

- **Czechia (CZ)**

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

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

*The Czech NPF broadly addresses the requirements of Article 3. It contains an extensive discussion of the current state and future scenarios for alternative fuels in the transport sector. For most fuels and modes, it establishes sufficient targets as required by Article 3 of the Directive. It does not contain a target for LNG refuelling points at inland ports.*

*The Czech NPF puts a comparably low emphasis on electric vehicles and estimates only 0.35% electric vehicles on the road in 2020. Today, the spatial distribution of recharging points and specifically high power recharging infrastructure seems to appropriately cover the needs of electric vehicles in terms of distance requirements in the Czech Republic. For the future, the targeted ratio of only one public recharging point per 13 electric vehicles estimated for 2020 could evolve to become a barrier for the further market deployment of electric vehicles. This could also lead to market fragmentation within the EU, especially in the context of the rather low estimated EV shares in the Czech NPF. It will be important to closely monitor this development and correct infrastructure targets in line with the market developments. Regarding electricity supply for stationary airplanes, the NPF only mentions that further installations for the Prague airport are under consideration. The NPF does not provide any targets for shore-side electricity.*

*The Czech Republic already today has a relatively dense network of CNG refuelling points and the NPF foresees that this will further grow in line with the expected market needs, which are comparably high in the NPF, with estimates of 1% CNG cars on the road in 2020.*

*The NPF has established targets for LNG refuelling points for heavy-duty vehicles that will likely ensure appropriate coverage of the road TEN-T Core Network on Czech territory.*

*The Czech NPF does not contain targets for LNG refuelling at inland ports. This omission could have a negative impact on the circulation of LNG inland waterway vessels throughout the TEN-T Core Network. The decision not to include LNG refuelling at inland ports in the Czech NPF would have merited a more detailed discussion of market needs. This may need to be revisited also in light of estimated market needs from other Member States.*

*The NPF establishes targets for hydrogen refuelling points.*

*The Czech NPF contains a very comprehensive list of measures, which, if implemented, could help overcome deployment barriers. Since the adoption status of most of these measures is low, there is a certain risk that the national targets and objectives of the NPF may not be reached. The NPF also contains a list of considered support measures to promote the deployment of alternative fuels infrastructure in public transport services.*

*The Czech Republic, in its NPF, declares interest to cooperate with the neighbouring countries to ensure EU-wide circulation, especially for LNG and hydrogen for road transport. It may be advisable to extend this cooperation also for the other fuels and modes.*

▪ **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, waterborne (inland) / Electricity, CNG, LNG, H2		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, waterborne (inland) / Electricity, CNG, LNG, H2		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, LNG, H2		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.	Road / Electricity, LNG, H2		Y
ANNEX I: 5. Targets and objectives	• Estimation of the number of alternative fuel vehicles expected by 2020, 2025 and 2030			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, waterborne (inland) / Electricity, CNG, LNG, H2, LPG		Y
	• Level of achievement of the national targets, year by year, for the deployment of alternative fuels infrastructure in the different transport modes			Y
	• Information on the methodology applied to take account of the charging efficiency of high power recharging points	All	Electricity	N
ANNEX I:6 Alternative fuels infrastructure developments	Changes in supply (additional infrastructure capacity) and demand (capacity actually used)	All	All	Y

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

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

The Czech NIR reports around 30 measures. Under the Policy and Deployment & Manufacturing sections it was possible to identify four 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	3,169 <sup>(1)</sup>	749	9,877	1,300 <sup>(2)</sup>	76,833	6,200	217,179	19,000
	Change NIR vs NPF [%]			-41.90%	0.00%	-23.93%		-13.13%	
	Attainment [%]			32.08%	57.62%	4.12%	12.08%	1.46%	3.94%
CNG / road	NIR	22,109	185	25,670	186	36,965	300	46,340	600
	Change NIR vs NPF [%]			-48.66%	-7.00%	-71.57%	0.00%	-76.83%	76.47%
	Attainment [%]			86.13%	99.46%	59.81%	61.67%	47.71%	30.83%
LNG / road	NIR	2	1	80	3	2,300	14	6,900	30
	Change NIR vs NPF [%]			-55.56%	100.00%	360.00%	180.00%	430.77%	114.29%
	Attainment [%]			2.50%	33.33%	0.09%	7.14%	0.03%	3.33%
LNG / water (inland)	NIR	0	0	0	0	20	0	40	2
	Change NIR vs NPF [%]								
	Attainment [%]								
H2 / road	NIR	1	0	3	4	13,380	20	62,559	95
	Change NIR vs NPF [%]						400.00%		
	Attainment [%]			33.33%		0.01%		0.00%	
H2 / water (inland)	NIR	0	NA	0	NA	5	NA	20	NA
	Change NIR vs NPF [%]								
	Attainment [%]								
LPG / road	NIR	170,300	950	190,300	995	256,050	995	256,650	1,005
	Change NIR vs NPF [%]								
	Attainment [%]			89.49%	95.48%	66.51%	95.48%	66.35%	94.53%

