

- **Romania (RO)**

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

In its original assessment of the Romanian NPF, the Commission concluded:

*The Romanian NPF addresses partly the requirements of Article 3 of the Directive. For most mandatory fuels and modes, it establishes targets but it does not contain a target for LNG refuelling points to be put in place along the road TEN-T Core Network for heavy-duty vehicles. It contains a discussion of the current state and future scenarios for alternative fuels in the transport sector. The Romanian NPF indicates global AF targets for infrastructure in 2020 and vague targets for electricity and CNG in road transport related only to urban agglomerations and the TEN-T Core Network. The NPF contains only general estimates of percentage increase for AFV in the future.*

*The Romanian NPF lacks concrete targets for EV infrastructure and information about the future EV vehicle market development. It only mentions a target for urban agglomerations in 2020 and one for the TEN-T Core Network in 2030. According to the Romanian NPF, the distance between two directly neighbouring high power-recharging points along the TEN-T Core Network will be approximately 70 km in 2030, which seems insufficient. If implemented, the proposed set of measures could support electro-mobility since it was evaluated as being comprehensive and having a medium assessment score. There are plans for the public procurement of 107 electric buses for public transport in three main urban agglomerations.*

*For shore-side electricity, the NPF does not contain concrete targets but mentions ongoing studies for Bucharest Airport "Henri Coandă" to investigate the possible extension of the existing network. The Romanian NPF provides targets for supplying shore-side electricity in its TEN-T Core Network ports.*

*The NPF shows the ambition of increasing the number of CNG refuelling stations with 23 new ones in selected urban agglomerations and 30 new ones along the TEN-T Core Network before the end of 2020. The targeted number of CNG refuelling stations can be considered sufficient, although the NPF does not provide future estimates for CNG vehicles. Since the average distance between them is foreseen to be 150 km along the TEN-T Core Network, it seems that the 2025 minimum coverage requirements will be fulfilled even though their precise spatial distribution information is not provided.*

*No infrastructure targets are given in terms of LNG for road transport, for 2025, the NPF is only mentioning as objective the assessment of the feasibility of deploying such an infrastructure.*

*The Romanian NPF does not provide targets for hydrogen refuelling infrastructure but mentions that research and development in this field will be encouraged since Romania is part of the group of countries who traditionally produce hydrogen.*

*The Romanian NPF, intending to accelerate the AF deployment in transport, contains a large portfolio of measures with more than half of the presented measures being of administrative, legislative and regulatory type. In the case of the assessed measures, most of them are under consideration and only few are already in place while the lack of concrete information makes it difficult to evaluate the scope according to our methodology. A medium overall assessment*

*score is derived for electric vehicles as well as for alternative fuels in public transport services. Electro-mobility is promoted through substantial direct incentives for purchase of vehicles that are in place since 2016. However, these incentives are only approved for one year at a time and this could be perceived by market actors as a lack of predictability in terms of stability of support measures.*

*The NPF provides a detailed current situation and assessment of the need for investment in public transport services. Measures and plans to increase to more than 30 % the share of electricity-powered vehicles (including tramways, trolleybuses, buses and minibuses) in the urban public transport fleet in 2020 are presented.*

*Five ministries and a series of relevant central public institutions were involved in the drafting of the Romanian NPF. It has been established respecting the interests of regional and local authorities. An inter-ministerial coordination council has been set up in order to ensure the monitoring of the implementation actions and cooperation between the relevant authorities.*

*Evidence of Romania's collaboration with other MSs has been found mainly in the frame of EU projects regarding the inland navigation sector (INNOVATIVE DANUBE VESSEL, PROMINENT, the LNG Master Plan for Rhine-Main-Danube). Beyond these projects, the NPF does not mention any cooperation or coordination with the neighbour MSs in the field of alternative fuels. It is advised to provide evidence of existing collaborations and planning or to engage in such cooperation to ensure AFI cross-border continuity.*

▪ *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.	Road, Water, Air / Electricity, CNG, LNG, H2, Biofuels, LPG		Y
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"> <li>• direct incentives for the purchase of means of transport using alternative fuels or for building the infrastructure,</li> <li>• availability of tax incentives to promote means of transport using alternative fuels and the relevant infrastructure,</li> <li>• use of public procurement in support of alternative fuels, including joint procurement,</li> <li>• demand-side non-financial incentives, for example preferential access to restricted areas, parking policy and dedicated lanes,</li> <li>• technical and administrative procedures and legislation with regard to the authorisation of alternative fuels supply, in order to facilitate the authorisation process.</li> </ul>	Road, Water, Air / Electricity, CNG, LNG, H2, Biofuels, LPG		Y
	• consideration of the need for renewable jet fuel refuelling points in airports within the TEN-T Core Network	Air	Biofuels	N
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).	Road / Electricity		Y
	• Annual public budget allocated to support manufacturing plants for alternative fuels technologies, broken down by alternative fuel and by transport mode.			N
	• Consideration of any particular needs during the initial phase of the deployment of alternative fuels infrastructures.			N
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.			N
ANNEX I: 5. Targets and objectives	• Estimation of the number of alternative fuel vehicles expected by 2020, 2025 and 2030	Road, Rail, Air / Electricity, CNG, LPG		Y
	• Level of achievement of the national objectives for the deployment of alternative fuels in the different transport modes (road, rail, water and air)	Road / Electricity, CNG		Y
	• Level of achievement of the national targets, year by year, for the deployment of alternative fuels infrastructure in the different transport modes			N
	• Information on the methodology applied to take account of the charging efficiency of high power recharging points	Road	Electricity	N
ANNEX I:6 Alternative fuels infrastructure developments	Changes in supply (additional infrastructure capacity) and demand (capacity actually used)	Road / Electricity, LPG, AF (in general)		Y

The checklist shows that not all the requirements of Annex I from the Directive are covered.

The Romanian NIR does not offer quantitative future AFI targets. Regarding the combination of AF/AFV/AFI with transport mode, electricity is partially covered for road, rail and air; CNG, hydrogen, biofuels and LPG are partially covered for road transport; LNG is partially covered for waterborne transport; other combinations being either absent or not applicable.

The Romanian NIR reports 28 measures. Under the Policy and Deployment & Manufacturing sections it was possible to identify six AF/transport mode clusters of measures, all assessable.


