

- **Greece (EL)**

- **Main messages from the Commission assessment of the NPF**

In its original assessment of the Greece NPF the Commission concluded:

The Greek NPF addresses many of the requirements of Article 3. It contains a detailed description of the current state and some future estimates for alternative fuels vehicles in the transport sector and establishes targets required by Article 3 of the Directive. However, the NPF does not contain any designation of urban/suburban agglomerations to be equipped with recharging points and the number and location of recharging points and LNG refuelling points to be put in place along the TEN-T Core Network is not defined.

The Greek NPF estimates a very modest share of below 0.1% electric vehicles on the road in 2020. The proposed set of measures based mainly on tax reliefs could support reaching the declared objectives since it was evaluated as being comprehensive and having a medium assessment score. The ratio of one public recharging point per 5 electric vehicles estimated for 2020 indicates that Greece has defined appropriate targets for recharging infrastructure in line with the requirements of the Directive. The spatial distribution of the future recharging points is not provided in the NPF.

The Athens central airport in the TEN-T Core Network has currently fixed electricity supply points and mobile ground power units for use by stationary airplanes. Other airports are using mobile ground power units. However, the Greek NPF does not include targets for electricity supply for stationary airplanes and it only mentions the possibility of pilot deployment for evaluating the feasibility and viability of such electricity supply points at specific airports.

In Greece, existing shore-side infrastructure for supplying electricity to ships primarily relates to tourist ports whereas at major maritime ports infrastructure is limited and mainly relates to pilot applications (such as the ELEMED project). The Greek NPF contains targets for further increasing shore-side electricity in its ports, concrete values being provided for different categories of ports (tourist ports, maritime ports of the TEN-T Core Network and outside of it). The NPF mentions that adopting a maritime electricity tariff category will be examined coupled with tax breaks for ships that use shore-side electricity supply.

For CNG vehicles, the estimated shares are slightly higher than for EVs (0.23% in 2020 and 0.5% in 2025). Due to high estimates for CNG vehicles and non-proportional expansion of refuelling points, the number of publicly accessible CNG refuelling points in the future will likely be insufficient. The NPF shows the ambition of increasing the number of CNG refuelling points with 13 new ones by 2020 on selected urban agglomerations along the TEN-T Core Network in the framework of a project partially funded by the Connecting Europe Facility. The NPF also presents different projects to significantly extend the existing natural gas distribution network.

The NPF has established a target of 2 LNG refuelling points for heavy-duty vehicles in 2025, which is insufficient to ensure appropriate coverage of the TEN-T Core Network on Greek territory. The NPF mentions also a project entailing the design and development of LNG tanker truck transshipment facilities at the Revythousa LNG terminal.

Currently, only the Port of Piraeus has the potential to provide ships berthed with LNG by transporting it from Revythousa facilities, using specially fitted ships. The Public Gas Corporation of Greece is currently examining the potential for developing LNG facilities at the other 4 maritime ports of the TEN-T Core Network.

The Greek NPF presents the situation of LPG for which the current number of vehicles, corresponding to a share of 3.04% from all the vehicles in circulation, is expected to grow to shares higher than 4.5% in 2020, than 5.5% in 2025 and than 7.5% in 2030. It also establishes appropriate refuelling infrastructure targets consistent with the vehicle projections.

The Greek NPF does not examine the potential for using hydrogen in the transport sector.

The Greek NPF, intending to accelerate the AF deployment in transport, contains a relatively wide portfolio of measures. More than half of the presented measures are of administrative, legislative and regulatory type targeting transposition provisions of the Directive and laying down terms and conditions for the installation and operation of the AFI. A high amount of the measures is under consideration whilst only a reduced amount is already in place. Some of the mentioned measures seem to have the potential to contribute towards reaching the national targets and objectives. In many cases, the lack of concrete information (for example budget ceiling or quantification of future incentives) for the measures makes it difficult to evaluate the scope according to our methodology. Electro-mobility is promoted mostly with financial measures in the form of taxation exemptions while direct incentives for purchase of vehicles are lacking. For natural gas, the Greek NPF focuses in a first stage to extend and improve the existing natural gas distribution network. The NPF also contains several support measures to promote the deployment of alternative fuels infrastructure in public transport services and of private electro-mobility infrastructure.

Greece is interested to cooperate with the neighbouring countries in the context of the deployment of alternative fuels infrastructure on the TEN-T Core Network to ensure EU-wide circulation. The NPF states that Greece cooperates with Cyprus and Italy in the frame of the EU funded POSEIDON-MED II project that aims to have LNG adopted as a marine fuel in the Eastern Mediterranean. Greece also cooperates with Cyprus and Slovenia in the frame of the ELEMED project regarding the introduction of shore-side electricity supply to the East Mediterranean Corridor (Adriatic and Ionian seas).