(1) value taken from EAFO (absent in both NIR and NPF)

(2) this value is mentioned in the CZ NIR but not officially reported in the accompanying excel file

- Road transport
  - Electricity

### *Vehicles*

Czechia recorded 44 LCVs and 55 buses and coaches in 2018 (all battery-electric) but did not provide the number of electric passenger cars. As the NPF also did not have this detail, the total number of EVs in 2018 has been taken from EAFO. For the period 2020-2030 the CZ NIR presents a new curve related to the estimated growth of electric vehicles up to 2030 compared to the NPF. While for 2020 and 2025 there is a sensible decrease in the estimated numbers (-41.90% and -23.93% respectively, compared to the NPF values), for 2030 the NPF estimate is substantially confirmed in the NIR and some expectations to overpass such number are also expressed. In fact, the CZ NIR report says: “*even though the uptake of electro-mobility in the Czech Republic has not been as fast as originally expected or in line with developments in certain western European countries in particular, the Czech Republic is still on course for just over 200,000 vehicles by 2030, as predicted in the National Action Plan for Clean Mobility. If the optimistic scenario worked out, this number could be more than doubled*”. The current estimate for 2030 is 217,179 EVs, of which 200,647 are passenger cars, 15,949 LCVs and 583 buses and coaches. The CZ NIR reveals also the presence of 756 trolleybuses in 2018, which are expected to remain in the same number until 2030.

The 2018 **attainment** of future EV estimates is 32.08% for 2020 and 1.46% 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 Czechia is equal to 44%.

### *Infrastructure*

Czechia recorded 749 publicly accessible recharging points in 2018, of which 253 were normal power ( $\leq 22\text{kW}$ ) and 496 high power ( $> 22\text{kW}$ ) recharging points. Concerning the next decade, the CZ NIR confirms the NPF targets for 2020. For 2025 and 2030 there are new targets, not present in the NPF, that appear to be coherently designed to maintain a constant ratio with respect to the estimated EVs for the target years. It is worth mentioning that the share of high power recharging infrastructure decreases from 67% in 2018 to 18% in 2025 and 11% in 2030.

The 2018 **attainment** of future public recharging infrastructure targets is 57.62% for 2020 and 3.94% 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 2016-2020 for publicly accessible recharging infrastructure evolution planned by Czechia is equal to 31%.

### *Ratio*

Based on the CZ NIR, the following table shows the ratio between vehicles and publicly accessible recharging points (i.e. sufficiency index) for the pair electricity/road. It can be seen that the foreseen sufficiency index remains below 10 until 2020, raising slightly above 10 in 2025 and 2030. Overall the sufficiency index can be considered adequate for the next decade.

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	Electricity	3.07		4.23	7.60	12.39	11.43

### *Information on charging efficiency*

Information is not available in the Czech NIR.

### ○ CNG

#### *Vehicles*

Czechia recorded 22,109 CNG vehicles in 2018, of which 20,660 were passenger cars, 215 HCVs and 1,234 buses and coaches. For the next decade, the CZ NIR presents an important revision of the CNG vehicles estimate compared to the NPF, with a decrease in the total number of CNG vehicles going down from 50,000 to 25,670 vehicles in 2020 and from 200,000 to 46,340 vehicles in 2030. This is justified in the NIR as: “*mainly due to the reduced offering of these vehicles resulting from the transition to the new Worldwide Harmonized Light Vehicle Test cycles*”. On the other hand, a partial compensation in terms of AF vehicles is foreseen by the increased estimates of LNG and mostly of hydrogen vehicles in the CZ NIR compared to the NPF (see next sections).