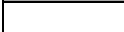

- ***Quantitative assessment: Vehicles and infrastructure***

The Romanian NPF had AFV estimations only as total number, and not discriminated by AF, while the RO NIR provides estimates for EVs and CNG vehicles. Instead, the RO NPF contained targets for electricity/road, electricity/water (maritime and inland), CNG/road and LNG/water (maritime and inland), while the NIR does not contain any AFI targets (with exception of the pair electricity/air).

Therefore, in order to be able to carry out the assessment of the Romanian NIR, the targets presented in the NPF have been considered.

**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	18,067 <sup>(1)</sup> 1,448 <sup>(2)</sup>	335	21,074 <sup>(1)</sup>	292 <sup>(3)</sup>	31,611 <sup>(1)</sup>	NA	42,148 <sup>(1)</sup>	362 <sup>(3)</sup>
	Change NIR vs NPF [%]				0.00%				0.00%
	Attainment [%]			85.73%	114.73%	57.15%		42.87%	92.54%
CNG / road	NIR	295 <sup>(4)</sup> 2,183 <sup>(5)</sup>	3	406 <sup>(4)</sup>	55 <sup>(3)</sup>	609 <sup>(4)</sup>	NA	812 <sup>(4)</sup>	NA
	Change NIR vs NPF [%]				0.00%				
	Attainment [%]			72.66%	5.45%	48.44%		36.33%	
LNG / road	NIR	0 <sup>(6)</sup>	0 <sup>(6)</sup>	NA	NA	NA	NA	NA	NA
	Change NIR vs NPF [%]								
	Attainment [%]								
LNG / water (maritime)	NIR	NA	NA	NA	NA	NA	1 <sup>(3)</sup>	NA	2 <sup>(3)</sup>
	Change NIR vs NPF [%]						0.00%		0.00%
	Attainment [%]								
LNG / water (inland)	NIR	NA	NA	NA	NA	NA	1 <sup>(3)</sup>	NA	2 <sup>(3)</sup>
	Change NIR vs NPF [%]						0.00%		0.00%
	Attainment [%]								
Electricity supply / air (stationary airplanes)	NIR		28		31		78		131
	Change NIR vs NPF [%]								
	Attainment [%]				90.32%		35.90%		21.37%
LPG / road	NIR	261,504	1,990	NA	NA	NA	NA	NA	NA
	Change NIR vs NPF [%]								
	Attainment [%]								

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

<sup>(1)</sup> value provided in the RO NIR (in this assessment it is assumed this value corresponds to BEV+PHEV+HEV);  
<sup>(2)</sup> values from EAFO (BEV+PHEV); <sup>(3)</sup> values from RO NPF; <sup>(4)</sup> mono-fuel CNG vehicles; <sup>(5)</sup> total CNG vehicles (sum of mono-fuel and bi-fuel vehicles) <sup>(6)</sup> values from EAFO.

- Road transport
  - Electricity

*Vehicles*

Romania reported a total of 18,067 electric vehicles in use in 2018 (

Table *Error! No text of specified style in document.*-2), of which 17,352 were passenger cars (1,802 BEV and 15,550 PHEV - but this number probably includes also HEVs, which do not fall under the scope of this assessment), 71 LCVs, 5 HCVs and 639 buses and coaches (but this number probably includes also trolleybuses, which do not fall under the scope of this assessment). On top of that, the RO NIR reports also 107 electric PTWs in use in 2018. According to EAFO, there were 1,448 EVs (excluding PTWs) in use in Romania at the end of 2018. In contrast to the NPF that did not include any EV estimates, the RO NIR contains EV estimates for the next decade (21,074 in 2020, 31,611 in 2025 and 42,148 in 2030)<sup>1</sup>.

The 2018 *attainment* of future EV (probably including also HEVs) estimates is 85.73% for 2020 and 42.87% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to a *fast 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 Romania is equal to 13%.

### Infrastructure

Romania recorded 335 publicly accessible recharging points in 2018, of which 207 were normal power ( $\leq 22\text{kW}$ ) and 128 high power ( $>22\text{kW}$ ) recharging points (38.21%). The RO NIR does not contain any information on targets for the next decade. The NPF had presented two targets: at least 292 recharging points by 2020 (achieved already in 2018) and at least 362 by 2030.

The 2018 *attainment* of future public recharging infrastructure targets is 114.73% for 2020 and 92.54% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to a *fast progress* towards reaching these envisaged targets. The calculated *average annual growth rate* corresponding to the period 2016-2020 for publicly accessible recharging infrastructure evolution planned by Romania is equal to 6%.

### Ratio

Based on RO NIR<sup>2</sup> and EAFO data, the following table shows the ratio between the number of electric vehicles and number of publicly accessible recharging points (i.e. sufficiency index) for the pair electricity/road. The sufficiency index is well below 10 for the computable years 2016 and 2018, thus it can be considered adequate<sup>3</sup>.

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	Electricity	2.25*		4.32**			

\* based on AFV and AFI data from EAFO; \*\* based on AFV data from EAFO and AFI data from RO NIR

### Information on charging efficiency

Information is not available in the Romanian NIR.

- CNG

<sup>1</sup> However, it is not clear whether this number includes also HEVs.

<sup>2</sup> The values reported in the RO NIR for EVs have not been used since it is not clear whether they include also HEVs, which do not require recharging infrastructure.

<sup>3</sup> The values of the ratio have been computed using AFV data representing EV+PHEV (available only for 2016 and 2018).

### *Vehicles*

The Romanian NIR reports 295 mono-fuel CNG vehicles in 2018, of which 167 were passenger cars, 78 LCVs, 11 HCVs and 39 buses and coaches. Additionally, the RO NIR states that at the end of 2018 there were 1,888 bi-fuel (CNG+gasoline) vehicles in use (1,755 passenger cars and 133 LCVs). In contrast to the NPF that did not include any estimates, the RO NIR contains estimates for mono-fuel CNG vehicles for the next decade (406 in 2020, 609 in 2025 and 812 in 2030).

The 2018 *attainment* of future estimates of mono-fuel CNG vehicles is 72.66% for 2020 and 36.33% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to a *fast progress* towards reaching the envisaged estimates of mono-fuel CNG vehicles. The calculated *average annual growth rate* corresponding to the period 2016-2030 for the evolution of the fleet of mono-fuel CNG vehicles planned by Romania is equal to 12%.

