



# First Report on the implementation of the National Policy Framework

Submitted pursuant to Article 10(1) of Directive  
2014/94/EU

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## Contents

<b>1. Background</b> .....	4
<b>2. Characteristics of the National Energy Situation</b> .....	7
<b>3. Promotion of alternative fuels and deployment of supply infrastructure</b> .....	11
<b>3.1. Legal acts</b> .....	12
<b>3.2. Policy measures supporting the implementation of the National Policy Framework</b>	23
<b>3.3. Deployment and manufacturing support</b> .....	44
<b>3.4. Research, technological development and demonstration</b> .....	54
<b>3.5. Goals and objectives</b> .....	58
<b>3.6. Alternative fuels infrastructure developments</b> .....	64
<b>4. Final Comments</b> .....	66

## Index of figures

Figure 1 - Evolution of Total Primary Energy Consumption (ktoe). Source: Directorate-General for Energy and Geology (DGEG) .....	7
Figure 2 - Final Energy Consumption (ktoe). Source: Directorate-General for Energy and Geology (DGEG).....	8
Figure 3- Final energy consumption in 2018 (provisional data), per sector of activity. Source: Directorate-General for Energy and Geology (DGEG).....	8
Figure 4- Final energy consumption in 2018 (provisional data), in the transport sector, per fuel type. Source: Directorate-General for Energy and Geology (DGEG) .....	9
Figure 5 - GHG emissions per sector in 2017. Source: Portuguese Environment Agency (Agência Portuguesa do Ambiente - APA, I. P.)/ Own production (Portuguese State of Environment Report).....	9
Figure 6 - Installed capacity at electricity-producing power plants in 2019 (provisional data), per technology (MW). Source: Directorate-General for Energy and Geology (DGEG) .....	10
Figure 7 - Commercial relations between participants in the electric mobility system. Source: Energy Services Regulatory Authority (ERSE).....	13
Figure 8 - Targets defined in the NECP 2030.....	38
Figure 9 - Main trends in the mobility and transport sector. Source: National Investment Programme (PNI) 2030.....	51

## Index of tables

Table 1 - Main legal acts published since 2015 in relation to alternative fuels for transport ....	18
Table 2 - Main policy measures to support the implementation of the NPF.....	25
Table 3 – Main action measures provided for in the NECP in relation to promoting alternative energy sources in transport .....	38
Table 4 - Action measures set out in the National Strategy for Hydrogen (EN-H2) to be implemented by 2030 in the area of the decarbonisation of transport.....	42
Table 5 –Support for deployment and manufacture .....	46
Table 6 – Support for research, technological development and demonstration (RTD&D).....	56
Table 7- Evolution in the number of alternative fuel vehicles .....	58
Table 8 – Evolution in refuelling/ charging infrastructure for alternative fuels .....	61
Table 9 - Deployment of alternative fuel infrastructure.....	64
Table 10 - Evolution in percentage use of various fuels in transport sector .....	64

## 1. Background

Decree-Law No 60/2017 of 9 June 2017 establishes the framework for the roll-out of infrastructure for alternative fuels, with a view to minimising dependence on oil and reducing the environmental impact of transport, transposing into Portuguese law Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure.

The above-mentioned Decree-Law states that there is a National Policy Framework (NPF) for developing the alternative fuels market in the transport sector and rolling out the respective infrastructure.

In accordance with Article 3(3) of Decree-Law No 60/2017 of 9 June 2017, Cabinet Resolution No 88/2017 of 26 June 2017 approved the National Policy Framework, which includes:

- i. an assessment of the current situation and the future prospects of the market as regards alternative fuels for the transport sector, including electricity, natural gas (NG), liquefied petroleum gas (LPG), biofuels and hydrogen;
- ii. national goals and targets for creating the infrastructure needed for the alternative fuels mentioned in Articles 4 and 6 of Decree-Law No 60/2017 of 9 June 2017 to be made available, i.e. the electricity charging network and the compressed natural gas (CNG) and liquefied natural gas (LNG) supply networks;
- iii. measures needed to ensure that the national goals and targets set out in the National Policy Framework are attained.

Transport remains the main energy-consuming sector; oil and oil products make up the main energy source consumed in this sector. Reducing energy dependency is a major concern in the national energy policy, especially as regards oil and reducing the environmental impact associated with transport, notably in terms of reducing greenhouse gases and pollutants and progressing towards decarbonisation.

Given the context and with a view to reinforcing that national commitment in a sector that has proved to be particularly challenging in making progress towards decarbonisation and the introduction of alternative energy sources, the National Policy Framework was drawn up with the goal of helping to overcome one of the main obstacles to the growth of an alternative fuel vehicles market with a lower environmental impact, i.e. developing the supply/ charging infrastructure needed for those vehicles.

LPG first started to be used as a fuel for light and heavy-duty vehicles in the early 1990s, leaving Portugal with a network of over 300 refuelling points. However, LPG has only ever accounted for less than 1% of the total energy consumption of the transport sector. The arrival of alternative technologies with better environmental and/or energy benefits also led Portugal to focus more on other alternatives.

In the last decade, biofuels have been the most affordable solution for an easy roll-out of renewable energy sources in transport. This is because they can generally be used immediately in existing vehicles with internal combustion engines and because they can avail of the supply infrastructure already in existence. The national strategy for the introduction of these alternative fuels has focused on their inclusion among conventional fuels used for road transport. The setting of mandatory targets for the inclusion of biofuels, and in the initial stage, the allocation of fiscal incentives such as exemptions from the tax on oil and energy products (*imposto sobre produtos petrolíferos e energéticos - ISP*), helped reinforce the foothold of this solution on the national market.

On the other hand, given that hydrogen has been recognised for its potential as a strategic energy vector enabling the temporary storage of energy and its high flexibility - including as a fuel in the transport sector - at the time of drafting of the National Policy Framework, work was commencing on assessing the potential of hydrogen and defining a roadmap for its development in Portugal. However, it was considered too early to start defining goals and targets regarding the creation of infrastructure to supply hydrogen for the transport sector within the scope of the National Policy Framework.

Therefore the national targets and objectives set out in the NPF focused mostly on the development of infrastructure for electricity, CNG and LNG for the 2020 or 2025 horizons, depending on whether they referred to electrical charging points for electric mobility and CNG refuelling points in urban agglomerations, or CNG refuelling points along the Trans-European Transport Network and LNG refuelling points.

Portugal focused on defining a strategic framework for the medium term, the 2021-2030 horizon, in its National Energy and Climate Plan 2021-2030 (NECP 2030), the final version of which was submitted to the European Commission in December 2019. This plan established more ambitious targets and objectives, promoting the decarbonisation of various sectors with a view to attaining carbon neutrality by 2050.

The Roadmap for Carbon Neutrality 2050 (RCN2050) approved by Cabinet Resolution No 107/2019 of 1 July 2019 set the national objective of attaining carbon neutrality by 2050, i.e. achieving a neutral balance between GHG emissions and carbon sequestration in soil and forests.

The NECP 2030 approved by Cabinet Resolution No 53/2020 of 10 July 2020 is the main instrument of the national energy and climate policy for the next decade. Aligned with the objectives of the RCN2050, it reinforces the progress made by Portugal in the area of renewable energies and energy efficiency and defines eight national objectives as part of an integrated energy and climate strategy, one of which is promoting sustainable mobility.

Based on the awareness that if a carbon-neutral economy is to be attained by 2050, the greatest effort in reducing GHG emissions and achieving the energy transition will have to be made in the next decade and that promoting decarbonisation in transport will have to be a

priority, the NCEP 2030 is more ambitious than the NPF when it comes to promoting the use of alternative fuels.

As regards the transport sector, the NECP 2030 therefore reinforces national ambitions concerning electric mobility and commitment to advanced biofuels.

New prospects are also opening up, as conditions are favourable for a greater contribution from renewable gases, particularly green hydrogen. It is envisaged that it could also be used in other sectors as well as transport, such as industry, energy production or in heating and cooling. With that in mind, Cabinet Resolution No 63/2020 of 14 August 2020 recently approved the National Strategy on Hydrogen (*Estratégia Nacional para o Hidrogénio - EN-H2*), which considers the use of hydrogen in transport and the creation of hydrogen refuelling points.

Given this context, Portugal has started to promote an industrial policy on renewable gases, with a focus on hydrogen, based on the definition of a number of public policies to guide, coordinate and mobilise public and private investment in projects in the areas of the production, storage, transportation and consumption of renewable gases in Portugal.

To this end, a number of short-term measures are also underway, including rules on the production and injection of renewable gases into the national natural gas network and the implementation of a guarantees of origin system for renewable gases.

Hydrogen, together with electric mobility and advanced biofuels, is therefore the national response to the challenges facing the transport sector. The NPF for creating infrastructure for alternative fuels will have to be revised in that light, bringing it into alignment with the new ambition as set out in the NCEP 2030 and the National Strategy on Hydrogen. The review of the NPF is in fact one of the action measures set out in the NECP 2030 for promoting sustainable mobility.

In accordance with Article 10(1) of Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure, Portugal is submitting its first report on the implementation of its national policy framework and the progress made in promoting alternative fuels and developing the infrastructure for them. Although the existing NPF will be reviewed, the intention is that this report will reflect Portugal's new ambition and objectives in that regard as much as possible.

## 2. Characteristics of the National Energy Situation

Oil and oil products continue to be the main source of primary energy, accounting for 39.0% of final primary energy consumption in 2018. In the same year, the consumption of renewable energy accounted for around 26.8% in real terms, while natural gas accounted for approximately 22.4%. However, there was a slight drop in primary energy consumption compared to the year 2015 (-0.7%), in parallel to an even greater decline (-7.3%) in the consumption of oil as a primary energy source and an increase in the contribution of renewables and natural gas.

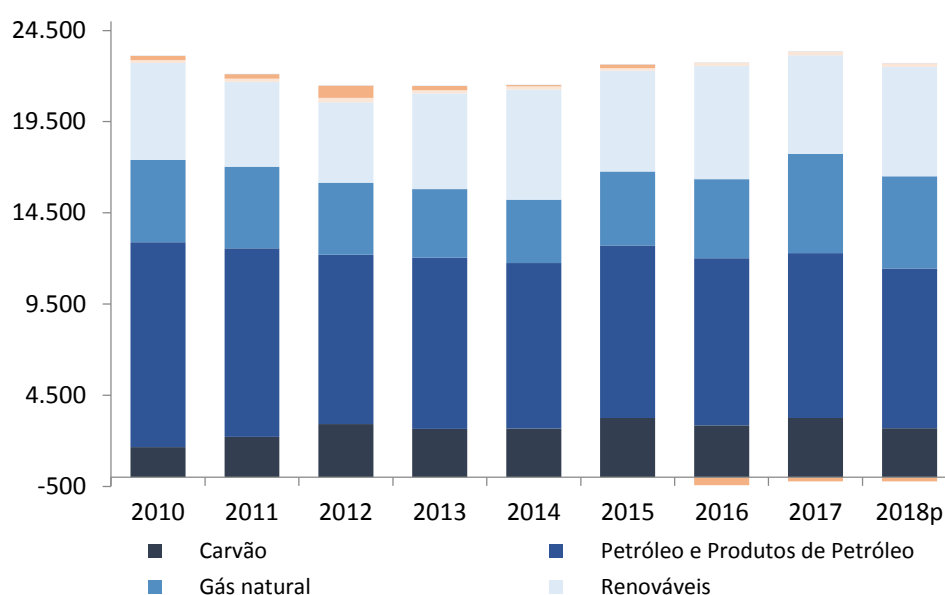


Figure 1 - Evolution of Total Primary Energy Consumption (ktoe).

Source: Directorate-General for Energy and Geology (DGEG)

PT	EN
Carvão	Coal
Gás natural	Natural gas
Petróleo e Produtos de Petróleo	Oil and Oil Products
Renováveis	Renewables

With regard to final energy consumption, a 3.4% increase on 2015 was recorded in 2018, with oil and oil products still the main energy source consumed. Portugal registered an export balance of electricity in 2018.



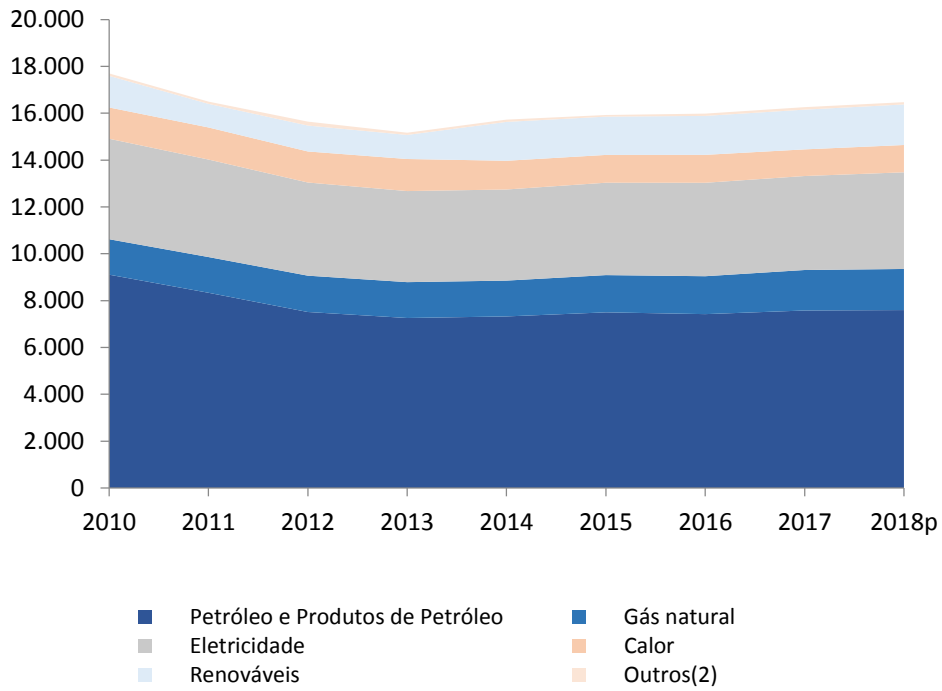


Figure 2 - Final Energy Consumption (ktoe). Source: Directorate-General for Energy and Geology (DGEG)

PT	EN
Petróleo e Produtos de Petróleo	Oil and Oil Products
Eletricidade	Electricity
Renováveis	Renewables
Gás natural	Natural gas
Calor	Heat
Outros	Others

Transport remains the main energy-consuming sector, accounting for 35.7% of energy consumption in 2018.

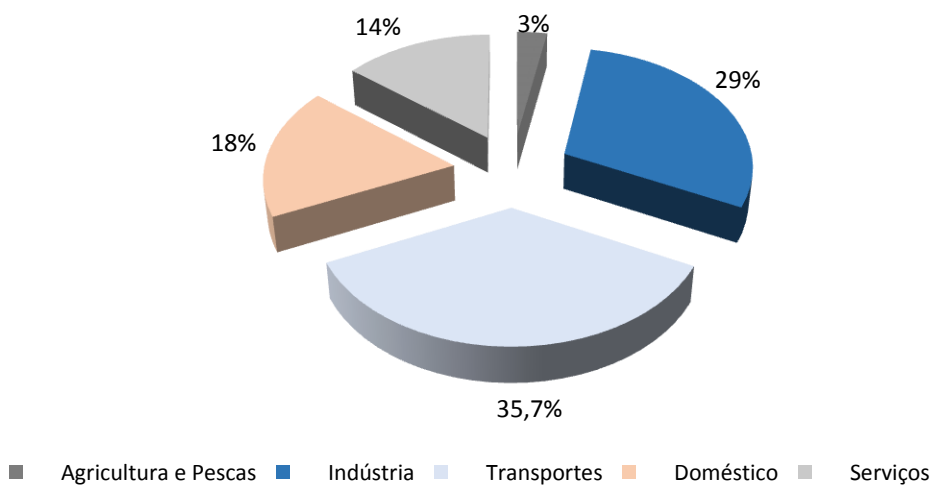


Figure 3- Final energy consumption in 2018 (provisional data), per sector of activity. Source: Directorate-General for Energy and Geology (DGEG)

PT	EN
Agricultura e Pescas	Agriculture and Fisheries
Indústria	Industry
Transportes	Transport
Doméstico	Domestic
Serviços	Services

However, transport accounts for around 79% of final oil product consumption for energy purposes. Within the transport sector, oil products account for around 95% of final energy consumption, mostly in the form of diesel and petrol for road transport.