The 2018 **attainment** of the significantly reduced future CNG vehicles estimates is 86.13% for 2020 and 47.71% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to a **fast 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 Czechia is equal to 8%.

#### *Infrastructure*

In 2018, Czechia recorded 185 CNG refuelling points. Table Error! No text of specified style in document.-2 shows a confirmation of the NPF targets for publicly accessible CNG refuelling points over the period 2020-2025, and a remarkable increase for 2030 (+76.47%), which however seems in contrast with the corresponding decrease in CNG vehicle estimate for 2030 (-76.83%) compared to the NPF estimate. This is not explained in the CZ NIR.

The 2018 **attainment** of future public CNG refuelling infrastructure targets is 99.46% for 2020 and 30.83% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to an **adequate 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 Czechia is equal to 12%.

#### *Ratio*

Based on the CZ 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 sufficiency index is well below the indicative value of 600 (see Section 2.1.5) for the whole period.

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	CNG	129.40	123.96	119.51	138.01	123.22	77.23

- *LNG*

#### *Vehicles*

Czechia recorded two LNG HCVs in 2018. For the next decade, the CZ NIR presents a revised plan compared to the NPF. Although for 2020 there is a lower estimate of LNG vehicles than in the NPF, the CZ NIR presents overall a considerably more ambitious plan for 2025 and 2030, with respectively 2,300 and 6,900 heavy commercial LNG vehicles on the market.

The 2018 **attainment** of future LNG vehicles estimates is 2.50% for 2020 and 0.03% for 2030. According to the assessment methodology described in Section 2.1, the **progress** obtained by Czechia from 2016 until 2018 for LNG vehicles deployment is 0.03% of the overall planned deployment during the period 2016-2030.

#### *Infrastructure*

With only one LNG refuelling point recorded on 2018, the CZ NIR presents a new and more ambitious set of targets for LNG infrastructures in 2020, 2025 and 2030 (30 in the NIR versus 14 in the NPF), which is in line with the corresponding increased estimation of LNG vehicles compared to the NPF for the next decade.

The 2018 **attainment** of future public LNG refuelling infrastructure targets is 33.33% for 2020 and 3.33% for 2030. According to the assessment methodology described in Section 2.1, the **progress** obtained by Czechia from 2016 until 2018 for public LNG refuelling infrastructure deployment is 3.33% of the overall planned deployment during the period 2016-2030.

#### *Ratio*

Based on the CZ 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			2.00	26.67	164.29	230.00

- *Hydrogen*

#### *Vehicles*

While in 2018 there was just one hydrogen vehicle recorded in Czechia, the CZ NIR presents quite an ambitious estimate of hydrogen vehicles for 2025 and 2030, with a total number of 62,559 in 2030. The vast majority of these vehicles is foreseen to be light-duty vehicles (i.e. passenger cars and light commercial vehicles) but 100 heavy commercial vehicles and 870 buses and coaches are also foreseen in 2030.

The 2018 **attainment** of future hydrogen vehicles estimates is 33.33% for 2020 and less than 0.01% for 2030. According to the assessment methodology described in Section 2.1, the **progress** Czechia obtained from 2016 until 2018 for hydrogen vehicles deployment is 0% of the overall planned deployment during the period 2016-2030 since the situation remained the same.

### *Infrastructure*

The new set of targets for hydrogen infrastructures (and vehicles) reported in the CZ NIR represents the most relevant change with respect to the NPF. In the latter, there was only one target for 2025 of four hydrogen publicly accessible refuelling stations. In the CZ NIR, these targets are: four for 2020 (the construction of which has already been contracted), 20 for 2025 and 95 for 2030.

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

### *Ratio*

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

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	H2				0.75	669.00	658.52

### ○ *Biofuels*

#### *Vehicles*

Information is not available in the Czech NIR.

#### *Infrastructure*

Information is not available in the Czech NIR.