### *Infrastructure*

In 2018, Romania recorded three publicly accessible CNG refuelling points (



Table *Error! No text of specified style in document.*-2). The RO NIR does not provide targets for the next decade but mentions that there is “*a potential of extension in the near future with nine CNG fuelling stations throughout the TEN-T corridor*”, including a series of cities from Arad, via Bucharest, up to Constanța. The RO NPF had presented a target of 55 publicly accessible CNG refuelling points by 2020.

The 2018 *attainment* of future public CNG refuelling infrastructure targets is 5.45% for 2020. 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 CNG refuelling infrastructure evolution planned by Romania is equal to 129%.

### *Ratio*

Based on the Romanian NIR and NPF, the following table shows the ratio between total CNG vehicles (mono-fuel and bi-fuel) and publicly accessible refuelling points (i.e. sufficiency index) for the pair CNG/road. The sufficiency index is below the indicative value of 600 for 2016 and thus can be considered adequate (see Section 2.1.5). In 2018, the index is above this indicative value and in the future the index should be monitored in order not to become a barrier for the further market deployment of CNG vehicles.

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	CNG	200.00*		727.67			

\* calculated using AFV data from EAFO and AFI data from RO NPF

- LNG

#### *Vehicles*

Similarly to the NPF, the Romanian NIR does not contain any information about the past or future situation of LNG vehicles. According to EAFO, there were no LNG vehicles deployed in 2018 in Romania. Therefore, the 2018 **attainment** and **progress** could not be computed.

#### *Infrastructure*

Similarly to the NPF, the Romanian NIR does not contain any information about past or future situation of LNG refuelling points for road transport. According to EAFO, there were no LNG refuelling points for road transport deployed in 2018 in Romania. Therefore, the 2018 **attainment** and **progress** could not be computed.

#### *Ratio*

Since there are no LNG vehicle or infrastructure data provided in the Romanian NIR, it is not possible to calculate the sufficiency index.

- Hydrogen

The Romanian NIR considers that hydrogen used as alternative fuel is at the research-development stage, and no specific regulations have been implemented in Romania for hydrogen refuelling of vehicles, despite the fact that the transport of hydrogen by road from the place of production to the refuelling station is regulated.

#### *Vehicles*

Similarly to the NPF, the Romanian NIR does not contain any quantitative information about the past or future situation of hydrogen vehicles. According to EAFO, there were no hydrogen vehicles deployed in 2018 in Romania. Therefore, the 2018 **attainment** and **progress** could not be computed.

#### *Infrastructure*

Similarly to the NPF, the Romanian NIR does not contain any quantitative information about past or future situation of hydrogen refuelling points for road transport. According to EAFO, there were no hydrogen refuelling points deployed in 2018 in Romania. Therefore, the 2018 **attainment** and **progress** could not be computed.

The RO NIR mentions an existing policy measure that was announced in the NPF on establishing the technical characteristics for defining and possibly facilitating the authorisation of hydrogen refuelling stations, and for the authorisation of supply with this type of alternative fuel. The Ministry of Energy initiated consultations with the national natural gas transmission operator, which proposed to establish a research topic regarding the technical reliability of hydrogen injection in the natural gas network.

#### *Ratio*

Since there are no quantitative hydrogen vehicle or infrastructure data provided in the Romanian NIR, it is not possible to calculate the sufficiency index.

- Biofuels

*Vehicles*

Similarly to the NPF, the Romanian NIR does not contain any quantitative information about past or future situation of vehicles fuelled by biofuels. Therefore, the 2018 **attainment** and **progress** could not be computed.

*Infrastructure*

Similarly to the NPF, the Romanian NIR does not contain any quantitative information about past or future situation of refuelling points dedicated to biofuels. Therefore, the 2018 **attainment** and **progress** could not be computed.

*Ratio*

Since there are no quantitative biofuels vehicle or infrastructure data provided in the Romanian NIR, it is not possible to calculate the sufficiency index.

- LPG

*Vehicles*

The RO NIR only reports that, according to the Periodic Roadworthiness Test results, the total number of vehicles equipped with LPG systems in use in 2018 was 261,504, of which 254,275 vehicles equipped with retrofitted LPG fuelling units and 7,229 vehicles equipped with petrol + LPG fuelling units by the vehicle manufacturer. Due to the lack of data, the 2018 **attainment** and **progress** could not be computed.

*Infrastructure*

The Romanian NIR reported approximately 1,990 public LPG refuelling points in 2018 and, similarly to the NPF, no information regarding future targets. Because there are no LPG refuelling points targets provided in the RO NIR, the 2018 **attainment** and **progress** could not be computed.

*Ratio*

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

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	LPG	158.33*		131.41			

\* calculated using AFV and AFI data from EAFO

- Rail transport
  - Electricity

#### *Vehicles*

Based on data from the Ministry of Transport, Infrastructure and Communications, the Romanian NIR indicates that the stock of electric locomotives has a descending trend, from 542 in 2016 to 526 in 2018, with 210 being estimated for 2020. For 2025 and 2030, it is stated that no predictions can be made because the active fleet of locomotives will depend on the rail traffic chart of that year.

#### *Infrastructure*

Information is not available in the Romanian NIR.

- Waterborne transport (maritime)
  - Electricity

#### *Vessels*

Similarly to the NPF, information is not available in the Romanian NIR related to electric seagoing ships.

#### *Infrastructure*

The Romanian NIR does not contain any information about past or future situation of shore-side electricity supply for maritime ports. The RO NPF had provided two targets for maritime and inland ports together: one port for 2025 and six ports by 2030. Since the situation in 2018 is not described in the RO NIR, the 2018 *attainment* and *progress* could not be computed.

- LNG

#### *Vessels*

Similarly to the NPF, no quantitative data are provided regarding LNG seagoing ships in the Romanian NIR. However, two studies are mentioned: one on the “*possibility of adapting the Navrom Galati fleet to using LNG*” (under the LNG MASTER PLAN project) and an opportunity study for the construction and refurbishment of ships using LNG. The NIR mentions that “*the opportunity of refurbishing Diesel propelled ships for the use of LNG is considered not a feasible solution for the time being, constituting a potential option only for newly built ships, in particular ships designed for such type of fuel*”.

#### *Infrastructure*

No quantitative data are provided in the Romanian NIR regarding LNG supply in the maritime ports, while the NPF contained two targets (1 port in 2025 and 2 ports in 2030). Under the LNG MASTER PLAN project, a pre-feasibility study was prepared on the construction of a small capacity LNG terminal in Constanța Port (maritime and inland) and a study on the construction of an LNG terminal in Galați Port (maritime and inland). The Romanian NIR considers as priority the identification of investors to concession the management of LNG terminals to port operators.