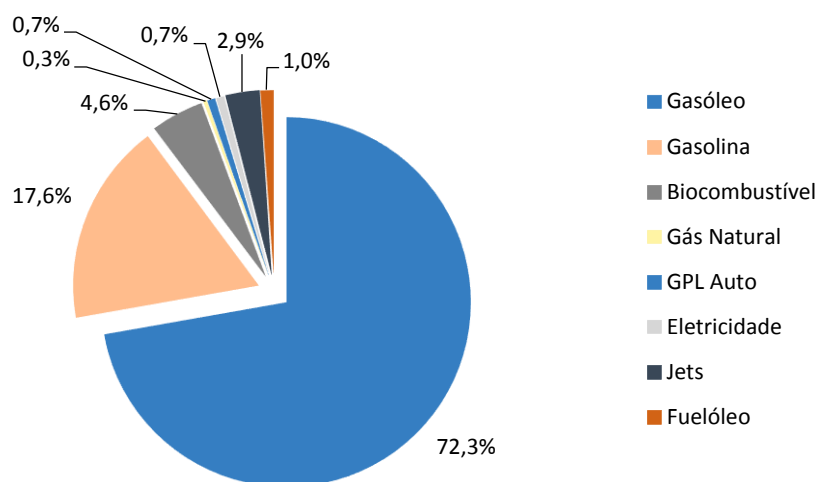


Figure 4- Final energy consumption in 2018 (provisional data), in the transport sector, per fuel type. Source: Directorate-General for Energy and Geology (DGEG)

PT	EN
Gasóleo	Diesel
Gasolina	Petrol
Biocombustível	Biofuel
Gás Natural	Natural Gas
GLP Auto	LPG autogas
Eletricidade	Electricity
Jets	Jets
Fuelóleo	Fuel-oil

Transport is therefore one of the main sectors responsible for GHG emissions. It accounted for around 24.3% of total carbon dioxide (CO<sub>2</sub>) equivalent emissions in 2017. However, it was the energy production and transformation sector that was the leading source of emissions in that year.

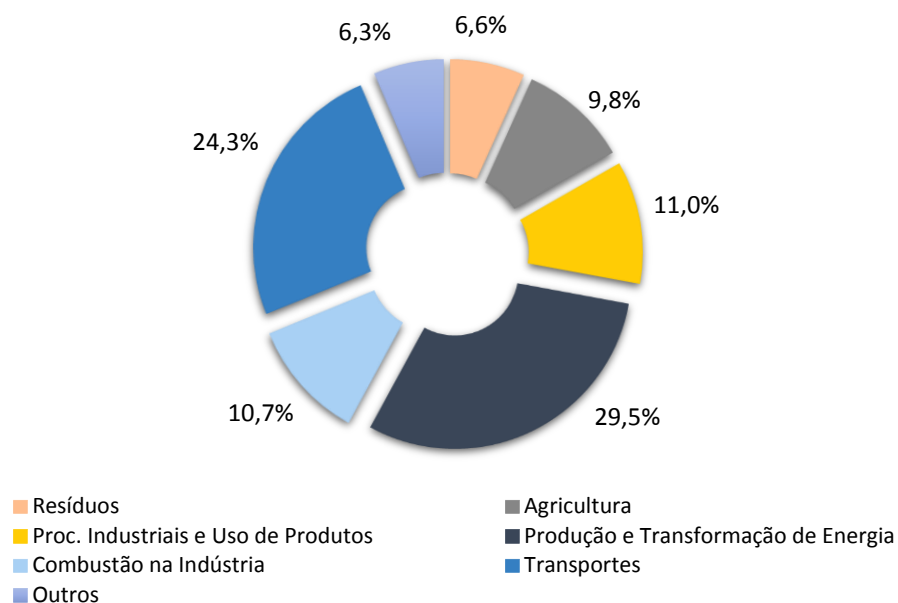


Figure 5 - GHG emissions per sector in 2017. Source: Portuguese Environment Agency (Agência Portuguesa do Ambiente - APA, I. P.)/ Own production (Portuguese State of Environment Report)

PT	EN
Resíduos	Waste
Proc. Industriais e Uso de Produtos	Industrial processes and product usage
Combustão na Indústria	Combustion in industry
Outros	Others
Agricultura	Agriculture
Produção e Transformação de Energia	Energy production and transformation
Transportes	Transport

Within the energy production and transformation sector, the national electricity production system is noted for its strong commitment to renewable energy sources, which represent over 64% of the total installed capacity for electricity production.

In 2018, the total installed capacity in various renewable technologies (hydro, wind, biomass, solar, geothermal and wave) amounted to 12 983 MW, which is an increase of about 14% on 2015. The remainder of the installed capacity recorded in 2018, 7 831 MW, is from fossil fuel technologies, mostly natural gas and coal.

In 2019, the installed capacity in renewable technologies for electricity production rose to some 14 350 MW<sup>1</sup>. The increase in capacity is mostly in wind, solar photovoltaic and biomass technologies.

<sup>1</sup> Provisional data for 2019

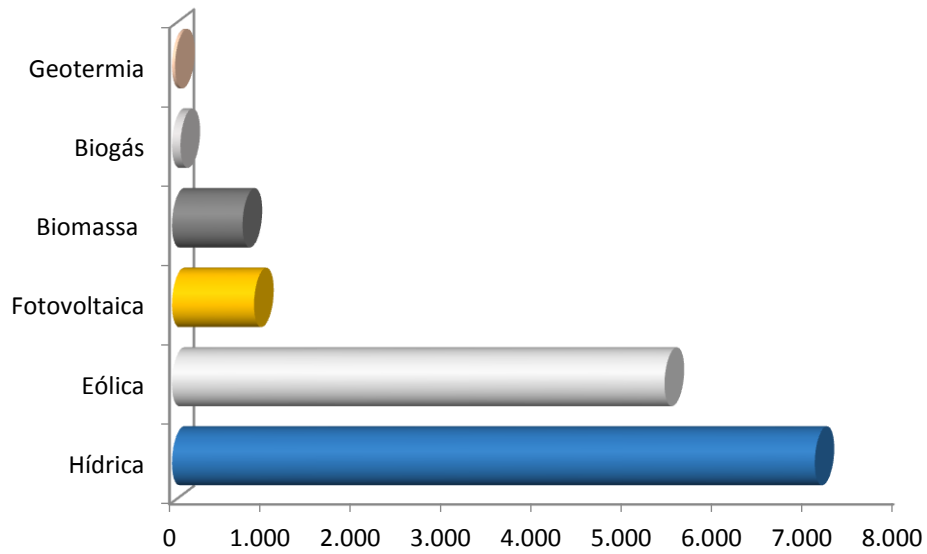


Figure 6 - Installed capacity at electricity-producing power plants in 2019 (provisional data), per technology (MW).  
Source: Directorate-General for Energy and Geology (DGEG)

PT	EN
Geotermia	Geothermal
Biogás	Biogas
Biomassa	Biomass
Fotovoltaica	Photovoltaic
Eólica	Wind
Hídrica	Hydro

A total of 30 637 GWh of electricity was produced from renewable sources in 2018, which is equivalent to an increase of about 20% in production from renewable sources compared to 2015.

### 3. Promotion of alternative fuels and deployment of supply infrastructure

The NPF established a number of measures geared towards achieving the objectives and targets set out in that framework. Some of these focused on stimulating demand for cleaner alternatives, while others sought to guarantee the existence of the minimum infrastructure needed for supply/charging purposes.

Unfortunately it has not been possible to roll out some of those measures within the timeframes initially envisaged and therefore the launch dates (or even the measures themselves) will be reviewed when the NPF is redrafted, because as explained in Chapter 1 of this report, it no longer matches the Government's current ambition in that regard.

Other measures and initiatives have however been implemented with a view to encouraging the use of alternative fuels and developing the relevant infrastructure. Although these had not initially been provided for in the NPF, they will be included in the scope of this report on account of their importance in attaining the objectives and targets set out in the framework.

### 3.1. Legal acts

The promotion of alternative fuels for transport has been a cornerstone of Portuguese energy policy, and therefore the legislative and regulatory framework on this subject has evolved over the years. The NPF provides a summary of the main legal acts published in this field up to 2016, i.e. Decrees-Law, Ministerial Implementing Orders, Orders, Regulations, Cabinet Resolutions and others.

The national commitment to **electric mobility in road transport** first began about a decade ago. In the years since then, Portugal has made significant investments in this area, such as the creation of a network of publicly accessible charging points and the drafting of a legislative and regulatory framework on this matter, including the technical requirements for the installation of the charging points and the licenses for operating them.

Decree-Law No 39/2010 of 26 April 2010, as amended by Law No 64-B/2011 of 30 December 2011, by Decree-Law No 170/2012 of 1 August 2012 and by Decree-Law No 90/2014 of 11 June 2014, establishes the legal regime for electric mobility applicable to the organisation of, access to and exercise of electrical mobility activities, as well as rules on the establishment of a pilot network for electrical mobility. Decree-Law No 90/2014 of 11 June 2014 reviewed the electrical mobility model adopted with a view to making it more sustainable for the various agents in the system, stimulating demand and improving its integration with the broader national panorama of promoting alternative fuels for transport. To this end, it introduced several amendments to Decree-Law No 39/2010 of 26 April 2010, which required that the latter be republished.

As a result, and in order that this legal act could be implemented, a number of Ministerial Implementing Orders were published between 2015 and 2016, containing technical rules and requirements on the installation and operation of charging points, and on the exercise of the activity, taking account of the guidelines provided in Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014. Although these Ministerial Implementing Orders have already been listed in the NPF, it has been decided that they should once again be listed in this report on account of their importance for the deployment of the charging infrastructure.

To sum up, the model adopted for electric mobility in Portugal - the MOBI.E network - consists of a charging system on a national scale, accessible to any user, with guarantees of technical interoperability and service interoperability, enabling access to any charging point through a single registration or contract and authentication and access mechanism.

In the initial stage of promoting electric mobility and with a view to stimulating demand and encouraging citizens to sign up for this alternative, a pilot network of public charging points was established, consisting of normal power charging points (normal charging points) and high

power charging points (rapid charging points). There was no cost to users of these charging points until November 2018.

In November 2018 Portugal entered a new stage of electric mobility, in which users started to pay for the costs associated to the electricity supplied at the rapid charging points in the pilot network. Later on, in April 2019, the operators of publicly accessible charging points in private locations integrated in the electric mobility network were given the choice of collecting charging costs from users. Finally, in June 2020 the process of allocating charging points in the pilot network which had begun in December 2019 was concluded, with the respective payments commencing on 1 July 2020.

In light of the developments in the electricity sector in general, as well as in electric mobility, the Energy Services Regulatory Authority (ERSE) proceeded to review the Regulation on Electric Mobility. In publishing Regulation No 854/2019, it approved a new regulation with provisions applicable to the exercise of electric mobility activities that come under the remit of its regulatory powers.

Among other matters, this Regulation on Electric Mobility establishes rules on the commercial relations between agents, provisions on the methods for formulating and calculating the tariffs to access the electricity networks for electric mobility and the tariffs to be applied by the body in charge of managing the electric mobility network, as well as participants' obligations as regards quality of service and the provision of information, and the activities involved in the electric mobility network.

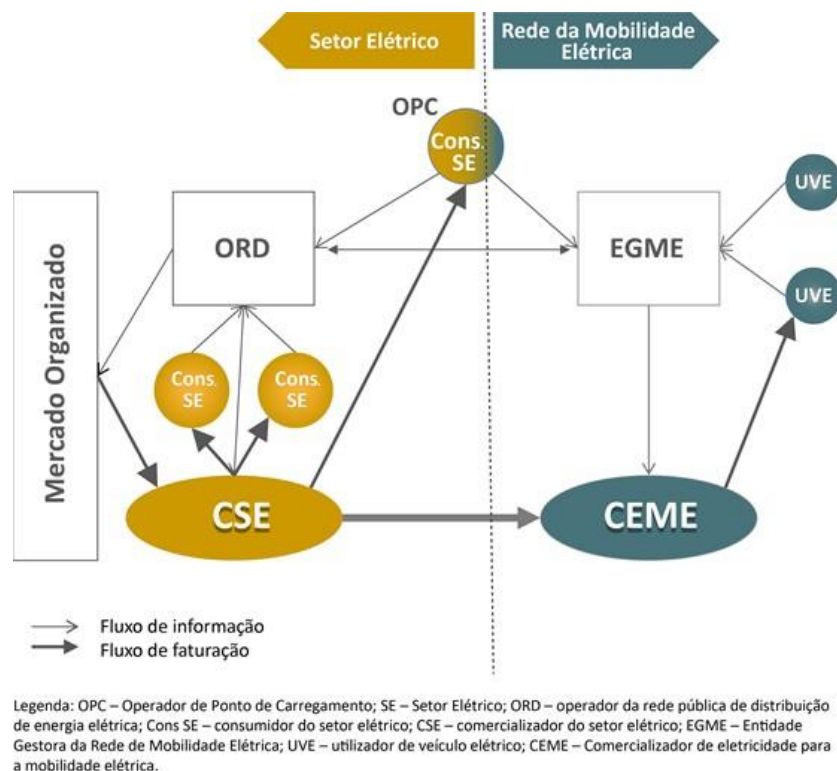


Figure 7 - Commercial relations between participants in the electric mobility system. Source: Energy Services Regulatory Authority (ERSE)

PT	EN
OPC – Operador de ponto de carregamento	Charging point operator
SE – Setor elétrico	Electricity sector
ORD – Operador da rede pública de distribuição de energia elétrica	Operator of the public electricity distribution grid
Cons SE – Consumidor do setor elétrico	Electricity sector consumer
CSE – Comercializador do setor elétrico	Electricity sector seller
EGME – Entidade gestora da rede de mobilidade elétrica	Electric mobility network managing body
UVE – Utilizador de veículo elétrico	Electric vehicle user
CEME – Comercializador de eletricidade para a mobilidade elétrica	Seller of electricity for electric mobility
Fluxo de informação	Information flow
Fluxo de faturação	Billing flow
Mercado organizado	Organised market
Setor elétrico	Electricity sector
Rede da mobilidade elétrica	Electric mobility network

On the other hand, it is not timely at this stage to define a regulatory framework and a tariff for the energy stored in a decentralised manner in electric vehicle batteries to be sold to the electricity grid, as more research into this is required.

In that regard, in accordance with Article 95 of Regulation No 854/2019 (Regulation on Electric Mobility), which provides for the possibility of research or demo projects in the electric mobility sector, a pilot project to connect electric vehicles to the public service electricity grid (RESP) is underway on the island of São Miguel in the Autonomous Region of the Azores. This not only allows electric vehicles to charge their batteries with energy from the electricity grid; it also allows them to supply the grid with energy from their batteries, using V2G (Vehicle-to-Grid) technology. This project aims to test the technology, assess its advantages for vehicle users and the electricity grid operator and assist in the development of a legislative framework for V2G so that it can be rolled out on the market. Data from the pilot project will also be gathered and processed to help define a possible business model.

This project aims to test the technology, assess its advantages for vehicle users and the electricity grid operator and assist in the development of a legislative framework for V2G so that it can be rolled out on the market. Data from the pilot project will also be gathered and processed to help define a possible business model. This Ministerial Implementing Order provides for the application and specification of technical rules for electric vehicle charging facilities, with a view to informing and guiding the staff in charge of designing, implementing and operating these facilities. These rules must be set out in a technical guide approved by the



Directorate-General for Energy and Geology (DGEG). Order No 5/2018 of the Director-General of Energy and Geology approved the 'Technical Guide to supply facilities for electric vehicles'.

On the same subject, please note that the Decree-Law intended to transpose into Portuguese law Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency is now at the final stage of drafting. That legal act and the ministerial implementing orders for the rules will include provisions to promote the charging of electric vehicles in garages of private residences and companies, thus ensuring the roll-out of the minimal charging infrastructure required or the preparation for such infrastructure to be installed in car parks of either new residential and non-residential buildings or those undergoing significant refurbishment. Given that the draft bill is still being finalised, it is not possible to submit the specifics of those provisions just yet. We can however guarantee that the minimum targets set out in the above-mentioned Directive from 2018 will be ensured.

As for the Autonomous Regions, mention should be made of Council of Government Resolution No 106/2019 of 4 October 2019, approving the Plan for Electric Mobility in the Azores (PEMA 2018-2024), which defines a number of coordinated measures geared towards achieving the energy transition by promoting the use of electric vehicles, particularly in the land transport sector. This plan is also intended as a guide to the deployment of electric mobility in the Autonomous Regions. It includes diagnostic studies carried out in the various sectors of activity and an outline of environmental performance information and the mobility patterns of private individuals, undertakings and public bodies. The Plan provides for a baseline scenario of 348 electric vehicles in 2020 and 1 568 electric vehicles in 2024. The optimistic scenario provides for the existence of 595 and 3 035 electric vehicles, respectively, in 2020 and 2024.