▪ **Overview of requirements' fulfilment from Annex I of the Directive**

Table Error! No text of specified style in document.-1 Checklist Table

Part of the Directive 2014/94/EU	Requirement	Mode of transport / Alternative Fuel (provided in the NIR)		Yes / No
ANNEX I: 1. Legal measures	Information on legal measures, which may consist of legislative, regulatory or administrative measures to support the build-up of alternative fuels infrastructure, such as building permits, parking lot permits, certification of the environmental performance of businesses and fuel stations concessions.	All / All		Yes
ANNEX I: 2. Policy measures supporting the implementation of the national policy framework	Information on those measures shall include the following elements: <ul style="list-style-type: none"> • direct incentives for the purchase of means of transport using alternative fuels or for building the infrastructure, • availability of tax incentives to promote means of transport using alternative fuels and the relevant infrastructure, • use of public procurement in support of alternative fuels, including joint procurement, • demand-side non-financial incentives, for example preferential access to restricted areas, parking policy and dedicated lanes, • technical and administrative procedures and legislation with regard to the authorisation of alternative fuels supply, in order to facilitate the authorisation process. 	Road / electricity, LNG		Yes
	• consideration of the need for renewable jet fuel refuelling points in airports within the TEN-T Core Network	Air	Biofuels	No
ANNEX I: 3. Deployment and manufacturing support	• Annual public budget allocated for alternative fuels infrastructure deployment, broken down by alternative fuel and by transport mode (road, rail, water and air).			No
	• Annual public budget allocated to support manufacturing plants for alternative fuels technologies, broken down by alternative fuel and by transport mode.			No
	• Consideration of any particular needs during the initial phase of the deployment of alternative fuels infrastructures.			No
ANNEX I: 4. Research, technological development and demonstration	• Annual public budget allocated to support alternative fuels RTD&D, broken down by fuel and by transport mode.	Water maritime / electricity, LNG		Yes
ANNEX I: 5. Targets and objectives	• Estimation of the number of alternative fuel vehicles expected by 2020, 2025 and 2030	Road, water maritime, air / electricity, CNG, LNG, LPG		Yes
	• Level of achievement of the national objectives for the deployment of alternative fuels in the different transport modes (road, rail, water and air)	Road, water maritime, air / electricity, CNG, LNG, LPG		Yes
	• Level of achievement of the national targets, year by year, for the deployment of alternative fuels infrastructure in the different transport modes	Road, water maritime, air / electricity, CNG, LNG, LPG		Yes
	• Information on the methodology applied to take account of the charging efficiency of high power recharging points			No
ANNEX I:6 Alternative fuels infrastructure developments	Changes in supply (additional infrastructure capacity) and demand (capacity actually used)			No

The checklist shows the requirements of Annex I from the Directive that are covered in the EL NIR.

Regarding the combination of AF/AFV/AFI with transport mode, electricity is covered for all modes; CNG, LNG, and LPG for road transport; LNG also for waterborne maritime transport; all the other combinations are either absent or not applicable.

The Greek NIR reports 83 measures in total (of which 70 are Legal measures). Under the Policy and Deployment & Manufacturing sections it was possible to identify three AF/transport mode clusters of measures, all assessable.

▪ **Quantitative assessment: Vehicles and infrastructure**

Table Error! No text of specified style in document.-2 National AFV estimates and AFI targets established in the NIR at the horizon 2020, 2025 and 2030 and their comparison with the NPF situation

Alternative fuel / Transport mode		2018		2020		2025		2030	
		AFV	AFI public	AFV	AFI public	AFV	AFI public	AFV	AFI public
Electricity / road	NIR	345	46	3,500	700*	8,000	4,000	15,000	10,000*
	Change NIR vs NPF [%]			0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Attainment [%]			9.86%	6.57%	4.31%	1.15%	2.30%	0.46%
CNG / road	NIR	1,406	13	2,570	22	5,050	35	11,550	55
	Change NIR vs NPF [%]			-80.96%	0.00%	-85.57%	0.00%	-83.50%	0.00%
	Attainment [%]			54.71%	59.09%	27.84%	37.14%	12.17%	23.64%
LNG / road	NIR	0	0	0	1	250	2	900	4
	Change NIR vs NPF [%]				0.00%	0.00%	0.00%	0.00%	0.00%
	Attainment [%]								
LNG / water (maritime)	NIR	0	NA	NA	2	NA	5	NA	5
	Change NIR vs NPF [%]				100.00%		150.00%		25.00%
	Attainment [%]								
Shore-side electricity supply / water (maritime)	NIR		NA		7		27		42
	Change NIR vs NPF [%]				0.00%		0.00%		0.00%
	Attainment [%]								
Electricity supply / air (stationary airplanes)	NIR		55		NA		97		97
	Change NIR vs NPF [%]								
	Attainment [%]						56.70%		56.70%
LPG / road	NIR	343	1,050	450	1,100	600	1,500	750	NA
	Change NIR vs NPF [%]				0.00%		0.00%		
	Attainment [%]			76.22%	95.45%	57.17%	70.00%	45.73%	

Legend:		not applicable
		the value could not be computed
	NA	no value/information provided/available in the NIR

* Values taken from the Greek NPF since the NIR only provided total recharging infrastructure targets and no breakdown for publicly accessible and private infrastructure.