- Waterborne transport (inland)
  - Electricity

#### *Vessels*

Similarly to the NPF, information is not provided in the Romanian NIR related to electric inland waterways vessels.

#### *Infrastructure*

The Romanian NIR does not contain any information about past or future situation of shore-side electricity supply for inland ports. The RO NPF had provided two targets for maritime and inland ports together: 1 port for 2025 and 6 ports by 2030. Since the situation in 2018 is not described in the RO NIR, the 2018 **attainment** and **progress** could not be computed.

- LNG

#### *Vessels*

Similarly to the NPF, no quantitative data are provided regarding LNG inland waterways in the Romanian NIR. However, a study is mentioned on the “*possibility of adapting the Navrom<sup>4</sup> Galati fleet to using LNG*” (under the LNG MASTER PLAN project). In Section 5.23.3.3.2 more details are provided on another developed study regarding LNG use in waterborne transport.

#### *Infrastructure*

No quantitative data are provided in the Romanian NIR regarding LNG supply in the inland ports, while the NPF contained two targets (one port in 2025 and two ports in 2030). In Section 5.23.3.3.2, some details on two studies regarding LNG terminals construction are presented. Since the situation in 2018 is not described in the RO NIR, the 2018 **attainment** and **progress** could not be computed.

- Air transport
  - Electricity

#### *Airplanes*

The only information found in the Romanian NIR relates exclusively to unmanned aircraft equipped with an electric motor – drones. Their number presents an increasing trend for the period 2016 – 2030 (from 542 in 2016 and 379 in 2018 to 800 foreseen in 2020, 1,200 in 2025 and 2,000 in 2030).

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<sup>4</sup> Romanian River Shipping Company Navrom that has most of its fleet on the Rhine River, where many LNG terminals are operable, whereas only a small number of ships are on the Danube River.

### *Infrastructure (for stationary airplanes)*

The Romanian NIR reports that 28 electricity supply points for stationary airports were in use in 2018. Targets for the next decade are provided as well: 31 in 2020, 78 in 2025 and 131 in 2030. The Romanian NIR provides also detailed information from the National Company of Airports that at the TEN-T Core “International Henri Coandă Airport” in Bucharest, which performs more than 50,000 aircraft movement per year, there are 16 electricity generators for parked aircraft at the 14 air bridges. The 16 electricity generators have an installed capacity of 90 kVA and, depending on the load, the average power demand is approximately 45 kW. As regards energy consumption, approximately 170 parking operations per air bridge per month are estimated and the electricity consumption is approximately 33.75 kWh per operation.

The 2018 *attainment* of future targets of electricity supply points for stationary airports is 90.32% for 2020 and 21.37% for 2030. According to the assessment methodology described in Section the *progress* obtained by Romania from 2016 until 2018 for the deployment of electricity supply points for stationary airports is 3.74% of the overall planned deployment during the period 2016-2030.

- Biofuels

### *Airplanes*

Information on flights / airplanes powered by biofuels is not available in the RO NIR. It is mentioned that no aircraft using alternative fuels is recorded in the Romanian air transport sector.

### *Infrastructure*

Information is not available in the Romanian NIR on the need for renewable jet fuel refuelling points in airports within the TEN-T Core Network.

## ▪ *Measures assessment*

The Romanian NIR contains a medium size portfolio of measures, most of them focusing on electricity/road. This situation results from the fact that the Romanian NIR presents only new measures in place after 2017 and none of the measures presented in the NPF as in place at that time is mentioned anymore. The NIR mentions that the presented measures are listed in the Annex to Government Decision No 87 of 7 March 2018 approving the “*NPF strategy for developing the alternative fuels market in the transport sector and deploying the relevant infrastructure in Romania and establishing the Inter-ministerial Coordination Council for developing the Alternative Fuels Market*”.

Around half of all the measures in the NIR are Legal measures, mainly of legislative and regulatory category, presenting either current or under discussion legislation.

- Legal measures

The Romanian NIR contains the description of 11 legal measures in place, a subset from the 19 measures that were listed as future intentions in the Romanian NPF. The remaining 10 measures presented in the NPF as in place at that time are not mentioned anymore in the NIR.

Nine NIR legal measures concern AFI deployment. For AFV and AF, there is one measure for each thematic. All AF types are relatively uniformly covered (two for electricity, one for CNG, one for LNG, three for LPG, two for hydrogen, one for biofuels and one for AF combinations). As transport mode, road is the most frequently mentioned. All measures have 2018 as starting year and are applied at national level.

Considering all the legal measures, they appear to be fit, if fully implemented, to support the realisation of the AFV/AFI objectives as described in the NPF and revised in the NIR. Taking into account that all the legal measures presented in the NIR were announced in the NPF (and proposed for the future), it is considered that the level of policy ambition of the legal measures is similar in the NIR compared to the NPF.

#### ○ Legislative & Regulatory

From the nine measures of this category described in the Romanian NIR, three are of type norms and requirement while six regard national targets. The measures concern developing, revising, supplementing and streamlining the legal framework for alternative fuels deployment in transport, including:

- establishing a common method and/or measurement unit for the public recharging service,
- ensuring the installation of normal power ( $\leq 22\text{kW}$ ) recharging points in classical fuel stations,
- revising the authorisation procedure of refuelling stations (CNG, LPG),
- conditions of safety and environmental protection for the refuelling process (CNG, LNG, Hydrogen),
- compulsory percentages of biofuels in fossil fuels (in accordance with national and EU legislation),
- revising the concession of spaces designated for the deployment of refuelling/recharging stations/points.

All AF types are present, and from the transport mode point of view, road is covered in all the measures (5 times expressly mentioned). Seven measures concern AFI and cover the following AFs: electricity, CNG, LNG, biofuels, hydrogen and LPG.

#### ○ Administrative

Of all the measures described in the Romanian NIR, six can be categorised as administrative measures. Two of them<sup>5</sup> regard AFI deployment and AFV purchase. One refers to an assessment of the development of LNG infrastructure, covering economic feasibility and cost-benefit proportionality, including environmental aspects. The other concerns the assessment of the opportunity to establish financial instruments (such as guarantee funds, bonds, public-private partnerships) for legal persons intending to develop recharging/refuelling points/stations, and to purchase alternative fuels vehicle fleets.