Regional Legislative Decree No 21/2019/A of 8 August 2019 defines the strategy for the roll-out of electric mobility in the Azores, taking account of the particularities of the autonomous region as an archipelago, as well as the geographical and environmental characteristics of its islands.

The strategy for electric mobility in the Autonomous Region of the Azores is based on a number of measures and actions, such as the deployment of a publicly accessible charging network for electric vehicles encompassing all of the islands and councils in the region, and the development of the electric vehicle charging network in buildings subject to co-ownership, tourist resorts, infrastructure used for tourism-related, social, recreational, cultural and sporting purposes, including shops and shopping complexes and publicly accessible car parks. Moreover, for implementation, the strategy envisages the allocation of incentives for the adoption of electric mobility, the setting of targets for the introduction of electric vehicles by fleet-owning entities, the promotion of electric mobility in regional and local public administration and in civil society, by setting up a web portal devoted to the subject. The Plan for Electric Mobility in the Azores and the Municipal Electric Mobility Plans are the planning

instruments for implementing the policy on electric mobility in the Autonomous Region of the Azores.

As regards the activities of transportation, underground storage of **NG**, reception, storage and regasification of LNG and distribution of NG, placement of NG on the market and the organisation of the respective markets, as well as the licensing procedures and the technical and safety requirements for the design, construction, operation and maintenance of natural gas refuelling points, the applicable legal regimes have been in place for several years now. There is a description of the legal framework that applies to this area in the NPF and therefore we will not go into that in this report.

However, we must once again refer to Decree-Law No 30/2006 of 15 February 2006, as amended by Decree-Law No 230/2012 of 26 October 2012, which establishes the general principles for the organisation and functioning of the National Natural Gas System (*Sistema Nacional de Gás Natural - SNGN*) and the exercise of the activities of reception, storage, transportation, distribution and placement on the market of natural gas, and the organisation of the natural gas markets.

Decree-Law No 140/2006 of 26 July 2006, as amended by Decree-Law No 231/2012 of 26 October 2012, established the legal regimes applicable to the activities of transportation, underground storage of NG, reception, storage, and regasification of LNG and distribution of NG, including the respective rules for concessions, as well as the placement of NG on the market and how the respective markets were to be organised.

These laws established the general rules on the organisation and functioning of the National Natural Gas System, as well as the general rules on the exercise of the respective activities.

With a view to reinforcing the energy transition, Portugal has already started to promote a policy of incentivising the use of renewable gases such as biomethane and hydrogen. We are currently reviewing the legal framework in that area in order to introduce guidelines to regulate the production and injection of renewable gases in the national NG network, as well as placing them on the market via refuelling points. In that regard, the recently published Decree-Law No 62/2020 of 28 August 2020 established the organisation and functioning of the National Gas System and the respective legal regime, transposing Directive (EU) 2019/692 of the European Parliament and of the Council of 17 April 2019, repealing Decree-Laws No 30/2006 of 15 February 2006 as amended and No 140/2006 of 26 July 2006 as amended. With a view to enabling the deployment of the infrastructure needed for hydrogen to be used in the transport sector, Portugal is currently preparing its Regulation on the construction and operation of hydrogen refuelling points.

The National Strategy on Hydrogen (EN-H2) defines goals and objectives on the incorporation of hydrogen into the natural gas network, transport and industry by 2030, as well as the introduction of refuelling points and hydrogen-fuelled vehicles. A mechanism to support the

production of hydrogen is at the design stage and a guarantees of origin system for renewable gases will be implemented soon.

As regards the use of alternative fuels in shipping, Cabinet Resolution No 175/2017 of 24 November 2017 approved the Strategy to increase the competitiveness of the network of commercial ports in mainland Portugal - Horizon 2026, which defines a number of strategic targets for the investments and goals to be attained by that date. These targets include the development of platforms for technological acceleration and new skills at the ports, i.e. transforming the Portuguese port system into a 'service station' capable of supplying ships with LNG and a hub for the re-exportation of LNG.

This strategy recognises Portugal's privileged location in the middle of the main international commercial shipping routes (both central and non-central). This location is favourable for the LNG bunkering business in the commercial shipping, tourism (cruise ships) and long- and short-haul transport segments. As regards the density of maritime transport, Portugal is also at the centre of the main shipping routes and this aspect makes it a privileged commercial hub for the bunkering business.

The national strategy for the introduction of biofuels on the consumer market in Portugal is mostly linked to their inclusion among the fuels used for road transport, making use of the infrastructure that already exists for conventional biofuels.

Decree-Law No 117/2010 of 25 October 2010, as amended by Decree-Laws No 6/2012 of 17 January 2012, No 224/2012 of 16 October 2012 and No 152-C/2017 of 11 December 2017, defined the biofuel support mechanism to be provided until 2020, establishing sustainability criteria for the production and use of biofuels and bioliquids and goals regarding the mandatory incorporation of biofuels for the years 2011 to 2020.

However, conventional biofuels produced from agricultural materials in the human and animal food chain do not seem sufficient for meeting the new challenges we are facing in terms of energy and climate matters. Portugal is therefore going to promote the development of other solutions, such as the production of advanced biofuels made from alternative raw materials, which allow for greater reduction in greenhouse gases and do not compete with food crops as regards the occupation of agricultural land.

In that context, with a view to reinforcing the national commitment to making better use of renewable energy sources by using biomass as an alternative energy source to fossil fuels, the National Biorefinery Promotion Plan was approved in Cabinet Resolution No 163/2017 of 31 October 2017.

This plan aims to define a strategy for the 2030 horizon to promote all types of advanced biorefineries using biofuels made from waste or with low economic value (e.g. biomass made from endogenous forestry and agricultural waste) to produce a variety of products, including

advanced biofuels and create new value chains for biomass from the perspective of the bioeconomy and the circular economy.

Table 1 provides a summary of the main legal acts published since 2016 [sic].

Table 1 - Main legal acts published since 2015 in relation to alternative fuels for transport

CATEGORY	No.	NAME	DESCRIPTION	FIELD	ALTERNATIVE FUEL	TYPE	MODE OF TRANSPORT	DEGREE OF IMPLEMENTATION	Year beginning	Year ending	OBSERVATIONS
Legislative and Regulatory	1	Ministerial Implementing Order No 240/2015 of 12 August 2015	setting the amount of the fees due for dealing with applications to register as an electric mobility electricity retailer, for issuing licences to operate recharging points and for carrying out regular inspections	AFI	Electricity	Licences	Road	National	2015	-	Statutory instrument identified in Part A - 'Current Situation and Outlook' of the National Policy Framework
Legislative and Regulatory	2	Ministerial Implementing Order No 241/2015 of 12 August 2015	on the technical requirements for granting licences to operate recharging points in the electric mobility network, as well as some procedural rules applicable to the filing of the respective application	AFI	Electricity	Licences	Road	National	2015	-	Statutory instrument identified in Part A - 'Current Situation and Outlook' of the National Policy Framework
Legislative & Regulatory	3	Ministerial Implementing Order No 252/2015 of 19 August 2015	adding to the Technical Rules on Low Voltage Electric Facilities by including technical rules for electric facilities to be used to supply alternating current to electric vehicles	AFI	Electricity	Rules & Requirements	Road	National	2015	-	-
Legislative & Regulatory	4	Ministerial Implementing Order No 220/2016 of 10 August 2016	on the minimum powers and technical standards to be met by recharging facilities for electric vehicles in buildings and other urban developments	AFI	Electricity	Rules and requirements	Road	National	2016	-	Statutory instrument identified in Part A - 'Current Situation and Outlook' of the National Policy Framework
Legislative & Regulatory	5	Ministerial Implementing Order No 221/2016 of 10 August 2016	setting out the technical and safety rules applicable to the installation and operation of electric vehicle recharging points;	AFI	Electricity	Rules and requirements	Road	National	2016	-	Statutory instrument identified in Part A - 'Current Situation and Outlook' of the National Policy Framework

CATEGORY	No.	NAME	DESCRIPTION	FIELD	ALTERNATIVE FUEL	TYPE	MODE OF TRANSPORT	DEGREE OF IMPLEMENTATION	Year beginning	Year ending	OBSERVATIONS
Legislative & Regulatory	6	Ministerial Implementing Order No 222/2016 of 11 August 2016	setting out the terms applicable to licences for the private use of public land for installing electric vehicle recharging points in a publicly-accessible public place on public land	AFI	Electricity	Licences	Road	National	2016	-	Statutory instrument identified in Part A - 'Current Situation and Outlook' of the National Policy Framework
Legislative & Regulatory	7	Ministerial Implementing Order No 231/2016 of 29 August 2016	defining the coverage, conditions and minimum amounts of compulsory civil liability insurance to be held for damages sustained in the marketing of electricity and the operation of recharging points for electric mobility	AFI	Electricity	Rules and requirements	Road	National	2016	-	Statutory instrument identified in Part A - 'Current Situation and Outlook' of the National Policy Framework
Legislative & Regulatory	8	Cabinet Resolution No 49/2016 of 1 September 2016	approving the conclusion of the 1st stage of the MOBI.E pilot network and launching the 2nd stage of the pilot network to include municipalities not served in the 1st stage, extending the pilot network to a total of 1 604 normal power charging points (normal charging points) and 50 high power charging points (rapid charging points), known as Rede+ MOBI.E.	AFI	Electricity	National targets	Road	National	2016	2018	Statutory instrument identified in Part A - 'Current Situation and Outlook' of the National Policy Framework
Legislative & Regulatory	9	Cabinet Resolution No 163/2017 of 31 October 2017	approving the National Biorefinery Promotion Plan, which aims to boost Portugal's commitment to making use of various renewable energy sources, specifically through the sustainable use of different types of endogenous biomass.	AF	Biofuels	National targets	Road	National	2017	2030	-
Legislative & Regulatory	10	Cabinet Resolution No 175/2017.	approving the strategy to increase the competitiveness of the network of commercial ports in mainland Portugal - Horizon 2026	AFI	LNG (incl. biomethane)	National targets	Sea	National	2017	2026	-

CATEGORY	No.	NAME	DESCRIPTION	FIELD	ALTERNATIVE FUEL	TYPE	MODE OF TRANSPORT	DEGREE OF IMPLEMENTATION	Year beginning	Year ending	OBSERVATIONS
Legislative & Regulatory	11	DGEG Order No 5/2018	approving the technical guide to electrical facilities intended to supply electric vehicles	AFI	Electricity	Rules and requirements	Road	National	2018	-	
Legislative & Regulatory	12	DGEG Order No 24/2019	on procedures for certification/ inspection of charging points for electric vehicles connected to the MOBI-E network	AFI	Electricity	Rules and requirements	Road	National	2019	-	
Legislative & Regulatory	13	Regional Legislative Decree No 21-2019-A of 8 August 2019	defining the strategy for the roll-out of electric mobility in the Azores	AF	Electricity	National targets	Road	Regional	2019	-	Statutory act applicable to the Autonomous Region of the Azores
Legislative & Regulatory	14	Council of Government Resolution No 106/2019 of 4 October 2019	approving the Electric Mobility Plan for the Azores, defining a number of coordinated measures to enable the energy transition, particularly in the land transport sector.	AF	Electricity	National targets	Road	Regional	2018	2024	Statutory act applicable to the Autonomous Region of the Azores
Legislative & Regulatory	15	Ministerial Implementing Order No 13/2020, of 7 February 2020	regulating the implementation of the charging network for electric vehicles in urban planning operations, particularly in buildings in co-ownership, tourist resorts, infrastructure used for tourism-related, social, recreational, cultural and sporting purposes, including shops and shopping complexes and publicly accessible car parks	AFI	Electricity	Rules and requirements	Road	Regional	2020	-	Statutory act applicable to the Autonomous Region of the Azores
Legislative & Regulatory	16	Decree-Law No 4/2018 of 2 February 2018	creating an incentive to promote the replacement of fossil fuels by electricity in supplying public municipal passenger transport vehicles	AFV	Electricity	Other	Road	National	2018	2025	-

CATEGORY	No.	NAME	DESCRIPTION	FIELD	ALTERNATIVE FUEL	TYPE	MODE OF TRANSPORT	DEGREE OF IMPLEMENTATION	Year beginning	Year ending	OBSERVATIONS
Legislative & Regulatory	17	Regional Legislative Decree No 26/2018/M of 31 December 2018	creating the Electric Mobility Incentive Programme for the Autonomous Region of Madeira (PRIME-RAM) funded by the Budget for the Autonomous Region for 2019.	AFV	Electricity	Other	Road	Regional	2019		The objective is to create a sustainable mobility solution based on the development of an electric ecosystem involving the allocation of incentives for using electric vehicles to the detriment of others fuelled by non-renewable energies. Statutory act applicable to the Autonomous Region of Madeira
Legislative & Regulatory	18	Cabinet Resolution No 53/2020 of 10 July 2020	approving the National Energy and Climate Plan 2021-2030 (NECP 2030)	AF	Combination	National targets	Combination	National	2021	2030	
Legislative & Regulatory	19	Cabinet Resolution No 63/2020 of 14 August 2020	approving the National Strategy for Hydrogen (EN-H2)	AF	Hydrogen	National targets	Combination	National	2020	2050	
Legislative & Regulatory	20	Decree-Law No 62/2020 of 28 August 2020	establishing the organisation and functioning of the National Gas System and the respective legal regime, transposing Directive 2019/692.	AF	Combination	Rules and requirements	Combination	National	2020	-	



CATEGORY	No.	NAME	DESCRIPTION	FIELD	ALTERNATIVE FUEL	TYPE	MODE OF TRANSPORT	DEGREE OF IMPLEMENTATION	Year beginning	Year ending	OBSERVATIONS
Administrative	1	Regulation No 854/2019 of 4 November 2019	approving the new Regulation on Electric Mobility (ERSE); establishing new provisions applicable to the exercise of electric mobility activities that come under the regulatory remit of the Energy Services Regulatory Authority (ERSE) and amending Regulation No 879/2015 of 22 December 2015.	AF	Electricity	Other	Road	National	2019	-	
Administrative	2	Ministerial Implementing Order No 678/2019 of 9 October 2019	authorising MOBI.E, S.A. to allocate charges with the contract for the acquisition of normal low voltage (NLV) and special low voltage (SLV) electricity supply services on a liberalised market	AFI	Electricity	Other	Road	National	2019	2020	
Administrative	3	ERSE (Energy Services Regulatory Authority) Directive No 8/2020 of 28 May 2020	approving the general conditions of the contract to sign up for the electric mobility network and the methodology for calculating the guarantees to be provided to the Management Body for the Electric Mobility Network	AF	Electricity	Other	Road	National	2019	-	

**Please note:** AF – Alternative Fuels; AFI - Alternative Fuels Infrastructure; AFV -Alternative Fuels Vehicles

## 3.2. Policy measures supporting the implementation of the National Policy Framework

Various incentives and grants financed by different funds and support programmes have focused on promoting the use of cleaner alternative fuels and developing the respective supply infrastructure. Some of the highlights are:

- Portugal 2020, a partnership agreement between Portugal and the European Commission, combining five European Structural and Investment Funds (the European Regional Development Fund, the Cohesion Fund, the European Social Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund) and consisting of 16 Operational Programmes as well as the Territorial Cooperation Programmes in which Portugal will be participating along with other Member States. The various Operational Programmes include: the Operational Programme for Sustainability and Efficiency in the Use of Resources, the Operational Programme for Competitiveness and Internationalisation. There are also 7 Regional Operational Programmes:
- The Environmental Fund created by Decree-Law No 42-A/2016 of 12 August 2016 phased out the Portuguese Carbon Fund, the Environmental Intervention Fund, the Fund for the Protection of Water Resources and the Fund for the Conservation of Nature and Biodiversity, with the goal of supporting environmental policies aimed at achieving sustainable development targets and contributing towards attaining national and international targets and commitments, including those pertaining to climate change. Among others, it financed bodies, activities and projects contributing towards the reduction of GHG emissions and thus towards attaining targets, particularly in the field of renewable energies and energy efficiency in various sectors of activity;
- The Public Transport Service Fund created by Ministerial Implementing Order No 359-A/2017 of 20 November 2017 is intended, inter alia, to contribute towards the financing and functioning of transport authorities, supporting research and development and promoting intelligent transport systems; promoting, participating in and supporting coordinated measures designed to bring about improved quality, safety and environmental conditions for public transport, as well as promoting, participating in and supporting the enhancement of the image of public transport;
- The Fund to Support Innovation created by Order No 32 276-A/2008, published in the Portuguese Official Gazette, 2nd Series, of 17 December 2008, which also approved the Management Rules, as subsequently amended by Order No 13 415/2010 published in the Portuguese Official Gazette, 2nd Series, of 19 August 2010 and by Order No 5727/2013 published in the Portuguese Official Gazette, 2nd Series, of 2 May 2013, was intended to provide support to projects focusing on innovation and technological

development and technological demonstration projects in the areas of renewable energies and energy efficiency, as well as projects for investment in energy efficiency. It constitutes a public policy instrument that supports the attainment of the targets set out in Portugal's energy strategy.