- Road transport
 - Electricity

Vehicles

Greece recorded 345 electric vehicles in use in 2018 (see Table Error! No text of specified style in document.-2), of which 322 were passenger cars (308 BEV and 14 PHEV), 21 LCVs (all BEV) and 2 BEV buses and coaches. The Greek NIR also reports 387 PTWs in 2018. For the next decade, the EL NIR provides estimates that seem to also include PWTs. These are 3,500 for 2020, 8,000 for 2025 and 15,000 for 2030 and are identical to the NPF. As for the heavy-duty sector, the EL NIR only estimates 40 BEV buses and coaches for 2025 and 90 for 2030.

The 2018 *attainment* of EV future estimates is 10% for 2020 and 2.3% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to an *adequate progress* towards reaching the envisaged EV estimates. The calculated *average annual growth rate* corresponding to the period 2016-2030 for EV fleet evolution planned by Greece is equal to 35%.

Infrastructure

Greece recorded 46 publicly accessible recharging points in 2018 (Table Error! No text of specified style in document.-2), of which 40 normal power ($\leq 22\text{kW}$) and 6 high power ($>22\text{kW}$) recharging points. For the next decade the EL NIR presents combined targets for the number of recharging points (public + private) for 2020 and 2030 (and they are identical to those in the NPF). Only for the year 2025, the EL NIR provides the breakdown between public and private recharging points (again identical to the NPF). The NPF however had provided targets for publicly accessible recharging points also for 2020 and 2030. On this basis, the NPF targets have been assumed still valid also for the NIR. Thus 700 publicly accessible recharging points for 2020, 4,000 for 2025 and 10,000 for 2030, are indicated in Table Error! No text of specified style in document.-2. No information is available on the future share of high power recharging points in the total number or public recharging points.

The 2018 *attainment* of future publicly accessible recharging infrastructure target is 6.57% for 2020 and 0.46% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to a *slow progress* towards reaching these envisaged targets. The calculated *average annual growth rate* corresponding to the period 2016-2030 for publicly accessible recharging infrastructure evolution planned by Greece is equal to 49%.

Ratio

Based on the EL NIR, the following table shows the ratio between vehicles and publicly accessible recharging points (i.e. sufficiency index) for the pair electricity/road. Because the Greek NIR has not clearly indicated the 2020 and 2030 targets for public recharging points, the sufficiency index is not reported in the table. When using the numbers from the NPF, the sufficiency index would be 5 for 2020 and 1.5 for 2030. This represents an adequate sufficiency index for the whole period.

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	Electricity	5.19	6.22	7.50		2.00	

Information on charging efficiency

Information is not available in the EL NIR.

- CNG

Vehicles

Greece recorded 1,406 CNG vehicles in use in 2018 (Table Error! No text of specified style in document.-2Error! Reference source not found.), of which 920 were passenger cars, 130 LCVs, 109 HCVs and 247 buses and coaches. In addition, the EL NIR presents an estimate of 2,570 vehicles for 2020, of 5,050 vehicles for 2025, and of 11,550 vehicles for 2030 (made by 10,000 passenger cars, 250 HDVs and 1,200 buses and coaches). The estimated numbers in the NPF were however considerably higher (13,500, 35,000, and 70,000 in 2020, 2025, and 2030, respectively), indicating that the ambition has decreased from the NPF to NIR.

The 2018 *attainment* of future CNG vehicles estimates is around 55% for 2020 and around 12% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to an *adequate progress* towards reaching the envisaged CNG vehicles estimates. The calculated *average annual growth rate* corresponding to the period 2016-2030 for the CNG vehicle fleet evolution planned by Greece is equal to 19%.

Infrastructure

The Greek NIR reports 11 CNG refuelling points in 2016 and 2017, 13 in 2018, and targets 22 refuelling points in 2020, 35 in 2025, and 55 in 2030 (Table Error! No text of specified style in document.-2). These numbers are identical to the NPF.

The 2018 *attainment* of future publicly accessible CNG refuelling infrastructure targets is close to 59% for 2020 and close to 24% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to a *slow progress* towards reaching these envisaged targets. The calculated *average annual growth rate* corresponding to the period 2016-2025 for publicly accessible CNG refuelling infrastructure evolution planned by Greece is equal to 12%.

Ratio

Based on the EL NIR, the following table shows the ratio between vehicles and publicly accessible refuelling points (i.e. sufficiency index) for the pair CNG/road. It can be seen that the sufficiency index is well below the indicative value of 600 (see Section 2.1.5) for the whole period 2016-2030.

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	CNG	85.18	99.64	108.15	116.82	144.29	210.00

- LNG

Vehicles

Greece recorded no LNG vehicles in 2018. For next years, the EL NIR confirms the NPF estimate of zero, 250 and 900 LNG vehicles (all of them heavy commercial vehicles) for the years 2020, 2025 and 2030, respectively.

Since at the end of 2018 there are no LNG vehicles deployed, the 2018 *attainment* and *progress* have not been computed.

Infrastructure

Greece reported no LNG refuelling points in use for road vehicles in 2018, and has set a target of one public LNG refuelling point in 2020, two in 2025, and four in 2030, as it can be seen in Table Error! No text of specified style in document.-2 (in line with the values reported in the NPF).

Since at the end of 2018 there are no LNG refuelling points deployed, the 2018 *attainment* and *progress* have not been computed.

Ratio

Based on the EL NIR, the following table shows the ratio between vehicles and publicly accessible refuelling points (i.e. sufficiency index) for the pair LNG/road.