### ○ *LPG*

#### *Vehicles*

Czechia recorded 170,300 LPG vehicles in 2018 (of which 170,000 were passenger cars and 300 LCVs). In the CZ NPF, there was no mention of LPG vehicle estimates for 2020, 2025 and 2030, while in the NIR (see Table Error! No text of specified style in document.-2) such estimate appears, with an increase from 190,300 vehicles in 2020 to 256,650 vehicles in 2030.

The 2018 *attainment* of future LPG vehicles estimates is 89.49% for 2020 and 66.35% for 2030. According to the assessment methodology described in Section 2.1, the *progress* Czechia obtained from 2016 until 2018 for LPG vehicles deployment is 0.00% of the overall planned deployment during the period 2016-2030 because the CZ NIR shows a constant value of 170,300 LPG vehicles for the period 2016-2018.

#### *Infrastructure*

As for LPG vehicles, the CZ NIR presents a strategy for LPG infrastructures, which was not present in the NPF. However this cannot be considered as a real novelty or a change of ambition on this fuel, as a substantial network of LPG refuelling points (and corresponding LPG vehicles) was already present in Czechia even before the AFI Directive. Furthermore, looking at the

infrastructure target for 2030 it can be seen that the level of attainment in 2018 is already around 95%, meaning a very limited growth compared to the current situation.

The 2018 *attainment* of future public LPG refuelling infrastructure targets is 95.48% for 2020 and 94.53% for 2030. According to the assessment methodology described in Section 2.1, the *progress* Czechia obtained from 2016 until 2018 for LPG refuelling infrastructure deployment is 42.71% of the overall planned deployment during the period 2016-2030.

#### *Ratio*

Based on the CZ NIR, 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	187.35	185.51	179.26	191.26	257.34	255.37

- Rail transport
  - *Electricity*

#### *Vehicles*

The CZ NIR recorded 814 locomotives/railcars and 317 passenger vehicles in 2018. A slight increase in these numbers is expected until 2030 (900 locomotives/railcars and 370 passenger vehicles).

#### *Infrastructure*

Information is not available in the Czech NIR.

- Waterborne transport (maritime)

Not applicable since Czechia has no maritime ports in the TEN-T Core Network.

- Waterborne transport (inland)
  - LNG

#### *Vessels*

The CZ NIR provides an estimate of 20 and 40 LNG vessels for inland waterborne transport, respectively by 2025 and 2030 (NOTE: these estimates have been presented as CNG vessels in the CZ NIR but it is considered that in reality the numbers refer to LNG vessels and as such they have been treated).

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



### *Infrastructure*

Following the Commission assessment of the CZ NPF, the CZ NIR shows a change of strategy, with a target of two LNG refuelling stations for 2030. In fact, in relation to Article 6(3) of the Directive, the CZ NPF had not set any target for the construction of LNG fillings stations at inland ports. The justification had been that the construction of filling stations for LNG-powered vessels in public ports in Czechia did not look effective for the immediate future.

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

- *Hydrogen*

### *Vessels*

The CZ NIR also presents an estimate of hydrogen-fuelled vessels for 2025 and 2030 (5 and 20 vessels, respectively), however this is not accompanied by any announced plan of corresponding hydrogen infrastructures at the Czech inland ports. The CZ NIR provides no explanation.

Since at the end of 2018 there are no hydrogen vessels deployed in the inland ports, the 2018 **attainment** and **progress** have not been computed.

### *Infrastructure*

Information is not available in the Czech NIR.

- Air transport
  - Electricity

### *Airplanes*

Information is not available in the Czech NIR.

### *Infrastructure (for stationary airplanes)*

CZ NIR reports the following: “At present, the (Prague’s Václav Havel) airport is equipped with power connections (400 Hz) at all 31 contact stands (stands served by boarding bridges), and every new contact stand will also be fitted with one. Remote stands are not provided with permanent connections and there are no plans to fit these. However, the handling companies have mobile ground power units (GPUs), which can be used for aircraft at remote stands.... Within five minutes of an aircraft stopping at a stand, it must be connected to an external power source and the auxiliary power unit must be disconnected. Auxiliary power units cannot be started up until 20 minutes prior to the expected time of departure (ETD). The other international airports included in the TEN-T core or global network, i.e. Ostrava/Mošnov airport and Brno/Tuřany airport, and equipped with permanent power connections do not have contact stands, but even here the same requirement applies concerning restrictions on auxiliary power units and the use of mobile ground power units instead.”