These funds and programmes allocate various incentives at national and regional level to support the acquisition of alternative fuels vehicles and the deployment of the relevant refuelling/charging infrastructure. Table 2 provides a summary of the main grants provided in this area.

Table 2 - Main policy measures to support the implementation of the NPF

CATEGORY	No.	NAME	DESCRIPTION	FIELD	TYPE	INDICATOR	ALTERNATIVE FUEL	MODE OF TRANSPORT	DEGREE OF IMPLEMENTATION	CURRENT AND PREVIOUS ANNUAL BUDGET [k€]				ESTIMATED FUTURE BUDGET [k€]			COMMENTS	
										2016	2017	2018	2019	2020	2021-2025	2026-2030		
M1 - Measures to attain national targets and objectives	M1.1	Incentive for introducing low emissions vehicles on the consumer market	Promoting the purchase of vehicles with high environmental performance, specifically low carbon vehicles, by private individuals and undertakings	AFV	Financial incentives	Subsidies	Electricity	Road	National	-	2 200	2 650	3 000	4 000				
	M1.2	ECO-mob programme to support electro-mobility in public administration	The ECO-mob programme provides funding for electric vehicles in public administration and supports the acquisition of charging points and the respective geo-referencing and monitoring systems	Comb.	Financial incentives	Subsidies	Electricity	Road	National	-	5 549	5 805	7 800 (*)					(*) The deadline for submission of applications under the call launched in 2019 to support the third stage of the Programme to Support Electric Mobility in Public Administration was extended to 2020
	M1.3	Promoting investments in infrastructure and facilities for public use as part of Sustainable Urban Mobility Plans.	Boosting electric mobility by introducing a charging network for vehicles that are 100% electric	AFI	Financial incentives	Subsidies	Electricity	Road	Regional			78						
	M1.4	Promoting sustainable urban mobility	Support for the acquisition of charging points in the public electric mobility network	AFI	Financial incentives	Subsidies	Electricity	Road	Regional	-	-	768	128					

CATEGORY	No.	NAME	DESCRIPTION	FIELD	TYPE	INDICATOR	ALTERNATIVE FUEL	MODE OF TRANSPORT	DEGREE OF IMPLEMENTATION	CURRENT AND PREVIOUS ANNUAL BUDGET [k€]				ESTIMATED FUTURE BUDGET [k€]			COMMENTS
	M1.5	Incentive for introducing low emissions vehicles - 100% electric - in the Autonomous Region of the Azores	Allocation of financial incentives for electric mobility, specifically for the acquisition of electric vehicles and charging points for electric vehicles in the Autonomous Region of the Azores.	Comb.	Financial incentives	Subsidies	Electricity	Road	Regional					500			Financial envelope provided for in Council of Government Resolution of 5 March 2020, approving the amounts and conditions for the allocation of financial incentives towards the acquisition of new electric vehicles, in accordance with the annex to this resolution, of which it forms an integral part.
	M1.6	Electric Mobility Incentive Programme for the Autonomous Region of Madeira ('PRIME-RAM')	Support granted solely and exclusively for the introduction of a new 100% electric vehicle for consumption which has not been registered before ('a new 100% electric automobile vehicle', a 'new 100% electric motorcycle' or a 'new electric bicycle', with the latter being allowed only in 2020).	AFV	Financial incentives	Subsidies	Electricity	Road	Regional			399	1 000				The amounts indicated are linked to the budget allocation provided for in Ministerial Implementing Orders Nos 434/2019 of 7 August 2019 and 110/2020 of 1 April 2020 of the Autonomous Region of Madeira, approving the Regulation on Incentives for Electric Mobility on the island of Porto Santo, created as part of the Electric Mobility Incentive Programme for the Autonomous Region of Madeira ('PRIME-RAM') for the years 2019 and 2020, respectively.

CATEGORY	No.	NAME	DESCRIPTION	FIELD	TYPE	INDICATOR	ALTERNATIVE FUEL	MODE OF TRANSPORT	DEGREE OF IMPLEMENTATION	CURRENT AND PREVIOUS ANNUAL BUDGET [k€]				ESTIMATED FUTURE BUDGET [k€]			COMMENTS
	M1.7	Creation of a charging network for electric vehicles connected to the MOBI.E network	Creation of the first private network of charging points for electric vehicles. Installation and operation of facilities in public and private parks and in parking spaces on public thoroughfares. The country is committed to new energy models for mobility, particularly the use of electric vehicles, and the intention is for this new network to contribute towards these new energy models.	AFI	Financial incentives	Subsidies	Electricity	Road	Regional				92				
	M1.8	Incentive to support the replacement of urban environmental service vehicles with electric vehicles to be used for the same purpose	Allocation of an incentive for local authorities with competences in urban environmental services, for the purchase of street-sweeping, street-washing and other cleaning vehicles to be used in urban or landscaped areas, to support environmental services and the acquisition of the respective charging points.	Comb.	Financial incentives	Subsidies	Electricity	Road	National		5 200						
	M1.9	Support for the replacement of service vehicle fleets with low emissions vehicles by bodies managing multi-municipal or inter-municipal systems	Allocation of an incentive for bodies managing multi-municipal or inter-municipal systems to replace their fleets with electric vehicles and acquire the respective charging infrastructure. The support towards the acquisition of charging points can be raised in the case of projects involving photovoltaic panels and/or energy-saving devices.	Comb.	Financial incentives	Subsidies	Electricity	Road	National		1 500						
	M1.10	Fiscal benefits for alternative fuel vehicles	Allocation of exemptions and reductions in Vehicle Tax ( <i>Imposto sobre os veículos - ISV</i> ) for light vehicles fuelled solely by alternative energy sources (electricity and natural gas) or equipped with hybrid engines	AFV	Financial incentives	Tax reductions and exemptions	Combination	Road	National	49	32 848	29 675	41602	40 110			

CATEGORY	No.	NAME	DESCRIPTION	FIELD	TYPE	INDICATOR	ALTERNATIVE FUEL	MODE OF TRANSPORT	DEGREE OF IMPLEMENTATION	CURRENT AND PREVIOUS ANNUAL BUDGET [k€]				ESTIMATED FUTURE BUDGET [k€]			COMMENTS
M2 - Measures that can promote AFI in public transport services	M2.1	Promoting economic and energy efficiency in public passenger transport	Support for the replacement of vehicles owned by collective transport operators with alternative fuel vehicles and the acquisition/ construction of the multiple fuelling/ charging points needed	Comb.			Combination	Road	National		41 556		22 506				
	M2.2	Support for the decarbonisation of the taxi fleet	Support for the acquisition of new 100% electric vehicles for use in public transport activities involving the hiring of light passenger automobile vehicles (taxi services) and the acquisition and installation of the respective charging facilities	Comb.			Electricity	Road	National			66	169	240			
	M2.3	Promoting energy efficiency in public inland waterway passenger transport entrusted with public service responsibilities	Support for the acquisition of environmentally friendly vessels and the acquisition / construction or adaptation of the respective charging/ fuelling infrastructure.	Comb.			Combination	Sea	National						8 659		

CATEGORY	No.	NAME	DESCRIPTION	FIELD	TYPE	INDICATOR	ALTERNATIVE FUEL	MODE OF TRANSPORT	DEGREE OF IMPLEMENTATION	CURRENT AND PREVIOUS ANNUAL BUDGET [k€]				ESTIMATED FUTURE BUDGET [k€]			COMMENTS
	M2.4	Promoting energy efficiency in public urban passenger transport entrusted with public service responsibilities	Support for integrated operations in public urban passenger transport services as part of sustainable mobility plans or integrated transport plans at regional level, with a view to enhancing the appeal of public transport over private transport and reducing CO <sub>2</sub> emissions, including the acquisition of road vehicles that use more efficient energies and technologies	Comb.			Combination	Road	Regional				3 938				The support granted was intended for projects promoting the use of more efficient vehicles using fuels with better environmental performance in the sector of public urban passenger transport entrusted with public service responsibilities. In accordance with this public service mission, it was particularly intended for the acquisition of new vehicles fuelled by diesel, compressed / liquefied natural gas or hydrogen, or electric or plug-in hybrid vehicles, with the requirement that emissions had to be at least 15% lower in all cases than the maximum applicable limits as set out in the Euro VI standards (environmentally friendly buses) and for the installation of new CNG, LNG or hydrogen refuelling points and electric charging points.
	M2.5	Clean urban transport infrastructure and promotion (including equipment and rolling stock)	Support for the acquisition of low emissions electric buses for use in collective passenger transport	Comb.			Electricity	Road	Regional					2 000			



CATEGORY	No.	NAME	DESCRIPTION	FIELD	TYPE	INDICATOR	ALTERNATIVE FUEL	MODE OF TRANSPORT	DEGREE OF IMPLEMENTATION	CURRENT AND PREVIOUS ANNUAL BUDGET [k€]				ESTIMATED FUTURE BUDGET [k€]			COMMENTS
M3 - Measures that can promote the deployment of private electric mobility infrastructure	M3.4	Acquisition and installation of charging points for electric vehicles on university campuses	Support for the acquisition and installation of charging points	AFI			Electricity	Road	National			225					

**Please note:** AF – Alternative Fuels; AFI - Alternative Fuels Infrastructure; AFV -Alternative Fuels Vehicles; Comb.- Combination

As can be seen from the table above, various incentives have been granted at both national and regional level to support the introduction of low emissions vehicles and the respective charging infrastructure required. The Environment Fund has allocated incentives for the introduction of new 100% electric vehicles that have not been registered before on the consumer market. These incentives are open to private individuals and legal persons. This incentive was initially limited to the acquisition of new light vehicles for passengers and goods that had not been registered before but it has since been extended to include bicycles, motorcycles, electric mopeds and cargo bicycles. The value of the incentive can vary depending on the type of electric vehicle and the type of beneficiary. At present it can amount to up to EUR 3 000, if the applicant is a private individual or if a light electric vehicle for goods transport is bought by a legal person.

In the Autonomous Region of the Azores, Council of Government Resolution No 49/2020 of 5 March 2020 approves the amounts and conditions for the allocation of financial incentives towards the acquisition of new electric vehicles (passenger cars, two-wheeled motorcycles or mopeds, motorised tricycles or quadricycles and bicycles with engines), and the acquisition of charging points for such vehicles. The total amount of the budget for this measure in 2020 is EUR 500 000. In the case of the acquisition of a passenger car, the incentive to be allocated is set at 10% of the amount paid, up to a maximum limit of EUR 3 000 per vehicle for private individuals and EUR 2 000 per vehicle for legal persons. These incentives can be increased if applicants availing of a differentiated tariff over time have their tax domicile in islands belonging to the UNESCO World Network of Biosphere Reserves or if they provide proof of having scrapped a car with an internal combustion engine which they owned. The grant towards the acquisition of charging infrastructure for electric vehicles corresponds to 50% of the amount paid, up to the maximum limit of EUR 500.

In the Autonomous Region of Madeira, Ministerial Implementing Orders Nos 434/2019 of 7 August 2019 and 110/2020 of 1 April 2020, respectively approved for the years 2019 and 2020 the Regulation on Incentives for Electric Mobility on the island of Porto Santo, created as part of the Electric Mobility Incentive Programme for the Autonomous Region of Madeira ('PRIME-RAM'). The total budget allocation available for these incentives amounted to EUR 400 000 in 2019 and rose to EUR 1 000 000 for this year. In 2019, up to EUR 10 000 could be awarded for the acquisition of a new 100% electric light car, in the case of private individuals, and EUR 7 500 in the case of legal persons. Under the current rules, these incentives have been adjusted. The maximum value is currently EUR 5 000 for the acquisition of a 100% electric light car by a private individual and EUR 3 500 if purchased by a legal person.

Cabinet Resolution No 54/2015 of 28 July 2015 approved the Sustainable Mobility Programme for Public Administration 2015-2020 (ECO.mob) with a view to reducing transport needs and promoting the choice of more suitable means of transport, as well as adopting sustainable mobility solutions for the state's vehicle fleet. More specifically, some 1 200 electric vehicles are expected to be added to the state's fleet of vehicles by 2020. Smart charging facilities integrated with network management by MOBI.E will also be introduced. The Environment Fund has also supported the acquisition of electric vehicles and the respective charging points and geo-referencing and monitoring systems by the Public Administration.

Mention should also be made of the incentives granted towards the replacement of urban environmental service vehicles with electric vehicles to be used for the same purpose. These

are intended for local authorities with competences in urban environmental services, for the purchase of street-sweeping, street-washing and other cleaning, gardening and environmental service vehicles. The total budget amounts to EUR 10 million, with 25% or 50% co-participation in the investment depending on the type of vehicle.

The replacement of service vehicles belonging to the fleets of bodies in charge of managing multi-municipal or inter-municipal systems, with grants of EUR 10 000 per electric vehicle and 75% of the total eligible expenditure on each charging point for electric vehicles (up to a maximum of EUR 1 500 per charging point, rising to EUR 5 000 if the operation includes photovoltaic panels and/or energy storage devices).

As regards promoting alternative fuels in public transport, the Operational Programme for Sustainability and Efficiency in the Use of Resources has granted incentives for the replacement of road vehicles used in public passenger transport entrusted with public service responsibilities. This is to incentivise the use of more efficient vehicles which use fuels with better environmental performance, specifically via the acquisition of new vehicles fuelled by CNG, LNG, hydrogen, electricity or plug-in hybrids ('clean buses') and the installation of the respective refuelling infrastructure. Funding is granted for the difference between the purchase cost of the 'clean bus' and the purchase cost of an equivalent new bus (of the same type and capacity) that is merely compliant with the Euro VI standard. The grant goes up to a maximum of EUR 100 000 in the case of clean buses fuelled by CNG or LNG and EUR 200 000 in the case of other technologies.

Measures to promote the use of cleaner fuel sources in inland waterway transport, such as CNG, LNG, electricity and hydrogen, via the acquisition or conversion of vessels, and the installation of the respective refuelling points, have also received support under the Operational Programme for Sustainability and Efficiency in the Use of Resource. In fact, a call for applications to that effect is currently underway. The eligible expenditure also corresponds to the differential between the purchase cost of the 'clean boat' and the expected cost of an equivalent diesel-fuelled boat complying with the maximum NO<sub>x</sub> limits under the Marpol Convention.

The development of refuelling/charging infrastructure has received support under other specific incentives, as well as the above-mentioned, with support for the purchase or construction of such infrastructure. One such example are the incentives granted by the Fund to support the installation of charging points for electric vehicles on university campuses. Eligible expenditure can be funded up to 100%, with a limit of EUR 5 000 per charging point, irrespective of the number of points provided, and to support the acquisition, installation and public provision of rapid charging points for electric vehicles.

The technological transition needed in the transport sector, both in terms of developing the infrastructure needed to produce or supply alternative fuels, and the acquisition of new

vehicles fuelled by these more environmentally sustainable alternatives, requires high levels of investment. EU funding sources, specifically the Multiannual Financial Framework for 2021-2027 and the Recovery and Resilience Facility (still under discussion) will have a key role in the decarbonisation of the sector.

The creation of a new fund for energy at national level is still being finalised. It will combine resources from various funds already in existence in that area and concentrate them in a single fund. The creation of this new fund will enable greater efficiency in managing the available budget in accordance with energy and climate policy priorities, on the one hand, and greater flexibility in funding larger scale projects, on the other.

Together with the review of the NPF that is needed to reflect the current energy and climate policy goals for the transport sector, this means that it is not possible within the scope of this report to provide an estimate of the budget to be allocated after 2020 to the various support measures defined for promoting alternative fuels and developing the refuelling infrastructure needed.

However, promoting mass-market use of electric vehicles is a premise for the 2030 horizon. This will be achieved, on the one hand, by expanding the network of rapid charging points (high power charging points) available to users on a fair and universal basis, and by promoting the installation of charging points in buildings; and on the other, by providing incentives for the acquisition of electric vehicles by private individuals. An estimated budget of EUR 360 million has been earmarked for this <sup>2</sup> for the period 2021 to 2030.

Another goal for the next decade is the deployment of innovative solutions in logistic processes in urban settings to contribute to decarbonisation in society and improve traffic on the roads. This will be achieved by setting up micrologistics hubs and systems for managing heavy-duty vehicle access to city centres, and promoting the acquisition of light-duty electric goods vehicles for the last mile urban logistics to meet the needs of micrologistics. A budget of EUR 450 million<sup>2</sup> has been earmarked for the roll-out of these solutions by 2030.