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	LNG				0.00	125.00	225.00

- Hydrogen

Vehicles

Similarly to the NPF, the Greek NIR reports no hydrogen in 2018 and does not foresee any development in the future.

Infrastructure

The Greek NIR reports no hydrogen refuelling point in 2018 and, similarly to the NPF, does not foresee any development in the future.

- Biofuels

Vehicles

The Greek NIR reports a long list of norms and regulations setting the specifications of biofuels (ethanol and biodiesel) and allowing the possibility to sell biofuels either mixed with conventional fuels, or neat. However there is no information on number of vehicles or on consumption of biofuels in Greece.

Infrastructure

The Greek NPF had stated that there is no infrastructure to provide biofuels or synthetic and paraffinic fuels. Biofuels are available in liquid or gaseous form and are sold on the Greek market mixed with diesel (biodiesel) or gasoline (ethanol) directly from existing refineries. No future targets are given in the Greek NIR.

- LPG

Vehicles

Greece recorded 343 pure LPG vehicles in use in 2018 (see Table Error! No text of specified style in document.-2), of which 248 were passenger cars, 80 LCVs, 11 HCVs and 4 buses and coaches). In the NPF, the reported situation was very different, with 264,053 LPG vehicles (for the year 2016) because the bi-fuel (petrol-LPG) vehicles were included. Now the EL NIR presents the future estimates of pure LPG vehicles, which are 450, 600, and 750, for 2020, 2025, and 2030, respectively. Because the NPF had provided future estimates regarding bi-fuel vehicles, it is not possible to assess the change between the NIR and NPF.

The 2018 **attainment** of future LPG vehicles estimates is 76.22% for 2020 and 45.73% for 2030. According to the assessment methodology described in Section 2.1, the **progress** obtained by Greece from 2016 until 2018 for LPG vehicles deployment is -14.33% of the overall planned deployment during the period 2016-2030, because a decrease has been reported between 2016 and 2018.

Infrastructure

The Greek NIR provides information on the number of publicly accessible LPG refuelling points for the period 2016-2018 (634 points in 2016, 811 in 2017, and 1,050 in 2018) and the future targets (1,100 in 2020, and 1,500 in 2025). The target for 2030 is missing in the NIR.

The 2018 **attainment** of future publicly accessible LPG refuelling infrastructure targets is 95.45% for 2020 and 70% for 2025. The **progress** could not be computed due the lack of the 2030 target.

Ratio

Based on the EL NIR, it is not possible to calculate the ratio between vehicles and publicly accessible refuelling points (i.e. sufficiency index) for the pair LPG/road, because the LPG infrastructure is clearly dimensioned and used by the bi-fuel vehicles too.

- Rail transport
 - Electricity

Vehicles

Greece recorded 30 (presumably new) electric locomotives in 2018, but no future estimates.

Infrastructure

Information is not available in the Greek NIR.

- Waterborne transport (maritime)
 - Electricity

Vessels

Greece has no electric vessels and does not give future estimates.

Infrastructure

The EL NIR does not provide any information regarding shore-side electricity supply for seagoing ships in 2018. The NPF had reported that the port of Piraeus accepted a large number of cruise liners and other passenger and vehicle ferries, which remained berthed for several hours in some cases, burning conventional fuels, and emitting large quantities of polluting gases. A proposal on electricity supply at the port of Piraeus has been submitted as part of the 2014-2020 Competitiveness, Entrepreneurship and Innovation Operational Programme, in order to conduct a feasibility study into the investment.

The Greek NIR confirms the NPF plan to have 7, 27, and 42 shore-side electricity supply points for seagoing ships in 2020, 2025, and 2030, respectively.

- LNG

Vessels

The Greek NIR does not provide information on the past nor on the estimated number of LNG vessels.

Infrastructure

The Greek NIR does not report any LNG infrastructure in 2018, but presents a revised and slightly more ambitious plan for the next decade compared to the NPF, consisting of two LNG refuelling points in maritime ports for 2020, and five in 2025 and 2030 (in the NPF they were one, two and four, respectively for 2020, 2025 and 2030).

Since at the end of 2018 there were no LNG refuelling points deployed, the 2018 *attainment* and *progress* have not been computed.

- Waterborne transport (inland)

Not applicable since Greece has no inland ports in the TEN-T Core Network.

- Air transport
 - Electricity

Airplanes

No information provided.

Infrastructure (for stationary airplanes)

The Greek NIR lists 55 recharging points at airports over the period 2016-2018. No target is reported for 2020, while from 2025 to 2030 there is a target of 97 recharging points for stationary airplanes. The NPF had stated that only the Athens central airport (Eleftherios Venizelos Airport) had fixed electricity-recharging supply points to meet the recharging needs

of stationary airplanes. Stationary airplanes could recharge from 76 fixed recharging points and there were in addition 33 portable power generators owned by private ground handlers. The other central and regional airports in Greece had no fixed recharging points, just portable generators.

- Biofuels

Airplanes

No information on flights / airplanes powered by biofuels is provided in the EL NIR.

Infrastructure

Information is not available in the Greek NIR.