The Romanian NIR lists as well two measures<sup>6</sup> regarding the establishment of information points and a monitoring system to provide the geographical locations and information on real-

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<sup>5</sup> Included by the RO NIR in the category Legal measures - Administrative

<sup>6</sup> In order to comply with the classification used in this assessment, four of the measures presented by the RO NIR as RTD&D measures are reclassified and assessed as Legal measures (Administrative).

time accessibility, historical and real-time information on recharging/refuelling for alternative fuels infrastructure<sup>7</sup>. Other two measures concern local authorities: preparation of guidelines by adapting and integrating good practices tested in other European cities and promotion of funding lines available under the 2014-2020 Regional Operational Programme and intended for the development of local projects, with focus on the development of the alternative fuels infrastructure.

- Policy measures

The Romanian NIR contains ten policy measures in place, the majority of which were announced as future measures in the NPF. Taking into account that some of them have been revised or have become more concrete, their overall level of ambition is considered increased. Some measures lack details in their description (e.g. budget) that are needed to perform an accurate assessment according to the methodology described in Section 2.2. From the transport mode point of view, nine regard specifically road and one the combination of all modes. Regarding the AF covered, six measures concern different combinations of fuels, three electricity, and one biofuels. They are in majority financial measures and in seven cases they apply at a national level, while in three cases they apply at local level.

- Measures to ensure national targets and objectives

#### *Road transport*

The RO NIR presents seven policy measures meant to support the achievement of the Romanian AF objectives in road transport (one measure appears only in the NIR, 6 are common to the NIR and NPF). They are all in place and the majority of them are financial incentives.

Within the measures in place targeting electricity/road pair, which is the focus of the Romanian strategy, the NIR lists:

- purchase subsidies (“Rabla Plus” programme - grants of €10,000 for the private purchase of a new BEV and of €4,250 for the private purchase of a new PHEV),
- scrappage schemes (“Rabla” programme - €1,250 for scrapping an old vehicle at national level and additionally around €2,000 in Bucharest)
- tax reductions/exemptions
  - Ownership tax exemption

The NIR also mentions that the Administration Office of the Environmental Fund is reviewing the possibility of including vehicles using CNG, LNG and hydrogen in the “Rabla Plus” purchase incentive programme in the following years and encouraging the purchase by freight and passenger transport operators of vehicles that can operate on E10 fuel.

A favourable regime for the parking of vehicles using alternative fuels in the main urban areas is mentioned as being under preparation. From the total number of approximately 481,036 parking spaces registered in the administrative territorial units<sup>8</sup>, approximately 400 of these are intended exclusively for vehicles using alternative fuels (150 additional under consideration). The NIR mentions that in 12 of the 41 administrative territorial units, including Bucharest

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<sup>7</sup> Data on 258 recharging points were inputted in the records of the Ministry of Energy at the date of drafting the NIR.

<sup>8</sup> Source: data taken from the letters received from the 41 administrative territorial units (ATU) included in the National Policy Framework Strategy for developing the alternative fuels market;



Municipality, a series of benefits were granted to natural and legal persons owning alternative fuels vehicles, which consisted in reduction of payment or gratuity for use of parking spaces.

#### *Other transport modes*

The Romanian NIR presents as an education/information measure the organisation of events to promote mobility based on alternative fuels.

- Measures that can promote AFI in public transport services

In accordance with Law No 37/2018 on the promotion of green transport, local public authorities, autonomous administrations and companies subordinated to administrative territorial units will purchase AF (electricity – HEV, PHEV and BEV; CNG; LNG; hydrogen) vehicles for passenger transport in a minimum rate of 30% of the demand for future procurements. Privately owned companies providing public local and metropolitan transport services or those in an inter-community development association, including taxi companies, will purchase, as from 2020, AF vehicles (electricity – HEV, PHEV and BEV; CNG; LNG; hydrogen) for passenger transport in a rate of 30% of the demand for future procurements. Annual procurements of vehicles by public authorities to supply their own fleet must include AF passenger cars (electricity – HEV, PHEV and BEV; hydrogen) at a minimum rate of 20%.

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

Information is not available in the Romanian NIR.

- Deployment and manufacturing support

Within the Romanian NIR, four measures have been identified to relate to deployment and manufacturing support in the area of alternative fuels in transport, however, the absence of the necessary financial data makes impossible an appropriated assessment.

- AFI deployment

Since 2018, there is in place a support scheme for deployment of recharging stations for electrical vehicle in the county capital cities. The maximum amount financed by the Authority for the installation of a recharging station (2 high power recharging points – one AC with power >22 kW and one DC with power  $\geq$ 50 kW) is approximately €40,000, representing 90% of the eligible expenditure.

The Romanian NIR reports one measure regarding the improvement of the methodology for replacing and recycling EV and HEV batteries in order to mitigate any potential negative impact on the environment and public health.

Another measure concerns the identification of funding solutions for power supply infrastructure deployment programmes for stationary aircraft. The administration office of the International Henri Coandă Airport in Bucharest that performs more than 50,000 aircraft movements/year will review the opportunity and the need to deploy power supply sources without using fossil fuel-based supply sources.

- Support of manufacturing plants for AF technologies

The Romanian NIR contains only one measure in this direction. It regards the assessment of the possibility of allocating an annual budget to support the units developing alternative fuels technologies and reviewing any special needs concerning the use of such technologies by public institutions, the accessing of European funds and communication of any potential benefits for the environment and the economic efficiency of these technologies for the final user.

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

Information is not available in the Romanian NIR, except the mention that “*special needs at the initial stage of deployment of the alternative fuels infrastructure were also considered*” while preparing the deployment and manufacturing support measures.

- 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. Five clusters of measures were identified for road transport and one for air transport. Three clusters contain dedicated measures (electricity/road, electricity/air, and biofuels/road) while the other three contain general measures addressing combinations of several alternative fuels. No measure could be identified for the pairs LNG/water (maritime and inland). Five clusters can be considered comprehensive because they cover different categories of measures and different directions of alternative fuels deployment.

In line with the overall focus on road electrification reported in the NIR, the most numerous cluster concerns electricity/road containing a comprehensive set of 10 measures, of which 3 are new measures, displaying a high overall score. 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 result to have a high impact and the measures for the pair hydrogen/road to have a medium impact. For all the other identified clusters of measures, the overall low score results in a low impact.