Fiscal policy has an important role to play in the energy transition and consequent decarbonisation of the sector. Over the years, various fiscal incentives towards the use of alternative fuels have been granted, including:

- Allocation of fiscal incentives towards the acquisition of electric, plug-in hybrid or natural-gas vehicles, with new eligible amounts for fiscal expenditure and autonomous income (**IRS**) and corporation (**IRC**) taxes.
- Extension of the possibility of **VAT** deductions for expenditure incurred in the acquisition, manufacture or import, rental or transformation into electric or plug-in hybrid vehicles of light passenger vehicles or mixed electric or plug-in hybrid vehicles,

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<sup>2</sup> National Investment Plan 2030

when considered to be passenger cars, as long as the purchase cost does not exceed the amount defined in the Ministerial Implementing Order referred to in Article 34(1)(e) of the Corporation Tax (IRC) Code;

- Possibility of 50% deduction of **VAT** paid on expenditure incurred in the acquisition, manufacture or import, rental or transformation into vehicles fuelled by LPG or natural gas, when considered to be passenger cars, as long as the purchase cost does not exceed the amount defined in the Ministerial Implementing Order referred to in Article 34(1)(e) of the Corporation Tax (IRC) Code;
- Possibility to deduct expenditure incurred in the acquisition in Portuguese territory of electricity, natural gas or LPG<sup>3</sup> to fuel road transport vehicles used for passengers and goods;
- In determining the taxable profit of those subject to corporation tax (IRC) with a commercial, industrial or agricultural activity as their main activity, and determining the business and professional revenue of those subject to income tax (IRS) with organised accounts, expenditure and losses in the tax period pertaining to the fiscally acceptable depreciation of elements of fixed tangible assets corresponding to solar electric or exclusively electric vessels are considered at 120% of the respective amount.
- Exemption from vehicle tax for vehicles that are exclusively electric or powered by non-fuel renewable energies and a reduction in vehicle tax for vehicles powered by alternative energy sources, depending on the type of vehicle, with an intermediate tax being applicable for the following percentages of this tax:
  - (i) 60% in the case of light passenger vehicles equipped with hybrid engines prepared for the consumption in their propulsion system of electricity or solar energy, petrol or diesel;
  - (ii) 40% in the case of light passenger cars that run exclusively on LPG<sup>4</sup> or natural gas;
  - (iii) 25% in the case of light passenger vehicles equipped with plug-in hybrid engines, batteries that can be charged by connection to the electricity grid and a minimum range of 25 km in the electric mode.
- Exemption from vehicle tax for light passenger and mixed-use vehicles intended for use in the taxi service, if solely powered by LPG, natural gas or electricity or equipped with hybrid engines.
- Exemption from payment of any tax on the conversion of internal combustion engine vehicles into electric vehicles;

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<sup>3</sup> The State Budget Law for 2020 amended the Fiscal Benefits Statute, doing away with the possibility of deductions of expenditure incurred in acquiring LPG within Portugal.

<sup>4</sup> The State Budget for 2020 amended the Vehicle Tax Code, leaving LPG-fuelled cars to benefit from a reduction in vehicle tax (ISV).

- Setting new thresholds for accepting as expenditure the depreciation of light passenger or mixed vehicles to vehicles powered exclusively by electricity and plug-in hybrid vehicles and light passenger or mixed vehicles powered by natural gas and LPG;
- Total exemption from tax on oil products (ISP) for small dedicated biofuel producers.

Also as regards fiscal matters, Decree-Law No 92/2018 of 13 November 2018 set up a special regime for determining the taxable amount based on ship and vessel tonnage, a fiscal and contributive regime for crew members and a simplified register of ships and vessels.

With a view to promoting environmentally sustainable maritime transport, Article 5 of the special regime on determining the taxable amount applicable to maritime transport activities, which is an annex to the above Decree-Law, provided for the setting in a Ministerial Implementing Order of a 10% to 20% reduction in the quantitative value of the taxable amount, in the case of ships or vessels with a tonnage of over 50 000 net tonnes that make use of mechanisms to preserve the maritime environment and reduce the effects of climate change.

To that end, Ministerial Implementing Order No 72-B/2019 of 4 March 2019 was published, providing tax reductions to incentivise ship-owners to invest in technology to minimise the environmental footprint of the Portuguese fleet, preserve the maritime environment and reduce the effects of climate change.

### Other initiatives

Cabinet Resolution No 38/2016 of 29 July 2016 approved the National Strategy for Environmentally-friendly Public Procurement 2020 (ENCPE 2020). This strategy included the production of manuals setting out the criteria for environmentally-friendly public procurement for different categories of goods and services, including transport.

The goal of these support manuals is to help public authorities purchase products, services and works with reduced environmental impacts. The criteria are drawn up so that they can be included in the precontractual procedural documents for purchases, if the body in question deems this to be appropriate.

The support manual for the transport category sets out a number of recommendations to enable alternative options for use with less of an environmental impact to be selected, for example that public bodies should contract electric vehicles for their fleets, taking account of analysis of their use and the environmental benefits to be gained.

The support manual also includes suggestions for selection criteria, technical specifications, criteria for awarding contracts and clauses regarding the conclusion of contracts to be used in public procurement procedures for the following goods and services:

- Acquisition of light vehicles that are either purchased directly or leased under long-term financial/operational lease agreements;

- Acquisition or lease of heavy-duty passenger transport vehicles (buses);
- Acquisition of passenger transport services;
- Acquisition or lease of heavy-duty waste collection vehicles;
- Acquisition of waste collection services.

The criteria for awarding contracts provide that additional points be allocated to vehicles designed to operate with alternative fuels or hybrid systems.

On the other hand, as regards operations in urban settings and last mile transportation, the Portuguese Institute for Mobility and Transport [*Instituto da Mobilidade e dos Transportes, I.P.* - *IMT, I.P.*] drew up Guidelines on Urban Logistics with a view to meeting the challenge of **urban logistics** to provide more and better services in society and at the same time ensure greater sustainability for supply operations performed in urban settings. This document targeted at public authorities, undertakings, logistics operators and professionals from the sector is intended as a support guide for the application of local policies on urban logistics. It recommends that goods be distributed in urban settings using light electric vehicles, cargo bikes, electric trolleys or other means of transport with low environmental impacts.

The Garveland<sup>5</sup> project, cofinanced by the European Regional Development Fund (ERDF) as part of the Interreg VA Spain-Portugal (POCTEP) programme 2014-2020, aims to promote electric vehicles in the area of crossborder cooperation by connecting the Algarve to Andalusia and helping to set up smart grids with studies on the optimal locations for charging points for electric vehicles on either side of the border, including municipalities, protected areas and areas of interest to tourism.

This project aims to *'contribute towards sustainable local development in urban areas via sustainable mobility based on electric vehicles and the creation of green corridors'*. It focuses on various activities, such as:

- Analysing the state of the art in electric mobility;
- Creating thematic working groups to promote electric vehicles;
- Developing pilot projects on electric mobility in municipalities, protected areas and tourist hubs;
- Drawing up a Comprehensive Plan of Action for the Promotion of Electric Vehicles.

As part of the scope of this project, Electric Mobility Plans were drawn up for the municipalities of Loulé, Castro Marim and Silves, as well as for the following nature reserves: [Ria Formosa nature reserve](#); [Sapal de Castro Marim and Vila Real de Santo António nature reserve](#); [Cádiz Bay nature reserve](#); and the [Sierra Norte nature reserve](#).

At local level, other municipalities have adopted measures to incentivise the use of electric vehicles, for example, by allocating exemptions from parking charges to electric vehicles or by creating designated parking spaces for electric vehicles.

<sup>5</sup> <http://garvelandproject.eu/pt/inicio/>

At Autonomous Region level, given that electric mobility is a strategic option in the environmental and energy policy, the Regional Government of the Azores issued Council of Government Resolution No 106/2019 of 4 October 2019 approving the Plan for Electric Mobility in the Azores 2018-2024 (mentioned previously). This plan defines a number of coordinated measures geared towards promoting the energy transition, particularly in the land transport sector. The measures provided in this strategic document are financial, non-financial and fiscal in nature. There are also measures to raise awareness of and promote electric mobility both in civil society and in the Regional Public Administration<sup>6</sup>.

The Plan for Electric Mobility in the Azores is therefore intended as a guide to the implementation of electric mobility in the Autonomous region of the Azores, including diagnostic surveys on various sectors of activity in accordance with their environmental performance and the mobility patterns of private individuals, undertakings and public bodies. The goal is to anticipate changes in technology and the market in order to define measures to promote the use of electric vehicles in the region.

In the Autonomous Region of Madeira, the regional government launched a strategy for ensuring the environmental, social and economic sustainability of the island of Porto Santo, with its 'Sustainable Porto Santo - Smart Fossil Free Island' project. Under the EU's 20-20-20 Strategy, this initiative is structured in six priority areas for intervention. Two of its main priority targets and objectives are intervention in sustainable energy and sustainable mobility and it is based on a concept that aims to bring together technology, energy efficiency and sustainability.

Against that context and with a view to supporting and encouraging the use of more environmentally-friendly means of transport, a regime of Incentives for Electric Mobility on the island of Porto Seguro was set up. The goal is to create a sustainable mobility solution based on an electric ecosystem, prioritising the acquisition and use of electric vehicles via the allocation of incentives by the Regional Government to the detriment of other vehicles fuelled by non-renewable energies.

This incentive aims to ensure the continued roll-out of the energy measures already included in the Programme of the 12th Regional Government of Madeira, promoting energy efficiency and renewable energy sources in order to reduce dependency on external sources, reduce carbon dioxide emissions and encourage more sustainable production and consumption patterns, while reinforcing the free choice and responsibility of citizens and undertakings alike.

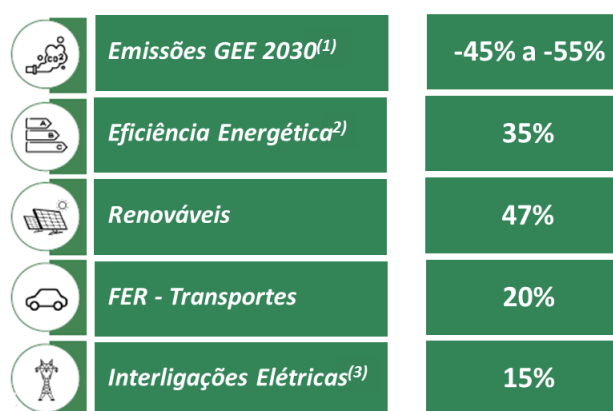
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<sup>6</sup> <https://portaldaenergia.azores.gov.pt/portal/Portals/0/Documentos/ME/PMEA.pdf?ver=2019-10-04-134500-553>



## NECP 2030

The NECP 2030 is the main instrument in the national energy and climate policy for the next decade as regards promoting the energy transition and the decarbonisation of the economy, with a view to attaining a carbon-neutral economy by 2050. To that end, 8 national objectives were defined in the NECP 2030 with a view to bringing together energy and climate concerns: 1. Decarbonisation of the national economy; 2. Putting energy efficiency first; 3. Reinforcing the commitment to renewable energies and reducing the country's energy dependence; 4. Guaranteeing security of supply; 5. Promoting sustainable mobility; 6. Fostering sustainable agriculture and promoting carbon capture; 7. Developing innovative and competitive industry; and 8. Guaranteeing a fair, democratic and cohesive transition.



Note: (1) without LULUCF; Compared to 2005; (2) Reduction in the consumption of primary energy without non-energy uses. By comparison with the projections of the PRIMES model from 2007

Figure 8 - Targets defined in the NECP 2030

PT	EN
Emissões GEE 2030	GHG emissions
Eficiência energética	Energy efficiency
Renováveis	Renewables
Transportes	Transport
Interligações Elétricas	Electricity interconnections

In order that the aims, targets and goals set out in this plan can be pursued and achieved in the various dimensions set out in the NECP 2030 (decarbonisation, energy efficiency, security of energy supply, internal market and research, innovation and competitiveness), various lines of action and action measures have been defined for the 2030 horizon. The following table shows the main action measures linked to the area of transport and mobility:

Table 3 – Main action measures provided for in the NECP in relation to promoting alternative energy sources in transport

LINE OF ACTION	ACTION MEASURE	COMMENTS
Promote the production and consumption of renewable gases.	Promote the production and consumption of green hydrogen.	Hydrogen has huge potential as an energy vector that could be used to store energy or as a fuel in various sectors of the economy, including transport.
Encourage the energy transition in the transport sector.	Renew bus fleets.	Continue to encourage fleet renewal by co-funding 'clean buses', particularly those that run on electricity and hydrogen.
	Include and prioritise environmental performance and low carbon criteria when awarding concessions for public passenger transport services.	
	Renew the fleet of vessels used for passenger transport.	Incentivise the use of vessels and boats that run on clean alternative fuels in transport and other maritime activities, with particular attention to the importance of electrification in short-distance river passenger transport.
	Look into repurposing diesel trains so they can be powered by green hydrogen and run on non-electrified tracks.	Hydrogen has the potential to play an important role in the decarbonisation of rail transport, as an alternative to track electrification. This would reduce costs and reduce the environmental impact of such interventions.
	Introduce cleaner energy sources on the ferry between Madeira and Porto Santo.	Renew the passenger and vehicle transport vessel (ferry) between Madeira and Porto Santo, introducing cleaner and more efficient forms of energy.
Promote and support electric mobility.	Consolidate the new model for electric mobility.	Expand the interoperability between different electricity marketers to the entirety of the publicly accessible network in operation.
	Foster efficient electric mobility in Madeira and Porto Santo.	Renew public transport fleets, taxi fleets, logistics services fleets and other transport fleets, as well as private vehicles, promoting a transition towards efficient electric mobility, particularly by providing financial, fiscal and other incentives.
	Maintain and promote incentives for the acquisition of 100% electric light vehicles, as well as the range of fiscal incentives available.	
	Promote electric vehicles in urban micrologistics.	
	Promote two-wheeler electric vehicles.	
	Promote the development of the publicly accessible charging network.	Adopt criteria on the mandatory installation of charging points, specifically in residential and shopping districts. Establish rules on the mandatory installation of charging points for electric vehicles in publicly accessible facilities.
	Promote the roll-out of charging points for electric vehicles in private buildings.	Create the technical and regulatory conditions and the right incentives so that the charging network for electric vehicles in private buildings can grow.
	Promote smart charging of electric vehicles with two-way energy flows.	

LINE OF ACTION	ACTION MEASURE	COMMENTS
	Promote charging facilities for electric buses.	Create a charging network for electric buses so that they can be charged at night and additional charging facilities at terminal stops or parking areas, covering both public transport and tourism services.
Promote the production and consumption of alternative renewable fuels	Promote the production of advanced biofuels, giving priority to endogenous national resources	The intention is to boost national production of advanced biofuels by making use of biomass from waste or with a low economic value.
	Promote mixes that have higher shares of bioenergy	Assess existing national legislation on the quality of fuels and encourage the inclusion of higher percentages of biofuels, particularly in the case of diesel for professional use.
Promote infrastructure for the supply of alternative fuels as clean fuels	Promote the installation of refuelling points for liquid and gas fuels that are 100% renewable in public transport and municipal service fleets	Prioritise local solutions for the use of advanced biofuels, biomethane, hydrogen and other renewable fuels, either pure or in high concentrations in fossil fuels, by promoting the installation of refuelling points for 100% renewable liquid and gaseous fuels in public transport and municipal service fleets, preferably in close proximity to the facilities where the alternative fuels are produced.
	Promote and support the installation of refuelling points for green hydrogen	Phased set-up of this network, firstly with pilot and demo projects mostly associated to public transport and logistics distribution fleets and then evolving into a network ensuring significant territorial coverage enabling the gradual penetration of hydrogen-fuelled mobility.
	Promote the development of infrastructure for the supply of renewable energy sources to vessels in ports	Promote the use of renewable energy sources for vessels docked at port, such as electricity or hydrogen, providing an on-shore power supply to vessels instead of using conventional fossil fuels to generate energy for internal use.
	Review the National Policy Framework for the deployment of alternative fuels infrastructure	
Promote goods transport by rail and sea.	Improve international links.	This improvement will be achieved via the following corridors: Sines/Setúbal/Lisbon-Caia; Leixões/Aveiro – Vilar Formoso. The use of railways to and from national ports will be promoted.
Continue to promote green fiscal measures.	Fiscal measures for the decarbonisation of the transport sector and promoting sustainable mobility.	Incentives for electric mobility with measures that will have an impact on income tax (IRS), corporation tax (IRC), VAT, vehicle tax (ISV) or autonomous taxes or the allocation of a subsidy for the purchase of new electric or plug-in hybrid vehicles. Review vehicle tax (ISV) and road tax (IUC) to reinforce positive discrimination for vehicles with better environmental performance, while maintaining taxation according to CO <sub>2</sub> emissions. Study potential incentives for mobility fuelled by bioenergy, making a distinction between bioenergy and fossil fuels and promoting the use of mixtures with a higher bioenergy content.
Incentivise R&D&i in renewable energies, storage, hydrogen, advanced biofuels and other fuels that re 100% renewable.	Promote coordination with the Thematic Research and Innovation Agendas run by the Fundação para a Ciência e Tecnologia (Foundation for Science and Technology).	
	Promote national research and innovation programmes to support technological development.	
	Promote a collaborative laboratory for renewable gases.	