- ***Measures assessment***

The Greek NIR presents a very long list of measures (70 Legal, 9 Policy, 2 Deployment & Manufacturing support and 2 RTD&D). The Legal measures cover all transport modes and generally contain the minimum level of information necessary for their comprehension and for the qualitative assessment of their ambition compared to the NPF. One of the Policy measures is in reality a Legal measure too, while the Deployment & Manufacturing measures lack any information/data needed to perform a quantitative assessment.

- Legal measures

The Greek NIR contains 70 legal measures, divided in 39 Legislative & Regulatory and 31 Administrative measures. Eleven out of the 39 Legislative & Regulatory measures are envisaged, which means that they are in process of adoption or under consideration. Considering all the legal measures together, they appear to be designed as the necessary tools to allow the realisation of the AFV/AFI plans as presented in the NPF and revised in the NIR. On the basis of the available information, it can be considered that the level of ambition of the legal measures has increased in the NIR, compared to the NPF, because there are many new measures listed in the NIR. Several new Ministerial Decisions, Laws, or Presidential Decrees have been adopted in 2019.

- Legislative & Regulatory

The Greek NIR contains 39 Legislative and Regulatory measures (11 are “envisaged”). The following new ones are highlighted:

- Joint Ministerial Decision No 42863/438/2019: Laying down the terms, conditions and technical specifications for installing charging devices for electric vehicle batteries (recharging points) at vehicle service facilities, at publicly accessible recharging points throughout the urban, intra-urban and national road network, and at parking facilities in public and private buildings.
- Joint Ministerial Decision No 33180/351/2019: Laying down the terms and conditions for establishing and operating liquid fuel, liquid petroleum gas (LPG) and natural gas

filling stations (refuelling points) within port zones and tourist ports (marinas) for fuel to be sold exclusively to ships.

- Presidential Decree 64/2019: Implementation of a Regulation on safe bunkering of liquefied natural gas fuelled vessels.
- Ministerial Decision No 7135/81/2019 and Ministerial Decision No 44464/452/2019: Laying down the terms and conditions for the creation, development, operation and maintenance of a digital register of operating ‘*fuel and energy supply stations, liquid and gaseous fuel filling stations, indoor car parks with fuel pumps and all kinds of stations supplying fuels for public and private use*’, and all other necessary details.
- Ministerial Decision No 29122/314/2019: Laying down the procedure, other conditions and all other technical details for sealing filling stations that supply LPG only, CNG only, and mixed stations that supply any combination of liquid fuels, LPG and CNG.
- Joint Ministerial Decision No 93067/1083/2018: Laying down the technical specifications, competent bodies and terms and conditions for establishing and operating filling stations with devices (refuelling points) for the supply of CNG to wheeled vehicles, such as (1) filling stations that supply CNG only; or (2) mixed filling stations that supply (a) liquid fuels, LPG and CNG; or (b) LPG and CNG; or (c) liquid fuels and CNG.
- Law 4067/2012 (start year 2018): New building regulation - Establishment licence for electric vehicle charging stations in public areas.

- Administrative

The Greek NIR lists 31 Administrative Legal measures. Most of them are international EN ISO standards. The following new ones can be highlighted:

ELOT EN 62196-1 (2019): Plugs, socket-outlets, vehicle connectors and vehicle inlets — Conductive charging of electric vehicles — Part 1: General requirements.

ELOT EN 62196-3 (2019): Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 3: Dimensional compatibility and interchangeability requirements for AC/DC pin and contact-tube vehicle couplers.

- Policy measures

The Greek NIR lists nine Policy Measures (of which one is a Legal measure and is not included in the quantitative assessment), which refer mainly to road transport and are all existing or adopted. In the NPF, there were 21 policy measures, but only 5 of them were existing, while all the others were under discussion.

- Measures to ensure national targets and objectives

The policy measures described in the Greek NIR are all presented as measure that should ensure national targets and objectives are reached. Some of the measures are quite general and others are of financial nature.

Road

- Establishment and composition of an Interministerial Committee for implementation of the project ‘*Promoting electro-mobility in Greece*’.
- Exemption of electric cars from the luxury tax.

- Electric, hybrid, and hydrogen-fuelled passenger motor vehicles for private or public use, registered in Greece for the first time up to 31 October 2010, are exempt from the circulation tax.
- Hybrid cars are exempt from 50% of the registration tax, and electric vehicles are not subject to the registration tax.
- Measures to limit vehicle traffic in the centre of Athens: All hybrid cars are exempt from the restrictions on circulation.
- Measures to combat smog, and town planning arrangements: Electric or hybrid cars ... are not subject to an excise duty, a supplementary single-payment tax and a registration tax.

Other transport modes

No specific measures listed in the EL NIR.

- Measures that can promote AFI in public transport services

Information is not available in the Greek NIR, however one of the measures listed under the previous heading is related to the purchase of 90 electric and natural gas buses and coaches, which can be considered as an indirect measure to promote AFI in public transport services.

- Measures that can promote the deployment of private electro-mobility infrastructure

Information is not available in the Greek NIR.

- Deployment and manufacturing support

- AFI deployment

The Greek NIR mentions one generic deployment measure but does not provide any information for a possible assessment.

- Support of manufacturing plants for AF technologies

The Greek NIR mentions one generic manufacturing support measure but does not provide any information for a possible assessment.