▪ *Measures assessment*

Concerning the measures to support the uptake of AF vehicles and infrastructures, the CZ NPF had listed a large number (around 70 overall) that was presented as a collection of the most common measures also taken into consideration by other Member States. Of this large list of measures, the NPF reported that only a limited number was actually implemented, while the majority was still at discussion stage. In the CZ NIR, the situation has evolved as to include a selection of measures that have been either confirmed/modified (if already in place), or implemented/dropped (if under discussion).

• Legal measures

The CZ NIR presents a list of six Legislative & Regulatory measures and seven Administrative measures. Ten of these measures are in place and three are in the process of being adopted. This compares with a list of 24 Legal measures presented in the NPF, of which seven were adopted and 17 were under discussion. In this case it was not possible to provide an assessment of the change of ambition level between NIR and NPF.

○ Legislative & Regulatory

The six Legislative & Regulatory measures are quite differentiated and cover a series of elements:

- allowing public contracting authorities to apply a methodology to calculate operating costs using lifetime costs when purchasing vehicles;
- setting specification of the requirements for electrical engineering qualifications for staff working on electric vehicles;
- updating the legislation dealing with LNG-powered vehicles;
- addressing the issue of removing barriers to the garaging of gas-powered vehicles;
- no payment of motorway vignettes/tolls for vehicles powered by alternative fuels;
- introduction of special registration plate for electric vehicles.

○ Administrative

Similarly, the seven Administrative measures address different aspects (both of financial and non-financial nature) like, for example:

- maintaining the reduced rate on excise duty for CNG and LNG;
- allowing free parking for vehicles powered by alternative fuels;
- promoting targeted specialised teaching in the area of clean mobility both at secondary schools and at university level;
- strengthening cooperation between universities, research organisations and industry in the development of alternative fuels in Czechia.

Overall, the list of Legal measures presented in the CZ NIR shows the development of a strategy that was not evident in the NPF.

- Policy measures

In terms of the Policy measures, the first considerations relate to the comparison between NPF and NIR.

The NPF contained 26 measures that could be considered as Policy measures. Of these, only four were implemented, while the other 22 were under discussion. The NIR only addresses eight Policy measures, but all are in place. Six measures are related to ensure national targets and objectives, one measure can be associated to the promotion of AFI in public transport services and one measure to the promotion of deployment of private electro-mobility infrastructure.

- Measures to ensure national targets and objectives

*Road transport*

Two out of the six measures in this section concern incentives to support the purchase of AF vehicles. The first has supported the purchase of 69 electric buses, 98 trolleybuses and 100 CNG buses. The second measure has supported the purchase of 508 electric vehicles by private business. It is noted here that, contrary to several other MSs, no incentives are foreseen for the purchase of EV by private citizens.

The remaining four measures are related to providing financial support to the construction of recharging stations (375 fast recharging points and 444 normal recharging points), CNG refuelling stations (2 CNG refuelling stations are already supported, others are planned), LNG refuelling stations (13 LNG refuelling stations are supported, others are planned), and hydrogen refuelling stations (4 hydrogen refuelling stations are supported, others are planned).

*Other transport modes*

The CZ NIR does not present measures for other transport modes (rail, water, air).

- Measures that can promote AFI in public transport services

The above-mentioned measure, concerning the purchase of 69 electric buses, 98 trolley-buses and 100 CNG buses, can be considered as an indirect measure to promote AFI in public transport service and as such it has been assessed.

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

The CZ NIR also presents a Policy measure to promote the deployment of private electro-mobility infrastructure. According to the NIR, this measure has supported 256 recharging stations within premises of private companies.

- Deployment and manufacturing support

- AFI deployment

Considering, that in the CZ NPF there were four Deployment measures mentioned, all under discussion, it is evident that actions have been taken and some progress has been made towards the uptake of AF infrastructures in the CZ Republic. The CZ NIR reports that, in the implementation period 2017-2020, 375 rapid recharging stations, 444 normal recharging stations, 13 LNG and 4 hydrogen refuelling stations have either been built, or are under construction or have been assigned for construction.

