development, but it also contributes significantly to global emissions. In 2021, the transport sector accounted for 37% of the CO<sub>2</sub> emissions from end-use sectors (and 23% of the overall CO<sub>2</sub> emissions) (International Energy Agency (IEA), n.d.; IEA, 2022). Of all sectors, the transport sector continues to rely most heavily on fossil fuels (ibid.). Since transport demand both for passengers and freight will continue to grow strongly in the coming year (ITF, 2023), it is crucial to break the link between transport activities and emissions from fossil fuels. Therefore, transport sector decarbonisation is one of the key activities to include in countries' NDCs, and to address in their efforts to decarbonise their economies (Arioli et al., 2020).

This assessment of the implementation status of selected policy instruments in Argentina, Brazil, Colombia, Mexico, and the EU includes relevant transport sector decarbonisation policy instruments at different implementation stages. Most cases in this publication focus on road transport, as it continues to not only be the subsector with the highest emissions, but also has a high potential for reductions. The policy selection focused on existing policies and policy instruments in the respective countries, to showcase successes and challenges in policy implementation to decarbonise transport in Latin-America as well as in the EU.

- The selected Argentinian policy instruments concentrate on investment needs for infrastructure development in railways and non-motorised transport. The latter case is especially important, as it represents one of the first steps Argentina has made to move towards a climate-friendly transport sector, even if it has been only moderately ambitious so far.
- For Brazil, two well-established, connected policy instruments were chosen that incentivise the automotive sector to innovate and become more efficient. They show a very high level of implementation; however, their ambition in terms of emissions reduction is limited.
- In Colombia, the assessment focused on the electrification of public road transport with a specific law, as well as a more general strategy towards electro-mobility, which highlighted differences in granularity for implementation. The current ambition of the assessed policies is still only moderate.
- Mexico represents a special case because of significant limitations in publicly available information on transport policy instruments in general. Two specific standards for vehicular emissions were analysed. Both have ample scope for improvements in robustness and transparency. The long-lasting delays in updating the standards has also led to a low ambition rating.
- The EU has ambitious climate targets in the transport sector. The EU's case is unique because policy instruments must function on a supra-national level, necessitating clear targets. The policies assessed – the EU's vehicular emissions standard adopted in 2019, as well as the Alternative Fuels Infrastructure Directive adopted in 2014 – have both been superseded by more ambitious ones that build on lessons learned from the older ones.

This assessment is of course only a snapshot of the full range of transport policies that countries (including supra-national entities such as the EU) have at their disposal, and are, indeed, being employed in many

cases to decarbonise the sector. The instruments reflect specific national circumstances as much as countries' priorities in transport sector policies.

Still, the 10 policy instruments assessed represent a wide range of different policy designs and specific approaches towards transport sector decarbonisation. Thus, while by no means being representative, comparing the results of the five case studies along the four assessment

categories leads to a number of findings that could inform future policy designs (see box on page 38), and also add to improvements in national and international approaches for tracking the implementation of such climate policies.

The following table shows the specific instruments assessed, their ambition rating, as well as an overall implementation rating, and a rating per each assessment category.

### OVERVIEW OF POLICIES ASSESSED, OVERALL AND CATEGORY RATINGS

	ARGENTINA	BRAZIL	COLOMBIA	MEXICO	EUROPEAN UNION
<b>Ambition rating</b>	Medium	Medium	Medium	Low	High
	Strengthening of the railway mode in freight transportation	Rota 2030: Tax incentives for research and development	National Electric Mobility Strategy (ENME)	NOM-163 (2017): CO <sub>2</sub> emissions standard	Regulation (EU) 2019/631: CO <sub>2</sub> emissions performance standards
<b>Implementation ratings 1</b>	MEDIUM	FRONTRUNNER	MEDIUM	MEDIUM	FRONTRUNNER
	Integrated Non-Motorised Mobility Programme	PBEV: Standardisation and consumer information	Law 1964 (2019): Promotion of electric vehicles	NOM-044 (2017): Hydrocarbon emissions standard	Directive 2014/94/ EU: Alternative fuels infrastructure
<b>Implementation ratings 2</b>	MEDIUM	FRONTRUNNER	STRONG	MEDIUM	STRONG

## RESULTS OF THE ASSESSMENT, PER CATEGORY

The following summarises the results of the assessment. It compares and highlights some noteworthy examples from the assessments in each category. For each category, a short explanation is provided.