- Consideration of any particular needs during the initial phase of the deployment of alternative fuels infrastructures

Information is not available in the EL NIR.

- Quantitative assessment of Policy and Deployment & Manufacturing measures

Table Error! *No text of specified style in document.*-3 presents an analysis of all the Policy and Deployment & Manufacturing measures, carried out according to the assessment methodology described in Section 2.2. As it can be seen, only three clusters of measures could be identified

in the Greek NIR, on electricity, CNG and hydrogen, all for road transport. No measure was found regarding LNG (contrary to the NPF), nor for waterborne, rail, or air transport. All the clusters obtained a medium or a low score and only the one for the pair electricity/road resulted to be comprehensive. In terms of expected impact of these measures to support the realisation of the AFV/AFI objectives as presented in the NPF and revised in the NIR, the measures for the pair electricity/road has a medium impact, while those for the other two pairs have a low impact.

Compared to the NPF, the level of ambition of the Policy and Deployment & Manufacturing support measures has increased only for electricity/road, while it has decreased for CNG and LNG.

Table Error! No text of specified style in document.-3 Quantitative assessment of Policy and Deployment & Manufacturing support measures

AF	Transport mode	Score	Comprehensiveness	Impact	Ambition (NIR vs NPF)
Electricity	Road	M	C	M	+
CNG	Road	M	N	L	-
LNG	Road				-
	Water - maritime				-
H2	Road	L	N	L	=

Legend: Score: H = high; M = medium; L = low; X = not assessable. Comprehensiveness: C = comprehensive; N = Not comprehensive. Ambition level: '+' means 'higher'; '=' means 'comparable'; '-' means 'lower'.

- Research, Technological Development & Demonstration

The Greek NIR lists only two RTD&D projects. Both projects, “POSEIDON MED II” and “ELEMED”, were already included in the NPF.

The POSEIDON MED II project is an EU co-funded project with a total budget of 33.4 million € for the period 2015-2020. It aims at the preparation of all final studies for the creation of a full chain of supply of LNG as fuel for shipping in the Southeast Mediterranean. The project is expected to make Greece an international hub for the bunkering and distribution of LNG in Southeast Europe.

ELEMED was an EU funded project with a budget of €860,000, for the period 2015-2018. It aims at the preparation of technical studies and plans regarding electricity supply and electrification of ships, analysis of the regulatory framework, a model-based financial analysis and the construction of facilities on a pilot basis to supply electricity to ships at the port of Kyllini, to implement environmentally-friendly maritime transport in the Adriatic and the Ionian Sea.

- *Additional information on alternative fuels infrastructure developments*

The Greek NIR does not provide information on the changes in fuel use.

▪ *Summary of the assessment*

Tabular overview

Table Error! No text of specified style in document.-4 Overview of the NIR assessment

	Indicators	Alternative fuel / transport mode				
		Electricity / road	CNG / road	LNG / road	LNG / water (maritime)	LPG / road
AF Vehicles / Vessels	Past situation (2016)	166	937	0	0	394
	Situation (2018)	345	1,406	0	0	343
	Estimate (2030)	15,000	11,550	900	NA	750
	Future share (2030) [%]	0.24%	0.18%	0.20%		0.01%
	Estimate attainment (2018 vs 2030) [%]	2.30%	12.17%			45.73%
	Progress (2018)	adequate	adequate			-14.33%
Publicly accessible AF Infrastructure	Past situation (2016)	32	11	0	0	634
	Situation (2018)	46	13	0	NA	1,050
	Target (2030)	10,000*	55	4	5	NA
	Target attainment (2018 vs 2030) [%]	0.46%	23.64%			
	Progress (2018)	slow	slow			
Sufficiency Index	2016	5.19	85.18			
	2018	7.50	108.15			
	2020	5.00*	116.82	0.00		
	2025	2.00	144.29	125.00		
	2030	1.50*	210.00	225.00		
Measures	Legal measures	Ambition (NIR vs NPF)	+	+	+	+
	Policy measures +	Score	M	M		
		Comprehensiveness	C	N		
	Deployment & manufacturing	Impact	M	L		
		Ambition (NIR vs NPF)	+	-	-	-
RTD&D	Ambition (NIR vs NPF)				+	

Legend:		not applicable
		the value could not be computed
	NA	no value/information provided/available in the NIR

* Values based on the Greek NPF since the NIR only provided total recharging infrastructure targets and no breakdown for publicly accessible and private infrastructure.

The Greek NIR provides an incomplete coverage of the requirements of Annex I from the Directive. Regarding the combination of AF/AFV/AFI with transport mode, electricity is covered for all modes; CNG, LNG, and LPG for road transport; LNG also for waterborne maritime transport; all the other combinations are either absent or not applicable. The Greek NIR has not provided considerations on the need of renewable jet fuel refuelling points in airports and has not reported any particular needs during the initial phase of the deployment of AF infrastructure.

The EL NIR contains a long lists of Legal measures addressing all transport modes and alternative fuels, but when it comes to policy measures, these are only related to road transport and to electro-mobility in particular.