The CZ NIR also reports that “*some businesses have also responded to the calls announced by the European Commission under the Connecting Europe Facility. In 2020, support from this source should lead to the construction of 149 rapid charging stations and 10 ultra-rapid charging stations on the corridors of the TEN-T Core Network*”.

- Support of manufacturing plants for AF technologies

The CZ NIR mentions a measure to support manufacturing plants for AF technologies in the form of investment incentive (reduced corporation tax), foreseen for the period 2021-2025 with a total budget of around 53 million €. However, no other information is given that could allow any assessment of this measure.

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

Information is not available in the Czech 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 clusters of measures on electricity, CNG, LNG and hydrogen, all for road transport, could be identified in the Czech NIR but none resulted to be comprehensive. The electricity/road, LNG/road and hydrogen/road clusters have at least one measure that scores high, thus the overall score is H. 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 pairs electricity/road, LNG/road and hydrogen/road result to have a medium impact, while those for the pair CNG/road have a low impact. Compared to the NPF, the level of ambition of the Policy and Deployment & Manufacturing support measures has increased for LNG/road and hydrogen/road, has remained the same for electricity/road and has decreased for CNG/road, coherently with the vehicle estimates and infrastructure targets presented in Section 5.3.3.

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



▪ *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							
		Electricity / road	CNG / road	LNG / road	LNG / water (inland)	H2 / road	H2 / water (inland)	LPG / road	
AF Vehicles / Vessels	Past situation (2016)	1,386*	15,140	0	0	1	0	170,300	
	Situation (2018)	3,169*	22,109	2	0	1	0	170,300	
	Estimate (2030)	217,179	46,340	6,900	40	62,559	20	256,650	
	Future share (2030) [%]	4.09%	0.87%	2.96%		1.18%		4.83%	
	Estimate attainment (2018 vs 2030) [%]	1.46%	47.71%	0.03%		<0.01%		66.35%	
	Progress (2018)	adequate	fast	0.03%		0.00%		0.00%	
Publicly accessible AF Infrastructure	Past situation (2016)	451	117	0	0	0	NA	909	
	Situation (2018)	749	185	1	0	0	NA	950	
	Target (2030)	19,000	600	30	2	95	NA	1,005	
	Target attainment (2018 vs 2030) [%]	3.94%	30.83%	3.33%				94.53%	
	Progress (2018)	slow	adequate	3.33%				42.71%	
Sufficiency Index	2016	3.07	129.40					187.35	
	2018	4.23	119.51	2.00				179.26	
	2020	7.60	138.01	26.67		0.75		191.26	
	2025	12.39	123.22	164.29		669.00		257.34	
	2030	11.43	77.23	230.00		658.52		255.37	
Measures	Legal measures	Ambition (NIR vs NPF)							
	Policy measures + Deployment & manufacturing support	Score	H	L/M	H		H		
		Comprehensiveness	N	N	N		N		
		Impact	M	L	M		M		
	RTD&D	Ambition (NIR vs NPF)	=	-	+		+		
		Ambition (NIR vs NPF)	=				=		

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

\* Value taken from EAFO (absent in both NIR and NPF).

The CZ NIR addresses all the requirements of Annex I from the Directive, although not with the same level of detail.

Regarding the combination of AF/AFV/AFI with transport mode, electricity is well covered for road transport; CNG, LNG and hydrogen are also covered for road transport; inland water transport is just mentioned (refuelling infrastructures are foreseen in 2025 and 2030 for LNG, while inland waterway vessels are estimated for CNG and hydrogen. In this assessment the CNG vessels have been considered instead as LNG vessels, while for hydrogen the discrepancy remains that no infrastructure is foreseen up to 2030); all the other combinations are either absent or not applicable. As for LPG, Czechia has already quite a developed combination of refuelling infrastructure and vehicles.