### Legal status

All 10 policies that were assessed in this publication rely on a sound legal framework. All of them are part of the countries' sets of transport policy rules and regulations, though they do not necessarily directly tie into overarching climate strategies.

However, while eight of the assessed policies consequentially rank high, the two Mexican policy instruments received a lower rating in this category. They were supposed to be updated to newer standards, which so far has not happened despite the requirement to do so enshrined in the laws themselves.

### Institutions and Governance

Five of the 10 assessed policy instruments were rated high in this category, indicating that their institutional and governance foundations are sound. However, five policy instruments only reach a medium rating in this category, for different reasons.

The two Mexican standards were rated medium because the rules they have set allow for a large degree of flexibility, and the institutional setup is neither conducive to transparency nor participation. The Colombian ENME also lacks transparency on how to reach the goal it states. The European Alternative AFID leaves the institutions ultimately responsible, while the governance frameworks to implement national policy frameworks as well as their ambitions are left open to interpretation by the Member States. While this was done deliberately, it has limited the effectiveness of the Directive to drive the development of a reliable network of recharging points (as well as other alternative fuel refuelling points) across the EU. Finally, while the Argentinian Integrated Non-Motorised Mobility Programme features a well-conceived institutional framework, information regarding its effectiveness in practice is lacking.

### Oversight

The assessment reveals that across all four categories, the oversight category shows the highest potential for improvements in policy designs.

The European Emission Performance Standard was rated high in this category. It requires all EU Member

States' authorities to submit detailed information on a large number of indicators on each newly registered car and van annually. The wealth of information available allows for monitoring by EU-level institutions as well as independent assessments with a high level of confidence. The PBEV, also rated high, is in effect a monitoring programme to increase efficiency by creating transparency for the consumer. As it has no overall goal to pursue other than maximising coverage, no quantified assessment is needed in this case.

The monitoring and evaluation included in the European AFID, while still rated high, reveals the importance of setting clear targets for implementing entities, in this case the EU Member States. Although there has been regular, publicly available progress monitoring by the Member States and the Commission, the lack of a clearly-defined common goal has led to a pattern of uneven infrastructure development for recharging and refuelling stations throughout the EU.

Five policies were rated weak in the oversight category. Both Argentinian policy instruments do not specify monitoring or evaluation metrics that would allow for a review of progress, and it should be noted that Argentina's overall capacity to monitor climate specific data is also limited. The Colombian ENME does not include a regular monitoring process as part of its regulations, and both Colombian policies assessed here do not include provisions for an evaluation of policy outcomes. Neither do the Mexican policies that were assessed. A large part of the information that is needed to assess the implementation status of the two policies is subject to confidentiality rules, which makes independent evaluation difficult.

### Resources

There is considerable variation in this category. Many types of policies, including many of the performance standards assessed, do not have the same direct budgetary implications as, for instance, infrastructure development programmes. At the same time, most policies and policy instruments assessed in this study do not clearly specify which resources are needed, and there is limited available information on the human and financial resources needed by specific instruments. Where costs are implicated, they are mostly included in general budgets of governments and/or implementing agencies. This implies that most policies will, indeed, receive the resources needed to implement them.

The Mexican cases represent an exception, as the budget of the implementing agency responsible for environmental regulation, PROFEPA, has been cut by 50% in the last 10 years, and the number of environmental inspectors significantly reduced, which very likely limits its ability to effectively implement and monitor environmental policies. Consequently, both policy instruments were rated low.

The Integrated Non-Motorized Mobility Programme in Argentina does include a dedicated budget for the implementation of bikeway infrastructure. However, there is an institutional gap between the national government level of the programme, where most functions reside, and

the local governments that need to develop the required infrastructure. Therefore, the programme received a low rating. There is, however, a process to reconnect the national and local levels through strengthened local mobility planning, which could lead to a higher score in the future.

Lastly, the assessment of Brazilian policy instruments in terms of resources held a good-practice example for a well-functioning public-private budget allocation: In the Rota 2030 programme, the cost for R&D as well as other compliance costs is held by the private sector. The government, in turn, provides tax incentives for R&D and imports, creating a self-enforcing “budget loop”.