Compared to the NPF, the level of ambition of the Policy and Deployment & Manufacturing support measures has increased for electricity/road, CNG/road, LNG/road and hydrogen/road, and has remained the same for biofuels/road and electricity/air.

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	H	C	H	+
CNG	Road	L	C	L	+
LNG	Road	L	C	L	+
	Water - maritime				
	Water - inland				
H2	Road	M	C	M	+
Biofuels	Road	L	C	L	=
Electricity	Air	L	N	L	=

**Legend:** Score and Impact: 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 Romanian NIR presents a list of eight RTD&D measures<sup>9</sup>, however only three of them have been considered as actual RTD&D measures. They represent activities appearing in the NPF as future plans, while the three EU projects on waterborne transport that were presented in the NPF are not mentioned anymore. All three measures are in force but no budget information is presented. As transport mode, two measures address road and one addresses combinations of modes. Regarding the targeted AF, one measure is specific for hydrogen and two for combinations of fuels.

The activities covering specifically hydrogen relate to the assessment of the possibilities of using it as alternative fuel in transport (including by a re-profiling of the current industrial potential of production) and of supporting research activities (including by facilitating access to European funding mechanisms like FCH JU), to develop the required refuelling and propelling systems. The NIR mentions that a technical possibility was identified as regards production of hydrogen in the three refineries within the Romanian territory, through the units producing hydrogen in the petrochemical industry and in the agro-chemical industry as a by-product. In this situation, the NIR level of ambition is consider increased in comparison with the NPF.

One measure is represented by the assessment of the possibility of supporting research activities concerning alternative fuels in general, including by accessing European financing mechanisms (main identified financing means listed are Horizon 2020, Innovation Fund, Connecting Europe Facility (CEF)).

Another RTD&D activity mentioned is the organisation of events to enable testing of buses using alternative fuels for the purpose of procurement for public transport.

<sup>9</sup> In order to comply with the classification used in this assessment, four of these measures are assessed as Legal measures (Administrative) and one as Policy measure.

- ***Additional information on alternative fuels infrastructure developments***

The Romanian NIR contains information on the fuels use in the transport sector only for the period 2016-2018 (see Table Error! No text of specified style in document.-4). Electricity presents a stable trend while LPG a slightly increasing one in the three years covered. The other AFs (presumably biofuels) are around 5%.

*Table Error! No text of specified style in document.-4 Changes in fuel use in transport sector (2016-2030)*

MODE OF TRANSPORT	FUEL	Fuels use [%]			Estimated fuels use [%]		
		2016	2017	2018	2020	2025	2030
Road	Gasoline	24.15%	22.69%	21.82%			
	Diesel	69.51%	70.41%	71.43%			
	Electricity	0.06%	0.06%	0.06%			
	LPG	1.36%	1.53%	1.55%			
	Other AF	4.92%	5.30%	5.14%			
	<b>Total Road</b>	<b>100.00%</b>	<b>99.99%</b>	<b>100.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>
Maritime	Marine gas oil	8.33%	1.40%	2.10%			
	Marine diesel oil	91.67%	98.60%	97.90%			
	<b>Total maritime</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>

▪ **Summary of the assessment**

**Tabular overview**

*Table Error! No text of specified style in document.-5 Overview of the NIR assessment*

	Indicators	Alternative fuel / transport mode					H2 / road	LPG / road	
		Electricity / road	CNG / road	LNG / road	LNG / water (maritime)	LNG / water (inland)			
<b>AF Vehicles / Vessels</b>	Past situation (2016)	6,423 <sup>(1)</sup> 337 <sup>(2)</sup>	142 <sup>(4)</sup> 400 <sup>(6)</sup>	0 <sup>(6)</sup>	NA	NA	0 <sup>(6)</sup>	190,000 <sup>(6)</sup>	
	Situation (2018)	18,067 <sup>(1)</sup> 1,448 <sup>(2)</sup>	295 <sup>(4)</sup> 2,183 <sup>(5)</sup>	0 <sup>(6)</sup>	NA	NA	0 <sup>(6)</sup>	261,504	
	Estimate (2030)	42,148 <sup>(1)</sup>	812 <sup>(4)</sup>	NA	NA	NA	NA	NA	
	Future share (2030) [%]	0.56%	0.01%						
	Estimate attainment (2018 vs 2030) [%]	42.87%	36.33%						
	Progress (2018)	fast	fast						
<b>Publicly accessible AF Infrastructure</b>	Past situation (2016)	150 <sup>(3)</sup>	2 <sup>(3)</sup>	0 <sup>(6)</sup>	0 <sup>(3)</sup>	0 <sup>(3)</sup>	0 <sup>(6)</sup>	1,200 <sup>(6)</sup>	
	Situation (2018)	335	3	0 <sup>(6)</sup>	NA	NA	0 <sup>(6)</sup>	1,990	
	Target (2030)	362 <sup>(3)</sup>	NA	NA	2 <sup>(3)</sup>	2 <sup>(3)</sup>	NA	NA	
	Target attainment (2018 vs 2030) [%]	92.54%							
	Progress (2018)	fast	slow						
<b>Sufficiency Index</b>	2016	2.25	200					158.33	
	2018	4.32	727.67					131.41	
	2020								
	2025								
	2030								
<b>Measures</b>	<b>Legal measures</b>	Ambition (NIR vs NPF)	=	=	=	=	=	=	
	<b>Policy measures + Deployment &amp; manufacturing support</b>	Score	H	L	L			M	
		Comprehensiveness	C	C	C			C	
		Impact	H	L	L			M	
	<b>RTD&amp;D</b>	Ambition (NIR vs NPF)	+	+	+			+	

**Legend:**

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

<sup>(1)</sup> value provided in the RO NIR (in this assessment it is assumed this value corresponds to BEV+PHEV+HEV); <sup>(2)</sup> values from EAFO (BEV+PHEV); <sup>(3)</sup> values from RO NPF; <sup>(4)</sup> mono-fuel CNG vehicles; <sup>(5)</sup> total CNG vehicles (sum of mono-fuel and bi-fuel vehicles) <sup>(6)</sup> values from EAFO.

The Romanian NIR does not cover all the requirements of Annex I from the Directive and does not offer any quantitative future AFI targets.