The main outcomes of the technical assessment of the Greek NIR on vehicles/vessels estimates and infrastructure targets can be summarised as follows:

Road transport

- **Electricity** - Greece recorded 345 electric and plug-in hybrid electric vehicles in use in 2018 (of which 322 were passenger cars, 21 LCVs and 2 buses/coaches). The EL NIR confirms the estimates made in the NPF, but does not distinguish EVs from PTWs and provide total numbers. For 2030 a total number of 15,000 EVs+PTWs is foreseen, with zero HCVs and 90 buses and coaches. The 2018 progress is adequate. As for recharging infrastructure, Greece recorded 46 publicly accessible recharging points in 2018. The number of public recharging points for 2020 and 2030 is missing in the NIR, but was given in the NPF (700 and 10,000, respectively). For the year 2025 instead, the EL NIR specifies that 4,000 public and 8,000 private recharging points (in total 12,000) are envisaged. In this case, the 2018 progress is slow, but the current and foreseen sufficiency index is adequate.
- **CNG** – Greece recorded 1,406 CNG vehicles in use in 2018, of which 920 were passenger cars, 130 LCVs, 109 HCVs and 247 buses and coaches. The NIR estimates for the years 2020, 2025, and 2030 are 2,570, 5,050, and 11,550 CNG vehicles (10,000 passenger cars, 250 HDVs and 1,200 buses and coaches), respectively. This represents a decrease of ambition of around 80% compared to the NPF. The 2018 progress for vehicles uptake is adequate. On the other hand, the EL NIR registers 13 public CNG refuelling points in 2018 and confirms the NPF plan for the next decade, i.e. 22 CNG public refuelling points for 2020, 35 in 2025, and 55 in 2030, respectively. The 2018 progress for infrastructure is slow, while the sufficiency index is adequate for the whole period.
- **LNG** – Greece did not record any road LNG vehicles or refuelling points in 2018. A development is foreseen, but only after 2020, since the NIR confirms the NPF estimate of 250 and 900 LNG vehicles (all of them HCVs) for the years 2025 and 2030, respectively. The LNG refuelling points targets for the years 2020, 2025, and 2030 are 1, 2, and 4, respectively.
- **Hydrogen** – The Greek NPF had declared that the use of hydrogen in the transport sector was not expected in the near future. The EL NIR follows on this line and does not report any vehicle estimate or infrastructure target until 2030. It is however worth mentioning that some measures of financial nature reported in the Greek NIR also cover hydrogen.
- **Biofuels** – The Greek NIR provides no relevant information on biofuels for transport.
- **LPG** – Greece recorded 343 pure LPG vehicles in use in 2018 (of which 248 were passenger cars, 80 LCVs, 11 HCVs and 4 buses and coaches). The future estimates of LPG vehicles for 2020, 2025, and 2030 are 450, 600, and 750, respectively. The NPF has provided much higher numbers that included bi-fuel LPG-gasoline vehicles. The number of publicly accessible LPG refuelling points in 2018 was 1,050, and the future targets are 1,100 in 2020, and 1,500 in 2025.

Rail transport

- **Electricity** – Greece recorded 30 electric locomotives in 2018, but the Greek NIR provides no future estimates.

Waterborne transport (maritime)

- **Electricity** – The EL NIR does not provide any information regarding shore-side electricity supply for seagoing ships in 2018. For the next decade, the Greek NIR confirms the NPF targets of 7, 27, and 42 shore-side electricity supply points for seagoing

ships by 2020, 2025, and 2030, respectively. No battery-powered vessels are reported, nor any specific future development in this sector.

- **LNG** – In none of Greece’s maritime ports was LNG supply available in 2018. The NIR estimates two LNG refuelling points in maritime ports for 2020, and five in 2025 and 2030, which is slightly more ambitious than the NPF. No information on LNG vessels could be found in the NIR.

Air transport

- **Electricity** - The Greek NIR lists 55 recharging points for stationary airplanes over the period 2016-2018. No target is reported for 2020, while from 2025 to 2030 there is a target of 97 recharging points for stationary airplanes.
- **Biofuels** – Information is not available in the Greek NIR on renewable jet fuel refuelling points in airports.

The Greek NIR contains a long list of mainly Legislative & Regulatory and Administrative **measures**. They address all transport modes and alternative fuels and provide a solid legal background to progress with the uptake of alternative fuels vehicles and infrastructure.

However, the level of implementation of these measures, which can be derived by the number and information provided in the list of Policy and Deployment & Manufacturing support measures, is still quite at an early stage. In fact, only three clusters of Policy measures could be identified in the Greek NIR, on electricity, CNG and hydrogen, all for road transport. No measure was found regarding LNG, nor for waterborne, rail or air transport. In terms of expected impact of these measures to support the realisation of the AFV/AFI objectives as presented in the NPF and revised in the NIR, the measures for the pair electricity/road has a medium impact, while those for the other two pairs have a low impact. Compared to the NPF, the level of ambition of the Policy and Deployment & Manufacturing support measures has increased only for electricity/road.

The Greek NIR lists only two RTD&D projects, one on the preparation of the necessary studies for the creation of a full chain of supply of LNG as fuel for shipping in the Southeast Mediterranean, the other to support electrification of waterborne maritime transport in the Adriatic and Ionian seas.