## FINDINGS FOR ENHANCED POLICY DESIGN AND IMPLEMENTATION

### **Policies that define high-level strategic targets need to clearly designate responsible institutions and governance frameworks at subsidiary levels to maximise effectiveness.**

This has been true in both the Colombian and the EU case. In the EU case, this has been clearly addressed by requiring EU Member States to present and uphold national-level policy frameworks. However, not defining individual targets or minimum requirements has hindered the implementation of the AFID, as the European Commission’s own impact assessment of the Alternative Fuels Directive (EC, 2021). In Colombia, the assessment also led to the insight that the strategic targets across all territories must be more clearly communicated, and policies differentiated among regions to strengthen their effectiveness.

### **Regular monitoring of the progress of implementation against the stated goal and evaluations or impact assessments at regular time intervals are crucial for policy learning.**

Weaknesses in oversight are a crucial problem for the assessment of implementation progress – without data to compare over time, there is no secure knowledge on status, and consequently limited knowledge on options to improve performance. The EU approach to alternative fuels infrastructure presents a good-practice example, as the less effective policy design of the original Directive has been strongly improved both in terms of ambition and policy design after findings from the European Commission’s impact assessment in 2021. The Alternative Fuels Infrastructure Regulation, agreed in March 2023, sets much clearer targets, includes shorter monitoring intervals, and provides for five-year assessment and revision cycles (Bernard, 2023).

### **Providing appropriate resources to implement policies and monitor compliance is key for successful implementation.**

The design of the budgeting process is highly dependent on the types of policies, so there can be no silver bullet solution. A significant reduction of resources without a corresponding adaptation of policies will likely lead to less effective implementation and lower compliance rates.

### **Comparing and highlighting challenges and success stories among implementing entities and other stakeholders enhances the on-the-ground implementation of national policies.**

While not in the direct scope of the assessment, the assessment of the Colombian ENME showed that implementation effectiveness could have been strongly improved by introducing policy dialogues between territories and cities on how to best implement national-level policies at subsidiary levels. This could be done in individual countries, but it could also be an anchor of international cooperation, not only within the Latin American region, but also with the EU, drawing from the large knowledge base gained in the interplay (and pitfalls) of national priorities and high-level target setting.



## AMBITION, IMPLEMENTATION, AND THE INTERNATIONAL PROCESS

The policy instruments assessed in this publication are mostly moderate in their level of ambition, i.e. in their potential to strongly reduce transport sector emissions with a view to keep global mean temperatures below the 1.5°C mark, as inscribed in the UNFCCC's Paris Agreement. Reaching agreements for ambitious transport policies has often been difficult, as the sector is crucial to citizens' mobility, and transport policies also have strong inter-relations with developments in the power sector (ITF, 2019).

The wide-ranging interconnections to other sectors render transport sector policies especially important for reaching the goals stated in countries' NDCs. The inclusion sector targets and specific sectoral actions to reach those targets varies across countries. Within the set of transport policies assess in this report, some can be traced to targets inscribed in countries NDC's, e.g. in the Argentinean and Colombian cases, whereas in the Mexican and European cases there are only indirect links to the respective NDCs.

The assessment did not find any meaningful inter-relations between the level of ambition and the status of implementation. While highly ambitious policies and accompanying instruments will likely face higher implementation barriers due to pushbacks by incumbent actors and public resistance to change (as could be observed in the first half of 2023 for Germany's fossil fuel heating phase-out), there is no indication that lower levels of ambition likewise would lead to a higher status of implementation.

Instead, the climate policy ambition of individual countries is at least partly determined by a number of objective factors (e.g., vulnerability, form of government, availability of fossil fuels) and subjective factors (e.g., public opinion, values) (Tørstad et al., 2020). Notably, these factors are largely independent of a country's ability to effectively implement climate policies and measures (or any policies and measures, for that matter). Therefore, for fighting climate change effectively, countries will have to continue to both set ambitious targets, and implement them to their full extent. There is no "either-or".