Regarding the combination of AF/AFV/AFI with transport mode, electricity is covered for road, rail and air; CNG and LPG for road transport; hydrogen and biofuels are partially covered for road transport; LNG is partially covered for waterborne transport; other combinations being either absent or not applicable.

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

#### *Road transport*

- **Electricity** – Romania reported a total of 18,067 electric vehicles in use in 2018 (but this number probably includes also HEVs that do not fall under the scope of this assessment). According to EAFO, there were 1,448 EVs (excluding PTWs) in use in Romania in 2018. In contrast to the NPF that did not include any EV estimates, the RO NIR contains EV estimates for the next decade (21,074 in 2020, 31,611 in 2025 and 42,148 in 2030)<sup>10</sup>. Romania recorded 335 publicly accessible recharging points in 2018, of which 38.21% were high power (>22kW) recharging points. The RO NIR does not contain any information on targets for the next decade, but the NPF had included two targets: at least 292 recharging points by 2020 (achieved already in 2018) and at least 362 by 2030. The progress in 2018 results to be fast both for EVs and for infrastructure. The ratio AFV to AFI is below 10 for the computable years 2016 and 2018, thus is considered adequate.
- **CNG** – The RO NIR reports 295 mono-fuel CNG vehicles and 1,888 bi-fuel (CNG+gasoline) vehicles in use in 2018. In contrast to the NPF that did not include any estimates, the RO NIR contains estimates for mono-fuel CNG vehicles for the next decade (406 in 2020, 609 in 2025 and 812 in 2030). In 2018, Romania recorded three publicly accessible CNG refuelling points. The RO NIR does not provide targets for the next decade but the RO NPF had included a target of 55 publicly accessible CNG refuelling points by 2020. The progress in 2018 is fast for CNG vehicles and slow for the infrastructure. The sufficiency index is below the indicative value of 600 for 2016 and above it in 2018, and should therefore be monitored in order not to become a barrier for the further market deployment of CNG vehicles.
- **LNG** – Similarly to the NPF, the Romanian NIR does not contain any information about past or future situation of LNG vehicles and infrastructure.
- **Hydrogen** – The Romanian NIR considers that hydrogen used as alternative fuel is at the research-development stage, thus no specific regulations have been implemented yet in Romania for hydrogen refuelling of vehicles, but some are in planning phase. Similarly to the NPF, the Romanian NIR does not contain any quantitative information about past or future situation of hydrogen vehicles and infrastructure.
- **Biofuels** – No specific information regarding vehicles and/or biofuels refuelling points was found in the RO NIR.
- **LPG** – The RO NIR reports that, according to the Periodic Roadworthiness Test results, the total number of vehicles equipped with LPG systems in use in 2018 is 261,504, mainly with retrofitted LPG fuelling units. The Romanian NIR reported approximately 1,990 public LPG refuelling points in 2018 and, similarly to the NPF, no information regarding future targets.

#### *Rail transport*

- **Electricity** – The Romanian NIR indicates that the stock of electric locomotives has a descending trend, from 542 in 2016 to 526 in 2018, and 210 are estimated for 2020 (while for 2025 and 2030 no predictions can be made because the active fleet of locomotives will depend on the rail traffic chart of those years).

#### *Waterborne transport (maritime)*

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<sup>10</sup> However, it is not clear whether these numbers include also HEVs which do not fall under the scope of this assessment.

- **Electricity** - Similarly to the NPF, information is not available in the Romanian NIR related to electric seagoing ships. The Romanian NIR does not contain any information about past or future situation of shore-side electricity supply for maritime ports, but the RO NPF had provided two targets for maritime and inland ports together: one port for 2025 and six ports by 2030.
- **LNG** – Similarly to the RO NPF, no quantitative data are provided in the Romanian NIR regarding LNG seagoing ships. However, an opportunity study for the construction and refurbishment of ships using LNG is mentioned. No quantitative data are provided in the Romanian NIR regarding LNG supply in the maritime ports, while the NPF contained two targets (one port in 2025 and two ports in 2030). Under the LNG MASTER PLAN project, a pre-feasibility study was prepared on the construction of a small capacity LNG terminal in Constanța Port (maritime and inland) and a study on the construction of an LNG terminal in Galați Port (maritime and inland).

#### *Waterborne transport (inland)*

- **Electricity** – Similarly to the NPF, no information is provided in the Romanian NIR related to electric inland waterways vessels. The Romanian NIR does not contain any information about past or future shore-side electricity supply points for inland ports, whilst the RO NPF had provided two targets for maritime and inland ports together: 1 port for 2025 and 6 ports by 2030.
- **LNG** – Similarly to the RO NPF, no quantitative data are provided regarding LNG inland waterways in the Romanian NIR. However, a study is mentioned on the “*possibility of adapting the Navrom<sup>11</sup> Galati fleet to using LNG*” (under the LNG MASTER PLAN project). No quantitative data are provided in the Romanian NIR regarding LNG supply in the inland ports, while the NPF contained two targets (1 port in 2025 and 2 ports in 2030).

#### *Air transport*

- **Electricity** – The Romanian NIR relates exclusively to unmanned aircraft equipped with an electric motor (drones), and foresees an increasing trend for them. The Romanian NIR reports that 28 electricity supply points for stationary airports were in use in 2018, mentioning that there are 16 electricity generators for parked aircraft at 14 air bridges “International Henri Coandă Airport” in Bucharest. Targets for the next decade are provided: 31 in 2020, 78 in 2025 and 131 in 2030.
- **Biofuels** – No aircraft using alternative fuels are recorded in the Romanian air transport sector. Information is not available in the Romanian NIR on the need for renewable jet fuel refuelling points in airports within the TEN-T Core Network.

The Romanian NIR contains around 30 **measures**, a medium size portfolio of measures. The NIR presents only measures in place after 2017 and none of the measures presented in the NPF as in place at that time is mentioned anymore. The NIR mentions that the presented measures are listed in the Annex to Government Decision No 87 of 7 March 2018 approving the “*NPF strategy for developing the alternative fuels market in the transport sector and deploying the relevant infrastructure in Romania*”.

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<sup>11</sup> Romanian River Shipping Company Navrom that has most of its fleet on the Rhine River, where many LNG terminals are operable, whereas only a small number of ships are on the Danube River.

The majority of the measures address road transport and focus on the development of electromobility. Around half of the presented measures are Legal measures, mainly of legislative and regulatory category presenting current or under discussion legislation.