The goals set out in the NECP 2030 as regards promoting alternative fuels for transport go beyond those initially envisaged in the NPF and therefore, as explained previously, this strategic document will need to be reviewed to bring it into alignment with the new national objectives and goals. The need for this review has already been stated in the NECP 2030.

## NATIONAL STRATEGY FOR HYDROGEN (EN-H2)

If the objective of carbon neutrality by 2050 is to be attained, the energy sector will have to make an important contribution towards the decarbonisation of the economy in the next decade. As stated in the NECP 2030, renewable gases - in particular, hydrogen - can play a key role in the decarbonisation of various sectors of the economy, especially in transport. Hydrogen is an energy vector that enables the temporary storage of energy and offers high flexibility in use. It can also play a leading role in stabilising electricity production system with high inputs from variable sources, such as is the case of the Portuguese system.

Given the competitive advantage already demonstrated in terms of renewable electricity production - one example of this being the results achieved in the solar photovoltaic auctions held in 2019<sup>7</sup> and 2020<sup>8</sup>, Portugal is well-positioned with competitive conditions for the production of green hydrogen and the development of value chains linked to this alternative fuel, with the creation and promotion of a national industrial cluster focusing on hydrogen and fuel batteries.

The National Strategy on Hydrogen (EN-H2) was drawn up with that in mind, to support the pursuit of the targets and objectives set out in the NECP 2030, while sending the energy sector incentive and stability signals and drawing attention to the role that hydrogen can play in decarbonising various sectors of the economy.

This strategy contemplates various initiatives and projects that aim to promote this alternative fuel, such as the following: setting up a mechanism to support the production of green hydrogen by providing a grant to bridge the difference in price between this alternative and natural gas, with no impact on the tariffs paid by consumers, or supporting investments in hydrogen projects. A call is expected to be launched in 2020 to support projects involving the production and distribution of energy from renewable sources. It will include a hydrogen component and the financial budget will be in the region of EUR 40 million.

Hydrogen will play an important role in the decarbonisation of the transport sector, in addition to electricity and advanced biofuels. To that end, green hydrogen should be promoted, particularly for road transportation of goods (with a focus on heavy-duty vehicles and urban

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<sup>7</sup> The weighted average tariff in the guaranteed scheme was EUR 20.33/ MWh, with a minimum of EUR 14.76/ MWh and a maximum of EUR 31.16/ MWh.

<sup>8</sup> Where only market scheme solutions were proposed for competition, with very successful results.

logistics) and road passenger transport (with a focus on buses). The roll-out of the infrastructure needed to supply this alternative fuel must also be supported, preferably in connection to local production.

The potential for introducing hydrogen in maritime transport has also been identified, particularly for the domestic transportation of passengers and goods. The proposal is for hydrogen to account for between 3% and 5% of the volume of domestic maritime transportation by 2030. As regards road transport, the National Strategy on Hydrogen (EN-H2) proposes as a target that hydrogen account for between 1% and 5% of the volume by 2030.

With a view to achieving the goals and objectives proposed within the scope of this strategy, a number of policies and action measures have also been presented for eight areas, which correspond to different stages in the value chain for hydrogen identified in the strategy: 1. Hydrogen production; 2. Warehousing, transport and distribution; 3. Decarbonisation of transport; 4. Decarbonisation of industry; 5. Decarbonisation of electricity and heat production; 6. Synthetic fuels and other purposes; 8. Employment, upskilling and vocational training; and 8. Cross-cutting actions.

The action measures defined in this strategy will be implemented in three stages in order to create a solid foundation capable of promoting the development of the hydrogen market in Portugal. The first of these stages will consist of a period for learning, experimentation and development. This will be followed by a second stage to consolidate the national framework on hydrogen, reinforce national competences (industrial and professional) and roll out projects at national level and at different points in the value chain, to launch Portugal’s positioning on the European market. Finally, the third stage will focus on fully developing this market.

*Table 4 - Action measures set out in the National Strategy for Hydrogen (EN-H2) to be implemented by 2030 in the area of the decarbonisation of transport*

<b>ACTION MEASURE</b>	<b>PHAS E I</b>	<b>PHAS E II</b>	<b>PHAS E III</b>
Adapt the regulations to enable hydrogen to be introduced into mobility and in the transport sector	X		
Establish rules for the installation of hydrogen refuelling points and the equipment needed to facilitate the supply.	X		
Promote and support the implementation of supply infrastructure for green hydrogen, preferably with local production linked to the refuelling point, in line with how the market evolves and taking account of the main traffic routes	X	X	X
Promote and support the roll-out of green hydrogen supply points for vehicle fleets;	X	X	
Include the possibility of acquiring hydrogen-fuelled vehicles for state fleets and public transport undertakings	X	X	
Promote the use of hydrogen in collective transport fleets (buses and trains) by providing incentives for the replacement of equipment and the respective supply infrastructure and establishing minimum limits for hydrogen to be introduced.	X	X	X

ACTION MEASURE	PHASE I	PHASE II	PHASE III
Promote the use of green hydrogen in goods transport by road and rail, by providing incentives for the replacement of equipment and the respective supply infrastructure and establishing minimum limits for hydrogen to be introduced.	X	X	X
Look into the feasibility of repurposing diesel trains so they can be powered by green hydrogen and run on non-electrified tracks.	X	X	
Promote the use of green hydrogen in taxi fleets, corporate fleets and shared mobility solutions.	X	X	X
Boost and promote the national car and car component industry with technology and products enabling the adoption of hydrogen-fuelled mobility, including the conversion of vehicles (in particular, heavy-duty vehicles).	X	X	X
Ensure participation in the standardisation work linked to refuelling stations for vehicles and the associated equipment and procedures, as part of the M/533 mandate for standardisation issued by the European Commission to the European Committee for Standardisation to support the implementation of Directive 2014/94/EU.	X	X	
Promote consultations on public perception, impact on employment, health and safety and regional/local development.	X	X	
Design specific notices targeted towards supporting the development of new projects using hydrogen to decarbonise transport, thus promoting the emergence of new and innovative technologies.	X	X	

As regards the need for refuelling points for renewable fuel to be used in airports belonging to the TEN-T, it is not yet possible to discuss this issue within the scope of this report, given the changes in energy and climate policy which we have already mentioned, meaning that the NPF needs to be reviewed,

### 3.3. Deployment and manufacturing support

The Programme for Electric Mobility in Portugal, which was launched in 2009, consists of an electric mobility model (MOBI.E) based on the interoperability and centralisation of services with a view to putting the user first. In the initial stage, this model provided for the creation of a pilot electric mobility network with charging points installed in 25 municipalities, allowing universal access and monitoring of the network and consumption levels.

However, based on the data compiled during the pilot stage, the surveys on the location of the normal and high power charging points (normal and rapid charging points) submitted in December 2014 were updated to take account of some of the recommendations made regarding the charging network to be concluded within the context of the MOBI.E pilot network.

Finally, as the light electric vehicles market is starting to show signs of sustained, dynamic growth and is becoming an increasingly more competitive and rational option, it was decided to improve the infrastructure for charging these vehicles. Cabinet Resolution No 49/2016 approved the conclusion of the first stage in the MOBI.E pilot network and launched the second stage of the pilot network to cover the municipalities that were not included in the first stage. This extended the pilot network to a total of 1 604 normal power charging points (normal charging points) and 50 high power charging points (rapid charging points), which is referred to as REDE+ MOBI.E.

The MOBI.E pilot network has therefore been the object of investments to extend it and upgrade its technology.

Rail infrastructure has also been the object of investments aiming to modernise and expand the network and reinforce and renew the rolling stock by acquiring trainsets to be used in providing public passenger transport services.

The Lisbon metro expansion plan - Prolongation of the yellow and green lines - Rato-Cais do Sodré, which contemplates the prolongation of the Lisbon metro network by connecting the two existing stations Rato and Cais do Sodré, with the construction of 1 956 metres of double-track tunnels and two new stations at Estrela and Santos. This investment also contemplates interventions on the Campo Grande viaducts, connecting the existing green and yellow lines between Alvalade, Campo Grande and Cidade Universitária, thus enabling the operation of a circular line between Cais do Sodré - Campo Grande and Cais do Sodré (new green line) and connecting Telheiras - Campo Grande - Odivelas (new yellow line).

The expansion plan for the Porto Metropolitan Area light metro system contemplates the construction of the pink line (Casa da Música - S. Bento), the expansion of the yellow line (Sto Ovídio - Vila d'Este) and the construction of a rolling stock and maintenance facility (*Parque de Material e Oficina - PMO*) in Vila d'Este.

The budget costs arising from the completion of these expansion projects will be financed with allocations from the Operational Programme for Sustainability and Efficiency in the Use of Resources and the Environment Fund, which ensures national investments in this infrastructure.

In the Law on the State Budget for 2020, published in Law No 2/2020 of 31 March 2020, the Government expresses its intention to promote the use of LNG in maritime trips between the mainland and the islands of the Azores and Madeira and in river cruise trips on the navigable section of the Douro in the year 2020. It also states that it will take the necessary steps to assess the economic feasibility of solutions enabling LNG and electricity to be supplied to ships at the ports of Leixões, Lisbon, Sines and Praia da Vitória belonging to the main Trans-European Transport (TEN-T) Network in accordance with the Strategy to Increase Port Competitiveness 2016-2026.

Table 5 provides a summary of the investments made and/or planned with the support of national and EU sources of funding, to improve and extend the infrastructure for alternative fuels, differentiated according to the type of energy and the mode of transport. It also provides examples of grants provided to production units, more sustainable mobility solutions or components in the value chain of those technological solution.

Some examples of projects that have received support are the design, development and production of vessels that only use solar power and electric propulsion technology. The project aims to phase out the consumption of fossil fuels and increase environmental sustainability. This will mean that the shipping sector, which is considered traditional, needs to be equipped with advanced technology under the Operational Programme for the Algarve.

Another project of particular interest which received support from the Operational Programme for the Alentejo Region, is the creation of an innovative centre of research into the area of technological development for electric cars. It includes a factory where certain models of electric cars will be produced. Ultimately the main objective is the creation of a digital undertaking based on the principles of Industry 4.0.

The COMPETE programme provides support for this kind of projects, such as the creation of a production unit devoted to the extrusion of aluminium and the machining of customised parts for the electric mobility segment.



Table 5 –Support for deployment and manufacture

CATEGORY	No.	NAME	DESCRIPTION	FIELD	ALTERNATIVE FUEL	MODE OF TRANSPORT	LEVEL OF APPLICATION	CURRENT AND PREVIOUS ANNUAL BUDGET [k€]				ESTIMATED FUTURE BUDGET [k€]			COMMENTS
								2016	2017	2018	2019	2020	2021-2025	2026-2030	
Roll-out of infrastructure for alternative fuels	1	Promoting electric mobility	Technological upgrade to public electric charging points, improving and extending the electric mobility network	AFI	Electricity	Road	National	3 917	705		530				The amounts and estimates shown take account of investments made using national (internal budget) and European funding sources.
	2	Expansion of the Lisbon metro network	Expansion plan for the Lisbon metro network — Prolongation of the yellow and green lines - Rato-Cais do Sodré	AFI	Electricity	Rail	Local			4 600	29 800	45 800	130 000		The amounts and estimates shown take account of investments made using national and European funding sources.
	3	Modernisation of the signalling systems in the Lisbon metro network	Modernisation of the signalling systems - 1st stage, submitted by Metropolitano de Lisboa, E.P.E., which includes the installation of a communications-based train control (CBTC) signalling system on the blue, green and yellow lines and in the machinery and operations facilities, the installation of on-board CBTC equipment in 70 existing triple units and the acquisition of 14 new triple units equipped with the new signalling technology.	AFV	Electricity	Rail	Local						136 500		

CATEGORY	No.	NAME	DESCRIPTION	FIELD	ALTERNATIVE FUEL	MODE OF TRANSPORT	LEVEL OF APPLICATION	CURRENT AND PREVIOUS ANNUAL BUDGET [k€]				ESTIMATED FUTURE BUDGET [k€]			COMMENTS
	4	Expansion of the Porto metro network	Expansion plan for the Porto metro network - construction of the Casa da Música - São Bento sections, expansion of the yellow line (Santo Ovídio – Vila d’Este), which includes the construction of a rolling stock and maintenance facility in Vila d’Este	AFI	Electricity	Rail	Local			1 355	19 408	43 802	342 134		The amounts and estimates shown take account of investments made using national (internal budget) and European funding sources.
	5	Acquisition of new rolling stock trainsets for the Porto metro network	Acquisition of 18 new rolling stock trainsets for the Porto metro network	AFV	Electricity	Rail	Local				10 500	10 500	52 500	41 000	The first vehicles are expected to be delivered in 2021.
	6	Acquisition of new rolling stock trainsets by CP (Comboios de Portugal).	Acquisition of 12 bimodal railcar units and 10 electric railcar units and the respective accessories and special tools	AFV	Electricity	Rail	Local						168 211		

CATEGORY	No.	NAME	DESCRIPTION	FIELD	ALTERNATIVE FUEL	MODE OF TRANSPORT	LEVEL OF APPLICATION	CURRENT AND PREVIOUS ANNUAL BUDGET [k€]				ESTIMATED FUTURE BUDGET [k€]			COMMENTS
	7	Promoting electric mobility in rail transport	Railway modernisation and electrification	AFI	Electricity	Rail	Local	48 714			50 000				<p>The amounts shown take account of investments using European funding sources.</p> <p>(* ) Project approved within the scope of the COMPETE programme, for the electrification of the Algarve line, for which the allocation of EUR 48.7 million in EU support has been approved. Despite the decision to allocate this amount to the year in which the application commenced or was approved, the funding will continue for the subsequent years, as the operation is completed.</p> <p>(**) Cascais railway modernisation project, supported by the Operational Programme for Sustainability and Efficiency in the Use of Resources, for which the allocation of EUR 50 million in EU support has been approved. Despite the decision to allocate this amount to the year in which the application was approved (2018), the funding will continue for the subsequent years, as the operation is completed.</p>
Support for facilities to manufacture alternative fuels	1	Creation of an industrial unit to produce aluminium frames for market segments with added value.	Creation of a production unit devoted to the extrusion of aluminium and the machining of customised parts for the electric mobility segment.	AF	Electricity	Road	National				2 582				The amounts and estimates shown take account of investments using European funding sources.
	2	Promoting the development of solar electric vessels: solar energy at the service of sustainable shipping.	Design, develop and produce vessels that only use solar energy and electric propulsion technology. The goal of this project is to phase out the consumption of fossil fuels and increase environmental sustainability. This will mean that the shipping sector, which is considered traditional, needs to be equipped with advanced technology.	AFV	Electricity	Sea	Regional		293						The amounts and estimates shown take account of investments using European funding sources.

CATEGORY	No.	NAME	DESCRIPTION	FIELD	ALTERNATIVE FUEL	MODE OF TRANSPORT	LEVEL OF APPLICATION	CURRENT AND PREVIOUS ANNUAL BUDGET [k€]				ESTIMATED FUTURE BUDGET [k€]			COMMENTS
	3	Creation of an innovative centre of research into the area of technological development for electric cars.	Creation of an innovative centre of research into the area of technological development for electric cars. It includes a factory where certain models of electric cars will be produced. Ultimately the main objective is the creation of a digital undertaking based on the principles of Industry 4.0.	AFV	Electricity	Road	Regional				1 767				The amounts and estimates shown take account of investments using European funding sources.
	4	Creation of the first centre for technical conversion and maintenance for electric vehicles in the Southern Region of Portugal.	Competitive support for electric mobility involving the construction/ set-up of a centre for transforming and providing technical maintenance for electric vehicles. As well as other services, it will be able to convert/ transform conventional (combustion) vehicles into electric vehicles.	AFV	Electricity	Road	Regional					598			The amounts and estimates shown take account of investments using European funding sources.