The interplay between climate ambition and implementation becomes important in ratcheting up

climate ambition in the next round of NDCs in 2025 after the 2023 Global Stocktake. Knowledge of what has been achieved in a previous time period helps to set ambitious, yet attainable goals. In that sense, monitoring implementation progress is crucial for achieving an upward spiral of ambition.

Under the Enhanced Transparency Framework of the Paris Agreement, all countries have more stringent, regular reporting requirements. After 2025, all signatories to the Paris Agreement will have to submit biennial transparency reports (BTRs), including information on progress made towards their NDC goals, as well as on support provided or mobilised (mandatory for developed countries), and support need and received (by developing countries). BTRs will be the key input to future Global Stocktakes and will, thus, be crucial for the global cycle of enhancing ambition.

Currently, there are no clear rules under the ETF to include information on the status of implementation in specific sectors. In terms of transparency and accountability of a Party's actions under the Paris Agreement, this represents a gap that may be dispensable, as long as a progression beyond a Party's previous NDC (Paris Agreement Art 4 §3) is demonstrated. Nevertheless, to be able to demonstrate such a progression, it is essential that countries closely monitor their key emitting sectors. This includes not only GHG emissions (policy outcomes), but also the implementation of policies and connected instruments to achieve those reductions, so it can be ensured that emissions will continue to fall.

**The transport sector has an especially crucial role to play in this regard, as it is still "overwhelmingly reliant on fossil fuels", and transport demands continue to grow (ITF Outlook, 2023). Transport should therefore be part of any country's implementation plans, and the decarbonisation of the sector needs to be closely monitored. The Climate Policy Implementation Check methodology piloted in this publication could be employed on a regular basis for key policy instruments in the transport sector and others, to provide for a relatively easy and quick assessment, and thus leading to a regular monitoring exercise that provides information and can point to implementation challenges early on.**

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# ENDNOTES

- 1 For more information on the Operational Improvement of the Railroad Connection with Chile project with CAF, visit <https://www.caf.com/es/actualidad/convocatorias/2022/12/servicios-de-consultoria-mejora-operativa-de-la-conexion-ferroviaria-con-chile/>
- 2 For more information on the AR-T1288: Sustainable Mobility and Electromobility in Argentina project with IADB, visit <https://www.iadb.org/es/project/AR-T1288>
- 3 In a groundbreaking move, the Brazilian government sanctioned a reduction in the biodiesel content of diesel blends in 2021, lowering it from 13% to 10%. In March 2023, the blend was increased to 12%, a content that still remains below the previously achieved level.
- 4 For example, the Brazilian Association of Technical Standards (ABNT) standards 62196-1:2021 (plugs and sockets for EVs), 17019:2022 (power supply for EVs), and 61851:2022 (conductive charging system for EVs), along with the regulatory resolution 1000:2021 (EV charging facilities), published by the National Electric Energy Agency (ANEEL).
- 5 The municipal Law No. 16.082/2015 establishes that emissions from bus transportation services in the city of São Paulo must be reduced by 100% for carbon dioxide, 95% for particulate matter, and 95% for nitrogen oxides by 2038.
- 6 Offered by the federally-owned agency called Special Agency for Industrial Financing (FINAME).
- 7 At the moment, the Motor Vehicle Property Tax (IPVA) is exempted or subject to reduced rates in nine Brazilian states.
- 8 The main pollutants limited by this standard with the incorporation of new technologies are carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>) and particulate matter (PM 2.5 and 10).
- 9 This assessment was conducted through interviews with transport sector specialists that are part of technical and political discussions reviewing and following up on the implementation of both regulations (NOM-163 and NOM-044). The authors thank Leticia Pineda and Carlos Jiménez from the ICCT; Anaid Velasco from CEMDA; Stephan Brodziak from El Poder del Consumidor and ICM's Energy Programme staff, coordinated by Luisa Sierra, for their feedback and guidance.
- 10 The 1993 standard required compliance with Euro III / USA 1998 from 1998 onwards. With the publication of the 2006 version the Euro IV / USA 2004 standard became mandatory since 2008.
- 11 The standard limits carbon monoxide, nitrogen oxides, non-methane hydrocarbons particulate matter, and ammonia.
- 12 For freight transport, only two classes are specified: tractor-trailer and others; similarly, for passengers: foreign buses and others.

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