Concerning the policy measures, most of the presented measures in the RO NIR were announced as future plans in the NPF. Since some measures have been revised or have become more concrete, their overall level of ambition is considered increased. They cover financial aspects (e.g. purchase and scrappage subsidies, tax incentives) but also non-financial (e.g. favourable parking regimes) and information ones (organisation of events to promote mobility based on alternative fuels).

The AFI deployment measures address the electricity/road and electricity/air pairs.

Concerning the Policy and Deployment & Manufacturing support measures, in the NIR compared with the NPF, the level of ambition has increased for electricity/road, CNG/road, LNG/road and hydrogen/road pairs, and has remained the same for biofuels/road and electricity/air pairs. The most complete and numerous cluster of measures is for the pair electricity/road. The expected impact of the measures to support the realisation of the AFV/AFI objectives as presented in the NPF and revised in the NIR is high for the electricity/road pair, medium for hydrogen/road while for the other pairs (CNG/road, LNG/road, biofuels/road and electricity/air) it results to be low.

Three measures have been identified as RTD&D, all being in place but none containing budget information. One of them covers specifically hydrogen and relates to the assessment of the possibilities of using it as alternative fuel in transport (including by a re-profiling of the current industrial potential of production) and of supporting research activities to develop the required refuelling and propelling systems. Another RTD&D activity mentioned is the organisation of events to enable testing of buses using alternative fuels for the purpose of procurement for public transport.

#### ▪ *Final remarks*

The Romanian NIR provides a rather limited report on the efforts to implement the Directive. The NIR meets, to a certain extent, the requirements of Annex I to the Directive, but it lacks information on the targets for CNG refuelling points by 2025 and 2030 and for LNG refuelling points for vehicles by 2020, 2025 and 2030. It also lacks information on estimates LNG vehicles and vessels in 2020, 2025 and 2030. Future reporting should provide further information on measures to support alternative fuels ramp up in other modes of transport than road and with special attention for waterborne transport.

Regarding electricity, the NIR does not provide detailed information. This assessment has been based on information provided already in the NPF. On this basis, it is estimated that by 2030 there could be about 42,000 electric vehicles on the roads, representing about 0.6% of the future vehicle fleet. Taking into account the current situation expected trends, this level of ambition appears too low compared to the pace of deployment of electric vehicles considered necessary for a full transition to carbon neutrality by 2050. The targets for publicly accessible recharging infrastructure correspond to the low estimated number of vehicles. Higher ambition would contribute to better meeting the objective of realising a dense, wide-spread and easy to use



network of recharging and refuelling infrastructure throughout the EU. No information on charging efficiency is provided. The NIR does not provide estimates on shore-side electricity supply in maritime and inland ports. Following the NPF, one port should be equipped accordingly by 2025 and six ports by 2030. Romania should provide updated information in this regard in future reporting. In 2018, 28 electricity supply points for stationary airplanes were already in use; 131 are expected by 2030. The number of electric locomotives has been decreasing, from 542 in 2016 to 526 in 2018, while 210 are expected for 2020. Further information as regards the current electrification of railways and future planning should be provided in future reporting.

Concerning hydrogen for road transport, the Romanian NIR does not contain any quantitative targets for hydrogen vehicles and refuelling points. It would be relevant that Romania provides more information on how to ensure EU-wide connectivity for HCEV.

Regarding natural gas for transport, there was a negligible fleet of CNG vehicles (295 mono-fuel and 2,183 bi-fuel, CNG-petrol) in Romania in 2018. By 2030, Romania expects 812 mono-fuel CNG vehicles. The NIR does not provide information on future targets for CNG refuelling points for vehicles. The NPF had provided the target of 55 refuelling points by 2020. Moreover, the NIR neither provides targets for LNG vehicles and vessels by 2020, 2025 and 2030, nor for road and port LNG infrastructure in the same years. In comparison. The NPF had indicated that one port should be equipped with a LNG refuelling point by 2025 and two ports by 2030.

As regards LPG in road transport, there was already a significant fleet of 261,504 and 1,990 refuelling points in 2018. However, the Romanian NIR does not contain any further targets for vehicles and infrastructure by 2020, 2025 and 2030.

As far as biofuels are concerned, the NIR does not provide quantitative information on the use of biofuels in road transport. Romania 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 238,400km<sup>2</sup>, Romania has a population of 19.531 million people in 2018, which makes up for a population density of 82 inhabitants/km<sup>2</sup>.

### *Number of main urban agglomerations*

- 35 urban agglomerations > 50,000 inhabitants

In 2018, Romania achieves a per capita gross domestic product at market prices of €10,510, which represents a per capita gross domestic product in purchasing power standards of 63 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 Romania is 2.564 km. The total road network length is 52.787 km, of which 823 km are motorways. The length of the total road network in Romania is 52,787 km.

The following lengths of the TEN-T Road Corridor network are present in Romania: 8 % (418 km) of the Orient / East - Mediterranean Corridor and 32 % (1,435 km) of the Rhine - Danube Corridor.

Through the TEN-T Road Corridors, Romania is connected with the following member states:

- Hungary (through the Orient / East Mediterranean and the Rhine - Danube Corridor)
- Bulgaria (through the Orient / East Mediterranean Corridor)

### *Number of registered road vehicles*

At the end of 2017, Romania accounts for 7,665,962 registered road vehicles of which 6,452,536 are categorized as passenger cars, 753,029 as light goods vehicles, 281,295 as heavy goods vehicles and 51,802 as buses, coaches or trolley-buses. The motorisation rate is 330 passenger cars per 1,000 inhabitants.

### *Number of ports in the TEN-T Core Network*

- 2 maritime ports in the TEN-T Core Network (Constanța, Galați)
- 3 maritime ports in the TEN-T Comprehensive Network (Brăila, Sulina, Tulcea)
- 6 inland ports in the TEN-T Core Network (Calafat, Cernavodă, Constanța, Drobeta Turnu Severin, Galați, Giurgiu)

The inland waterways TEN-T Core Network in Romania is 1,294 km long.

### *Number of airports in the TEN-T Core Network*

- 2 airports in the TEN-T Core Network (București-Henri Coandă, Timișoara)
- 10 airports in the TEN-T Comprehensive Network (Bacău, Baia Mare, Cluj-Napoca, Constanța, Craiova, Iași, Oradea, Sibiu, Suceava, Tulcea)