▪ ***Final remarks***

The Greek NIR provides a sufficiently comprehensive report on the efforts to implement the Directive, although it does not report on some important provisions of Annex I to the Directive. Overall, the level of ambition for the development of alternative fuel vehicles and vessels and the relevant infrastructures seems to be rather limited. The Greek NIR presents a very long list of legal measures, but only a limited number seems to address concretely the uptake of alternative fuel vehicles and infrastructure, with a focus on road transport, while it does not mention measures for waterborne, rail, or air transport.

With regard to electricity, the NIR expects some 15,000 electric vehicles on the roads by 2030, representing less than 0.3% of the vehicle fleet by that time. Furthermore, deployment of only 10,000 recharging points is foreseen by 2030. Taking into account the current situation and

expected trends, this level of ambition appears quite low compared to the pace of deployment of electric vehicles considered necessary for a full transition to carbon neutrality by 2050. No information on charging efficiency is provided. The NIR estimates that there will be 27 shore-side electricity supply facilities in 2025 and 42 in 2030, aiming to cover the needs of the five ports in the TEN-T Core Network. There were 55 electricity supply points for stationary aircraft in 2018. The NIR expects an increase to 97 points by 2025, which will remain constant in number for 2030. The electricity supply points for stationary aircraft are and will mainly be located at the Eleftherios Venizelos Airport. Portable power generators will be installed in other airports. There was a small number of electric locomotives in 2018. Further information on the electrification of the rail network should be provided in future reporting.

The NIR does not include any information on future development of hydrogen as a transport fuel in Greece. Although hydrogen is not binding under the Alternative Fuels Infrastructure Directive, it would be relevant that Greece provides information on how to ensure EU-wide connectivity for HCEV.

The NIR also shows a limited level of ambition with the use of natural gas in road transport. There were 13 CNG refuelling points in 2018 for a small fleet of 1,406 CNG vehicles. It is estimated that in 2030 the number of CNG refuelling points will be 55 and the number of vehicles will be 11,550, representing 0.18% of the future vehicle fleet. Two LNG refuelling points are planned in Greece for 2025 and four for 2030. This seems insufficient taking into account the extensiveness of the TEN-T Road Core Network. A limited number of LNG heavy-duty vehicles is also foreseen (250 and 900 LNG heavy-duty vehicles by 2025 and 2030 respectively). All five ports of the Greek TEN-T Core Network are expected to have LNG refuelling points by 2025, as required by the Directive.

Regarding LPG, the NPF had reported a figure of 264,053 LPG vehicles by 2016. This figure included bi-fuel (petrol-LPG) vehicles. The NIR, on the other hand, only reports pure LPG vehicles e.g. 343 in 2018, 600 by 2025 and 750 by 2030) which does not allow a comparison between the NIR and the NPF. The number of LPG filling stations will increase from 1,050 in 2018 to 1,500 in 2025. Bi-fuel LPG vehicles are the main alternative fuel vehicle fleet in Greece.

Greece should provide more information in future reporting on efforts to promote the use of renewable fuels in transport, and particularly in aviation.

▪ ***ANNEX - Description of the Member State***

On a surface area of 132,000 km², Greece has a population of 10.741 million people in 2018, which makes up for a population density of 81 inhabitants/km².

Number of main urban agglomerations

- 9 urban agglomerations > 50,000 inhabitants

In 2018, Greece achieves a per capita gross domestic product at market prices of €17,210, which represents a per capita gross domestic product in purchasing power standards of 68 if expressed in relation to the EU-28 average set to equal 100.

Length of the road networks

The length of the road TEN-T Core Network in Greece is 1,815 km. The total road network length is 40,163 km, of which 1,843 km are motorways.

The following lengths of the TEN-T Road Corridors are present in Greece: 25% (1,346 km) of the Orient – East Mediterranean Corridor.

Through the TEN-T Road Corridors, Greece is connected with the following Member States:
- Bulgaria (through the Orient – East Mediterranean Corridor)

Number of registered road vehicles

At the end of 2017¹, Greece accounts for 8,236,900 registered road vehicles of which 5,236,000 are categorized as passenger cars, 1,344,100 as goods vehicles² and 26,300 as buses and coaches. The motorisation rate is 492 passenger cars per 1,000 inhabitants.

The present situation of few AFV/electric vehicles (1749/345) on Greek roads, with for example less than 0.022% of AFV/0.0042% electric vehicle/passenger cars, *is regarded by Greece as insufficient and in need of improvement*. In the NPF was written that there are 3.5% AFV on Greek roads, with less than 0.01% of electric passenger cars. The higher amount of AFV in the NPF is due to the LPG bi-fuel vehicles that were counted in the NPF.

Number of ports in the TEN-T Core Network

- 5 maritime ports in the TEN-T Core Network (Athina-Piraeus, Heraklion, Igoumenitsa, Patras, Thessaloniki)
- 20 maritime ports in the TEN-T Comprehensive Network
- No inland ports

Number of airports in the TEN-T Core Network

- 3 airports in the TEN-T Core Network (Athina, Heraklion, Thessaloniki)
- 35 airports in the TEN-T Comprehensive Network

¹ No data available for 2018.

² No data available for light and heavy goods vehicle categories.