**Note:** AF – Alternative Fuels; AFI - Alternative Fuels Infrastructure; AFV -Alternative Fuels Vehicles;

## NATIONAL INVESTMENT PROGRAMME 2030

The 2030 National Investment Plan is the instrument for planning the cycle of strategic and structural investments at national level, to be made in the period between 2021 and 2030 to meet future needs and challenges. It is based on three strategic objectives:

- Cohesion - reinforcing territorial cohesion;
- Competitiveness and Innovation - increasing and improving infrastructure conditions in national territory, making the most of the country's geographical potential given its Atlantic location and boost the territorial integration of Portugal in Europe, particularly as regards the Iberian Peninsula; and
- Sustainability and Climate Action - promoting the decarbonisation of the economy and the energy transition.

The 2030 National Investment Plan focuses on four thematic areas: Transport and mobility; Environment; Energy; Irrigation. Each of these thematic areas contains strategic axes to guide the investment projects and programmes selected. The investments planned in the 2030 National Investment Plan amount to some EUR 21 905 million for a total of 72 programmes and projects. 58% of investments have been allocated to the thematic area of Transport and Mobility (44 investment projects/programmes, worth EUR 12 655 million).

The investments planned under this programme will receive finance from various sources of funding, depending on the respective bodies in charge of running them. Mention should be made of the important contribution of European Funds in bringing them to completion:

- European funding sources: Includes European Structural and Investment Funds and other European funds;
- National funding sources: Essentially includes the Environment Fund and General State Revenue;
- Other funding sources: direct funding from the private sector or the state enterprise sector that has not been reclassified (equity and/or debt).

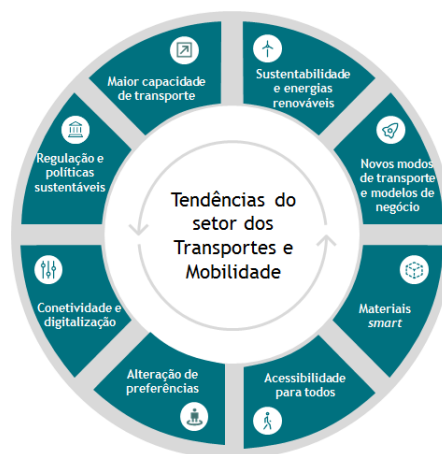


Figure 9 - Main trends in the mobility and transport sector. Source: National Investment Programme (PNI) 2030

PT	EN
Tendências do setor dos Transportes e Mobilidade	Trends in the Transport and Mobility sector
Maior capacidade de transporte	More transport capacity
Regulação e políticas sustentáveis	Regulation and sustainable policies
Conetividade e digitalização	Connectivity and digitisation
Alteração de preferências	Changes in preferences
Accessibilidade para todos	Universal accessibility
Materiais smart	Smart materials
Novos modos de transporte e modelos de negócio	New modes of transport and business models
Sustentabilidade e energias renováveis	Sustainability and renewable energies

Five strategic axes were defined for the thematic area of Transport and Mobility in the 2030 National Investment Plan, with investments in the next decade to focus on: Fair accessibility; Extended connectivity; Smart mobility; Sustainable mobility and carbon neutrality; and resilient infrastructure and facilities.

Of the various investments planned for this thematic area, given their relevance in improving and developing infrastructure for alternative fuels for rail, the following programmes/projects in the 2030 National Investment Plan are of particular importance:

- **Consolidation of the Porto light metro network** - this programme plans to reinforce the supply and expand the light metro systems in the Porto metropolitan area and in areas where demand justifies such technology; investments are expected to amount to some EUR 620 million, to be made between 2021 and 2030;
- **Consolidation of the Lisbon metro network** - this programme is to expand and modernise the Lisbon metropolitan network and its systems and the equipment needed to support its operation, as well as adapt stations to guarantee conditions of accessibility for all. Investments of EUR 445 million are planned for this programme between 2021 and 2030.  
Please note that the Lisbon metro expansion plan and the plan to expand the lines in the light metro system in the Porto metropolitan area mentioned above are also included in the scope of these programmes.
- **Programme to reinforce capacity and increase speeds on the Porto-Lisbon axis** - this programme aims to improve the quality of long-distance services and free up capacity on the Northern line for commuter and goods traffic; investments of some EUR 1 500 million are planned for completion by 2030. The interventions planned for this programme include the following: installation of a new high-specification double-track corridor to enable the segregation of fast and slow traffic on the Cacia-Gaia

section; construction of a new high-specification double track to enable the segregation of fast and slow traffic on the Soure-Coimbra-Mealhada section; construction of the variant and increase of the maximum circulation speed between Santarém and Entroncamento; construction of a 3rd reversible track between Alverca and Castanheira do Ribatejo and installation of a four-way track between Castanheira do Ribatejo and Azambuja;

- **Programme for the electrification and reinforcement of the national railway network**, with an estimated associated investment of EUR 235 million to be completed by 2025. This Programme includes the following interventions: electrification of the Régua-Pinhão-Pocinho section of the Douro line; electrification and installation of signalling and telecommunication systems on the Caldas da Rainha - Louriçal section of the West line; duplication of the Alfarelos branch, allowing trains up to 750 m long to cross; surveys and projects to determine the feasibility of boosting the density of the National Rail Network (e.g. New Vale do Sousa line, Portalegre branch and others) or the reactivation of lines/ sections that are currently not in use;
- **Southern international corridor: new link between Sines and Grândola**, to promote goods transport by rail and rail interoperability with the Spanish and European networks. This project consists of the construction of a new electrified single-track rail link between Sines and Grândola (Southern line), the adaptation of the Grândola Norte station and the construction of a connection between the new line and the Southern line. The associated investment is estimated at about EUR 120 million, to be completed between 2026 and 2030;
- **modernisation of the Alentejo line**, improving the competitiveness of the railway sector at international and regional levels and improving the integration of the Alentejo line in the National Railway Network, as well as improving mobility for passengers and goods throughout the Baixo Alentejo region. This project includes the duplication of the Poceirão - Bombel section and the modernisation of the Casa Branca-Beja section, with electrification and the installation of signalling, control, command and telecommunications systems. The estimated investment associated to this programme is EUR 90 million by 2025;
- **Rehabilitation of the Espinho - Oliveira de Azeméis section of the Vouga line**, to increase the market share of the railway line, enable direct commuter services to the town of Oliveira de Azeméis with predetermined schedules and improve accessibility to the rest of the railway network; estimated investment of EUR 75 million by 2025;
- **Northern international corridor: new Aveiro - Mangualde section**, consisting of the construction of a new electrified railway link between Aveiro and Mangualde with a view to promoting rail interoperability with the Spanish and European networks and

boosting the capacity for goods trains. The estimated investment associated to this project is EUR 650 million, to be completed between 2026 and 2030;

- **Programme for road and rail access to national airports**, including the construction of the rail link to Sá Carneiro and Faro airports. The estimated investment for this project is EUR 130 million, to be completed by 2026.

The 2030 National Investment Plan also provides for various investments in the maritime-port subsector. One such project involves improving conditions at Leixões port with an estimated associated investment in the region of EUR 379 million. It includes adapting the infrastructure to minimise environmental impacts and promote the use of LNG in the port system.

Despite not being included in the 2030 National Investment Plan, as regards the production of alternative fuels, there are plans for a project to produce green hydrogen on an industrial scale, with a total capacity of at least 1 GW in electrolyzers by 2030. It will be powered by electricity obtained from renewable sources, particularly solar and wind power, and have a component to produce electricity for self-consumption.

The selected location, Sines (Southern Portugal), is suitable for the project for various reasons: the existence of infrastructure for transmission, storage and connection to the natural gas transmission network, the proximity of a port with deep waters and an industrial zone with hydrogen consumption, as well as the availability of land for the project to be rolled out.

Production capacity will be flexible, rising as the demand for hydrogen in the domestic market (and in the European market for export) increases. The hydrogen produced will be intended for injection into the natural gas network, distribution via tanker lorries to various consumption points, including refuelling points, and maritime exportation via the port of Sines. The intention is therefore to position the port of Sines as an important hub for green hydrogen. According to preliminary estimates, the planned investment will be in excess of EUR 1.5 billion for the installation of an industrial unit with a total capacity of at least 1 GW in electrolyzers by 2030.

The EU's financial support mechanisms will have a vital role to play in the funding and completion of this project, which aims to help meet the EU's decarbonisation targets as well as its goals as regards promoting alternative fuels.



### 3.4. Research, technological development and demonstration

Portugal's commitment to research, development and innovation in new technologies is firmly on the agenda. The country is determined to take measures that will put it in a leading position as regards the incorporation of renewable energy sources and new low carbon technologies, including in the area of alternative fuels. To that end, both the national support frameworks to promote technological development in accordance with the country's priorities and the EU support programmes have played an important role in financing research, development and innovation projects in this area.

Promoting innovation in all areas has been a priority and a number of measures have been taken to boost innovation and the adoption of technology by undertakings and society in general.

Cabinet Resolution No 32/2016 of 3 June 2016 approved the terms of reference for a public discussion on the agenda 'Commitment to knowledge and science: a commitment to the future' for the years 2016 to 2020. This agenda focuses on various strategic dimensions, one of which is: 'System: promoting thematic agendas for research and innovation on a national scale with regional specialisation, with coordination between the public and private sectors and covering the modernisation of the infrastructure network'. This dimension includes the implementation of a programme of 'Agendas for Research and Innovation' in various areas, including urban science and cities for the future, integrating renewable energies and electric mobility networks/infrastructure in urban settings.

The collaborative laboratories (*Laboratórios Colaborativos - CoLabs*), centres for technology transfer and support for innovation, have the goal of driving collaboration between the science and technology community and enterprise, promoting research, development and innovation (R&D&i) activities and operating as private not-for-profit institutions or enterprises.

Cabinet Resolution No 23/2018 of 8 March 2018 set the initial competitive financing for Laboratórios Colaborativos (CoLABS) via the Fundação para a Ciência e a Tecnologia, I. P. [Foundation for Science and Technology, public body], up to EUR 26 800 000 over a 5-year horizon. Mention should be made in that regard to BIOREF - Laboratório Colaborativo para as Biorrefinarias [Collaborative Laboratory for Bio-refineries] in the area of research into the production of advanced biofuels.

Cabinet Resolution No 25/2018 of 8 March 2018 approved the guidelines for a strategy for technological and business innovation in Portugal 2018-2030. One of the main objectives was to achieve an overall investment of 3% in R&D by 2030, with one-third coming from public expenditure and two-thirds from private expenditure. This would correspond to an overall investment of 1.8% of GDP in R&D by 2020.

We would also like to highlight the significance of R&D in the National Strategy on Hydrogen, which provides for the creation of a collaborative laboratory that would be a national and international reference as regards the most important components in the value chain for hydrogen, thereby fostering the development of new industries and services on the basis of highly qualified human resources.

Table 6 indicates the grants provided to RTD in the area of alternative fuels, differentiating between the fuels and modes of transport, under support programmes within the scope of Portugal 2020 or finance from national funds.

Table 6 – Support for research, technological development and demonstration (RTD&D)

No.	NAME	DESCRIPTION	FIELD	ALTERNATIVE FUEL	MODE OF TRANSPORT	CURRENT AND PREVIOUS ANNUAL BUDGET [k€]				ESTIMATED FUTURE BUDGET [k€]			COMMENTS
						2016	2017	2018	2019	2020	2021-2025	2026-2030	
1	Promoting V2G: Vehicle to Grid	Project to demonstrate the main advantages of using electric vehicles to store clean energy and their energy storage capacity for a building or a community, in a circuit that is independent of the distribution network.	AF	Electricity	Road			477					The amounts and estimates shown take account of investments using European funding sources.
2	Promoting the use of advanced biofuels produced using innovative technologies by making sustainable use of biomass from waste or with a low economic value	Allocation of financial incentives to pilot or demo projects that are innovative and which focus on the production, storage and provision of advanced biofuels, including biogas, for the transport sector.	AF	Biofuels	Road					4 200			
3	Promoting the development of an ULTRA-FAST CHARGER - faster charging of batteries	Project to develop an ultra-fast charging system with the capacity to charge several vehicles at the same time.	AFI	Electricity	Road				411				The amounts and estimates shown take account of investments using European funding sources.
4	Promoting new solutions for charging EVs	Development of modular concrete structures with an inductive charging system for electric vehicles and a lighting/ signalling system that is totally integrated and highly innovative.	AFI	Electricity	Road			321					The amounts and estimates shown take account of investments using European funding sources.
5	Promoting the renewable production of high-efficiency hydrogen to fuel cars	Research and development of an integrated station for the renewable production of high-efficiency hydrogen to fuel cars, particularly by designing a new and disruptive electrolyser and a new engine conversion process.	AF	Hydrogen	Road			279					The amounts and estimates shown take account of investments using European funding sources.

No.	NAME	DESCRIPTION	FIELD	ALTERNATIVE FUEL	MODE OF TRANSPORT	CURRENT AND PREVIOUS ANNUAL BUDGET [k€]				ESTIMATED FUTURE BUDGET [k€]			COMMENTS	
6	Promoting new energy solutions for the aeronautical sector including battery development	Developing new energy solutions for the aeronautical sector including the development of batteries; one high-density battery and another produced with additive methods and the development of electricity-generating fuel cells	AF	Electricity	Air			1 018						The amounts and estimates shown take account of investments using European funding sources.
7	Development of functional compounds for electric vehicle components	Taking a consolidated approach to optimising the performance of materials with a view to increasing their electrical performance and therefore extending the vehicle's range without taking action at battery level.	AFV	Electricity	Road			450						The amounts and estimates shown take account of investments using European funding sources.
8	SR-PLUG: charging point for electric vehicles	The idea is to develop a charging point for electric vehicles based on the structure of a road marker that is barely raised off the ground and that could easily be installed in any street parking space or car park.	AFI	Electricity	Road				392					The amounts and estimates shown take account of investments using European funding sources.
9	New generation of Electric Vehicle DC Fast Chargers	Development of new solutions for fast charging of electric vehicle batteries, based on the ISO 15118 standard, the OCPP 2.0 protocol, refrigerated cables, new power electronics topologies, new semi-conductors, load management and the DC electricity supply.	AFI	Electricity	Road			647						The amounts and estimates shown take account of investments using European funding sources.
10	Promoting new solutions for public transport	Research and development into new electric mobility solutions based on hybrid energy sources (fuel batteries and lithium batteries) intended for middle-distance journeys.	AFV	Combination	Road			1 237						The amounts and estimates shown take account of investments using European funding sources.

**Note:** AF – Alternative Fuels; AFI - Alternative Fuels Infrastructure; AFV -Alternative Fuels Vehicles;

### 3.5.Goals and objectives

The following table shows the evolution in recent years in the number of vehicles powered by different types of alternative fuels, as well as estimations on the number of road vehicles powered by alternative energy sources for the years 2020, 2025 and 2030.

Table 7- Evolution in the number of alternative fuel vehicles

MODE OF TRANSPORT	ALTERNATIVE FUEL VEHICLES (AFV)	NUMBER OF VEHICLES CURRENT AND PREVIOUS			ESTIMATED NUMBER OF VEHICLES		
		2016	2017	2018	2020	2025	2030
<b>ELECTRICITY</b>							
Road	<b>Electric vehicles, EVs (not incl. PTWs)</b>	<b>4 352</b>	<b>9 691</b>	<b>20 692</b>	<b>59 208</b>	<b>277 300</b>	<b>896160</b>
	Electric light-duty passenger vehicles	<b>4 142</b>	<b>9 265</b>	<b>19 926</b>	<b>56 000</b>	<b>250 000</b>	<b>806 000</b>
	• Pure electric vehicles	2 374	4 693	10 104	30 000	150 000	550 000
	• Plug-in hybrid vehicles	1 768	4 572	9 822	26 000	100 000	256 000
	Electric light-duty goods vehicles	<b>186</b>	<b>402</b>	<b>705</b>	<b>3 000</b>	<b>26 000</b>	<b>86 000</b>
	• Pure electric vehicles	186	402	705	3 000	26 000	86 000
	• Plug-in hybrid vehicles	0	0	0			
	Electric heavy-duty goods vehicles	0	0	10	18	420	1 960
	• Pure electric vehicles	0	0	10	18	420	1 960
	• Plug-in hybrid vehicles	0	0	0			
	Electric heavy-duty passenger vehicles	<b>24</b>	<b>24</b>	<b>51</b>	<b>190</b>	<b>880</b>	<b>2 200</b>
	• Pure electric vehicles	24	24	51	190	880	2 200
	• Plug-in hybrid vehicles	0	0	0			
Shipping	Navigable inland waterways vessels	NA	NA	NA			
	Seagoing ships	NA	NA	NA			
Air	Aeroplanes	0	0	0			
Rail	Locomotives	213	213	213			
<b>CNG (incl. biomethane)</b>							
Road	<b>CNG-fuelled vehicles (not incl. PTWs)</b>	<b>378</b>	<b>413</b>	<b>590</b>	<b>1400</b>	<b>2 300</b>	<b>3100</b>
	CNG-fuelled light-duty passenger vehicles	23	35	39			
	CNG-fuelled light-duty goods vehicles	25	29	46			
	CNG-fuelled heavy-duty goods vehicles	102	111	128	500	1 200	2 100
	CNG-fuelled heavy-duty goods vehicles	228	238	377	900	1 100	1000
Shipping	Navigable inland waterways vessels	NA	NA	NA			
	Seagoing ships	NA	NA	NA			
Air	Aeroplanes	0	0	0			
Rail	Locomotives	0	0	0			
<b>LNG (incl. biomethane)</b>							
Road	<b>LNG-fuelled vehicles (not incl. PTWs)</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>163</b>	<b>700</b>	<b>1 400</b>
	LNG-fuelled light-duty passenger vehicles	1	1	1			
	LNG-fuelled light-duty goods vehicles	0	0	0			

MODE OF TRANSPORT	ALTERNATIVE FUEL VEHICLES (AFV)	NUMBER OF VEHICLES CURRENT AND PREVIOUS			ESTIMATED NUMBER OF VEHICLES		
		2016	2017	2018	2020	2025	2030
	LNG-fuelled heavy-duty goods vehicles	1	1	3	163	700	1 400
	LNG-fuelled heavy-duty goods vehicles	0	0	0			
Shipping	Navigable inland waterways vessels	NA	NA	NA			
	Seagoing ships	NA	NA	NA			
Air	Aeroplanes	0	0	0			
Rail	Locomotives	0	0	0			
<b>HYDROGEN</b>							
Road	<b>Hydrogen-fuelled vehicles (not incl. PTWs)</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>600</b>	<b>2 250</b>
	Hydrogen-fuelled light-duty passenger vehicles	0	0	0		500	1 000
	Hydrogen-fuelled light-duty goods vehicles	0	0	0			
	Hydrogen-fuelled heavy-duty goods vehicles	0	0	0		50	500
	Hydrogen-fuelled heavy-duty passenger vehicles	0	0	0		50	750
Shipping	Navigable inland waterways vessels	0	0	0			
	Seagoing ships	0	0	0			
Air	Aeroplanes	0	0	0			
Rail	Locomotives	0	0	0			
<b>LPG</b>							
Road	<b>LPG-fuelled vehicles (not incl. PTWs)</b>	49 967	52 977	56 883	<b>58 345</b>	<b>54 434</b>	<b>44 113</b>
	LPG-fuelled light-duty passenger vehicles	49 301	52 315	56 213	57 700	54 000	44 000
	LPG-fuelled light-duty goods vehicles	609	611	620	600	400	100
	LPG-fuelled heavy-duty goods vehicles	52	46	45	40	30	10
	LPG-fuelled heavy-duty goods vehicles	5	5	5	5	4	3
Shipping	Navigable inland waterways vessels	NA	NA	NA			
	Seagoing ships	NA	NA	NA			
Air	Aeroplanes	0	0	0			
Rail	Locomotives	0	0	0			

**Note:** The figures for electric locomotives only take account of the active rolling stock owned by CP (Comboios Portugal).

PTW - Powered Two-Wheelers

Source: IMT, IP - Number of road vehicles presumed to be in circulation for the years 2016 to 2018; CP Accounting Reports - Estimated number of locomotives

As regards electric vehicles for road transport, the NPF predicted about 34 000 electric vehicles in circulation by 2020. This included passenger cars, goods vehicles, buses and motorcycles. The projection was for 179 000 electric vehicles by 2030. By 2019, the number of electric vehicles in circulation, including pure electric and plug-in hybrid vehicles, had already exceeded the above-mentioned estimate set out in the NPF for 2020.

As explained previously, given our awareness that carbon neutrality necessarily requires the decarbonisation of transport and that a huge effort must be made over the next decade if this objective is to be attained, the NECP 2030 reiterates and intensifies Portugal's commitment to electric mobility and its goals go beyond the targets initially set out in the NPF. The objectives

presented in the NPF have been reviewed in light of the new goals set out in the NECP 2030, which will be integrated when the national policy framework is reviewed with a view to deploying infrastructure for alternative fuels. By redoubling efforts to promote the mass-market use of electric vehicles expected for the next decade, in line with the ongoing reductions in the expected cost of this technology due to new developments and the effects of economies of scale making this solution increasingly competitive, it is estimated that there will be over 890 000 vehicles powered by electricity in 2030, including pure electric vehicles and plug-in hybrid vehicles.

When the NPF was being drafted, a study to assess the potential and impact of hydrogen in Portugal was being launched. It included a two-pronged action plan: on the one hand, focusing on strategy and regulations (under the responsibility of the Directorate-General for Energy and Geology (DGEG)) and on the other, a more technological focus (under the responsibility of the National Laboratory for Energy and Geology (LNEG)). Given the circumstances, as the study and application of this technology on national territory was only in the early stages, it was considered too early to progress towards the definition in the NPF of goals and targets regarding the deployment of infrastructure to supply hydrogen.

Following this assessment of the potential and impact of hydrogen, the 'Roadmap and Action Plan for Hydrogen in Portugal' was drawn up. It proposes the gradual introduction of hydrogen, providing evidence of how this alternative fuel contributes towards the process of energy transition towards a decarbonised system and identifying applications in the transport sector for the 2030 horizon.

The competitive advantage demonstrated in the meantime in terms of the production of renewable electricity, such as the results obtained in the solar photovoltaic auction held in 2019, helped to reinforce Portugal's commitment to this energy vector in the NECP 2030, which introduces hydrogen, in addition to electric mobility, as the country's main response to the challenges ahead in the transport sector. Therefore, this report has presented the country's objectives as regards hydrogen, in line with the new goals set out in the NECP 2030 and in the National Strategy on Hydrogen (EN-H2). It is estimated that there will be some 2 250 hydrogen vehicles by 2030 and a network consisting of at least 50 refuelling points for this alternative fuel.

As explained in the NPF, given its dimensions, Portugal does not have the capacity (absence of market scale) to simultaneously support the development of extended refuelling/ charging infrastructure for the various alternative fuels as well as various types of vehicles powered by alternative fuels. Some solutions can only be promoted at local/ regional level or be specifically targeted towards particular subsectors/ modes of transport.

The country's main commitment for the next decade will therefore focus on electric mobility and green hydrogen, to the detriment of other technologies with less interesting environmental advantages.

This commitment will also be reflected in the development of infrastructure for alternative fuels, as shown in the following table.

Table 8 – Evolution in refuelling/ charging infrastructure for alternative fuels

MODE OF TRANSPORT	ALTERNATIVE FUELS INFRASTRUCTURE (AFI)	NUMBER OF CHARGING POINTS AND FILLING/ REFUELLING POINTS			ESTIMATED NUMBER OF CHARGING POINTS AND FILLING/ REFUELLING POINTS		
		2016	2017	2018	2020	2025	2030
<b>ELECTRICITY</b>							
Road	<b>Total no. charging points (public + private)</b>	<b>1 046</b>	<b>1 182</b>	<b>1 389</b>	<b>2403</b>	<b>16600</b>	<b>40000</b>
	<b>Charging points (publicly accessible)</b>	<b>1 002</b>	<b>1 128</b>	<b>1 260</b>	<b>2 200</b>	<b>15 000</b>	<b>36000</b>
	Normal power charging points, P ≤ 22kW (public)	943	983	1 087	1 850	11 350	24 000
	High power charging points, P ≤ 22kW (public)	59	145	173	350	3650	12 000
	• Fast-charging AC, 22kW < P ≤ 43 kW (public)	19	47	53	100	850	2400
	• Fast-charging DC, P < 100 kW (public)	40	98	120	250	2750	9000
	• Fast-charging DC, P ≥ 100 kW (public)	0	0	0	0	90	600
	<b>Charging points (private)</b>	<b>44</b>	<b>54</b>	<b>129</b>	<b>203</b>	<b>1 600</b>	<b>4000</b>
	Normal power charging points, P ≤ 22kW (private)	41	51	123	195	1530	3850
	High power charging points, P > 22kW (private)	3	3	6	8	70	150
	• Fast-charging AC, 22kW < P ≤ 43 kW (private)	1	1	2	2	15	20
	• Fast-charging DC, P < 100 kW (private)	2	2	4	6	50	120
	• Fast-charging DC, P ≥ 100 kW (private)	0	0	0	0	5	10
<b>Natural gas (incl. biomethane)</b>							
Road	<b>CNG refuelling points (total)</b>	<b>15</b>	<b>15</b>	<b>16</b>	<b>24</b>	<b>34</b>	<b>43</b>
	CNG refuelling points (public)	8	8	8	13	20	26
	CNG refuelling points (private)	7	7	8	11	14	17
	<b>LNG refuelling points (total)</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>12</b>	<b>15</b>	<b>29</b>
	LNG refuelling points (public)	5	5	5	11	18	24
	LNG refuelling points (private)	0	0	1	1	3	5
<b>Hydrogen</b>							
Road	<b>H2 refuelling points (total)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>25</b>	<b>100</b>



MODE OF TRANSPORT	ALTERNATIVE FUELS INFRASTRUCTURE (AFI)	NUMBER OF CHARGING POINTS AND FILLING/ REFUELLING POINTS			ESTIMATED NUMBER OF CHARGING POINTS AND FILLING/ REFUELLING POINTS		
	<b>H2 refuelling points - 350 bar (total)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>25</b>	<b>100</b>
	H2 refuelling points - 350 bar (public)	0	0	0	0	25	100
	H2 refuelling points - 350 bar (private)	0	0	0			
	<b>H2 refuelling points - 700 bar (total)</b>	<b>0</b>	<b>0</b>	<b>0</b>			
	H2 refuelling points - 700 bar (public)	0	0	0			
	H2 refuelling points - 700 bar (private)	0	0	0			
<b>LPG</b>							
Road	<b>LPG refuelling points (total)</b>	<b>356</b>	<b>363</b>	<b>383</b>	<b>397</b>	<b>320</b>	<b>200</b>
	LPG refuelling points (public)	356	363	383	397	320	200
	LPG refuelling points (private)	0	0	0			

Note: The values shown for the number of charging points only refer to the charging points connected to the Mobi-E network.

Source: MOBI.E, SA – Number of charging points in facilities from 2016 to 2018: DGEG – Number of CNG, LNG and LPG refuelling points from 2016 to 2018

As regards the supply of alternative fuels for maritime transport, it is important to note that there are currently two Portuguese vessels fuelled by LNG, known as ‘AUTO ECO’ (IMO No 9736365) and ‘AUTO ENERGY’ (IMO No 9736377)<sup>9</sup>.

An estimated 80 LNG-fuelled vessels stopped at Portuguese ports in 2019. The majority of these stopovers were linked to 35 LNG tankers which visited Portuguese ports (between 1 and 4 times at most in 2019). An Italian cruise ship made weekly stopovers in the port of Funchal in Madeira, during specific periods of 2019<sup>10</sup>.

Still on the subject of alternative fuel vessels, please note that at the Viana do Castelo shipyards work is ongoing to build vessels with a hybrid propulsion system, equipped with electric and combustion engines. This technology is being manufactured in a partnership between the ship-owner and Rolls Royce.

As for the supply of LNG at Portuguese ports, 13 truck-to-ship operations were carried out at the ports of Sines and Funchal between November 2017 and April 2018.

We have also been informed that more recently, in February 2020, a new LNG supply was carried out at the port of Sines. The alternative fuel was loaded onto road tankers at the NG filling station at the Sines terminal and then supplied to the anchored vessel.

The Sines and Algarve Port Administration, and more specifically the port of Sines, have been working to ensure safety in supplying LNG to ships using road tankers. They have created the

<sup>9</sup> Information provided by the European Maritime Safety Agency (EMSA)

<sup>10</sup> In accordance with information reported to *SafeSeaNet*

conditions to enable this supply in safe conditions and the plan is to have a dock in Sines that will specialise in supplying the fuel to boats so that they can in turn supply it to ships.

However, given the need for the current NPF to be reviewed in order to bring it into alignment with the current energy and climate policy goals for the 2030 horizon as set out in the various strategic documents published in recent times, it is not yet possible to present the goals and objectives as regards the development of infrastructure to supply alternative energy sources to all modes of transport or the respective estimates as to how the numbers of alternative fuel vehicles may evolve. It was barely possible to perform that exercise within the scope of this report, as for the other modes of transportation, particularly air transport and shipping, more reflection is needed on the scale of such infrastructure and the detailed setting of objectives. We will therefore submit that information when we review the NPF.

### 3.6. Alternative fuels infrastructure developments

The following table shows the history and prospects for evolution in the supply and demand of different alternative technologies for road mobility.

Table 9 - Deployment of alternative fuel infrastructure

MODE OF TRANSPORT	COMB. ALTERNATIVE	PAST									ESTIMATED FUTURE								
		2016			2017			2018			2020			2025			2030		
		Sup p.	Dem .	Ratio	Supp.	Dem.	Ratio	Supp.	Dem.	Ratio	Supp.	Dem.	Ratio	Supp.	Dem.	Ratio	Supp.	Dem.	Ratio
Road	Electricity	1 002	4 352	4	1 128	9 691	9	1 260	20 692	16	2 200	59 208	27	15 000	277 300	18	36 000	896 160	25
	CNG	8	378	47	8	413	52	8	590	74	13	1 400	108	20	2 300	115	26	3 100	119
	LNG	5	2	0	5	2	0	5	4	1	11	163	15	18	700	39	24	1 400	58

Note: Supp. - Supply; Dem. - Demand

The main fuel consumed in road transport is currently diesel (accounting for over 74% of consumption). Alternative energy sources only account for about 6%. The national shipping sector is entirely dependent on conventional fuels, specifically diesel and fuel-oil.

However, consumption of alternative energy sources in transport is expected to improve as conventional fossil fuels are replaced. The estimates are for them to account for at least 21% of fuel consumed in road transport and about 20% of fuel in national shipping by 2030.

Table 10 - Evolution in percentage use of various fuels in transport sector

MODE OF TRANSPORT	FUEL	PAST SITUATION AND CURRENT SITUATION AS REGARDS FUEL CONSUMPTION IN TRANSPORT SECTOR			ASSESSMENT OF HOW FUEL CONSUMPTION WILL EVOLVE IN TRANSPORT SECTOR		
		Percentage of different fuels consumed in transport [%]			Estimated percentage consumption of different fuels in transport [%]		
		2016	2017	2018	2020	2025	2030
Road	Petrol	20%	20%	19%	20.2%	21.2%	24.4%
	Diesel	74%	75%	74%	71.6%	68.6%	61.9%
	Electricity	0.0%	0.0%	0.0%	0.2%	1.0%	3.8%
	CNG	0.2%	0.2%	0.2%	0.1%	0.2%	0.5%
	LNG	0%	0%	0.1%	0.1%	0.2%	0.3%
	Hydrogen	0%	0%	0%	0%	0.1%	0.5%
	LPG	1%	1%	1%	0.8%	0.8%	0.6%
	Biofuels	5%	5%	5%	7%	8%	8%
	Synthetic and paraffinic fuels	0%	0%	0%	0%	0%	0%
	Other	0%	0%	0%	0%	0%	0%
	<b>Total road</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
National shipping (sea and inland waterways)	Diesel	28%	39%	39%	42%	36%	30%
	Fuel oil	72%	61%	61%	58%	54%	50%
	LNG	0%	0%	0%	0%	8%	15%

MODE OF TRANSPORT	FUEL	PAST SITUATION AND CURRENT SITUATION AS REGARDS FUEL CONSUMPTION IN TRANSPORT SECTOR			ASSESSMENT OF HOW FUEL CONSUMPTION WILL EVOLVE IN TRANSPORT SECTOR		
		Percentage of different fuels consumed in transport [%]			Estimated percentage consumption of different fuels in transport [%]		
		2016	2017	2018	2020	2025	2030
	Hydrogen	0%	0%	0%	0%	3%	5%

## 4. Final Comments

In view of the current energy and climate policy goals for the 2030 horizon as set out in the NCEP 2030, and in accordance with the NCN2050 and the goals defined in the National Strategy on Hydrogen, there is a pressing need for the NPF to be reviewed so that this strategic document may be aligned with the new goals for the energy transition and decarbonisation of the transport sector, with a focus on strong commitment to electric mobility and renewable gases, in particular green hydrogen, as explained throughout this report.