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

*Road transport*

- **Electricity** – With 749 recharging points recorded in 2018, the CZ NIR confirms the infrastructure target for the end of 2020, thus showing the same level of ambition of the NPF. Targets have been introduced for the years 2025 and 2030 that were not included in the NPF. These appear to be coherently designed to maintain a constant and adequate ratio with the estimated EV for the target years. Concerning EV vehicles, the CZ NIR presents a new growth curve, with a lower number of vehicles in 2020 and 2025 compared to the NPF, but a similar number of vehicles in 2030 (i.e. > 200,000). According to our methodology, the progress between 2016 and 2018 to achieve their objectives in 2030 is considered adequate for EV vehicles and slow for EV infrastructure. As for heavy-duty vehicles, the CZ NIR estimates 583 battery-electric buses and coaches on the road by 2030 but no HCV.
- **CNG** – In 2018, Czechia recorded 185 CNG refuelling points and 22,109 vehicles. For the next decade, the CZ NIR shows a substantial reduction in CNG vehicle estimate for 2030, from 200,000 to less than 50,000 (-76.83%), coupled to an increase for the CNG infrastructure. This discrepancy is not explained in the NIR. It should be noted that the decrease in vehicle estimates for CNG/road is partially compensated by an increase of LNG/road and hydrogen/road vehicles, however this does not seem sufficient compared to the NPF plan. Thus, it can be considered that on non-EV vehicles there is an overall decrease of ambition compared to the NPF. According to our methodology, the progress between 2016 and 2018 to achieve their objectives in 2030 is considered adequate for CNG infrastructure and fast for CNG vehicles. Obviously, the substantial reduction in vehicle estimates for 2030 plays a role here. In the heavy-duty sector, the CZ NIR estimates 600 HCVs and 1,740 buses and coaches on the road by 2030.
- **LNG** – The CZ NIR presents a plan to double the number of LNG refuelling infrastructure in 2030 compared to the NPF (30 in the NIR versus 14 in the NPF) and to have 6,900 LNG heavy commercial vehicles on the road by 2030.
- **Hydrogen** – The CZ NIR provides objectives that were not present in the NPF (with the exception of the hydrogen infrastructure target for 2025). In the CZ NIR, 62,559 hydrogen vehicles and 95 hydrogen publicly accessible refuelling stations are foreseen by 2030. Most of these hydrogen vehicles should be light-duty vehicles (>60,000) but 100 heavy commercial vehicles and 870 buses and coaches are estimated too.
- **Biofuels** – Information is not available in the CZ NIR.
- **LPG** – The CZ NIR also presents a plan for the pair LPG/road, which was not included in the NPF. However, this cannot be considered as a consequence of the AFI Directive, because the LPG vehicles and infrastructure were already present on the Czech territory before 2016 and the outlook presented in the NIR until 2030 only shows a moderate increase compared to the current situation.

#### *Rail transport*

- **Electricity** – The CZ NIR recorded 814 locomotives/railcars and 317 passenger transport vehicles in 2018 and these numbers are expected to slightly increase until 2030 (900 locomotives/railcars and 370 passenger vehicles).

#### *Waterborne transport (inland)*

- **LNG** – The CZ NIR presents the intention to have 40 LNG waterborne vessels and 2 LNG inland port refuelling stations by 2030.
- **Hydrogen** – The CZ NIR also estimates 20 hydrogen-fuelled waterborne vessels for 2030, but no infrastructure is planned at the moment.

### *Air transport*

Information is not available in the Czech NIR.

Concerning the **measures** to support the uptake of AF vehicles and infrastructures, the CZ NIR shows an effort to move from the wide list of measures under discussion in the NPF, to a more limited but focussed set of measures. As a general statement, such effort seems to have been more successful for what concerns the deployment of infrastructure (in particular charging points), less for the AF vehicles.

The Legislative & Regulatory measures are quite differentiated and cover a series of elements: from allowing public contracting authorities to apply a methodology to calculate operating costs using lifetime costs when purchasing vehicles, to setting specification of the requirements for electrical engineering qualifications for staff working on electric vehicles; from updating the legislation dealing with LNG-powered vehicles, to addressing the issue of removing barriers to the garaging of gas-powered vehicles. Similarly, the Administrative measures address different aspects (both of financial and non-financial nature) like, for example, maintaining the reduced rate on excise duty for CNG and LNG; allowing free parking for vehicles powered by alternative fuels; strengthening cooperation between universities, research organisations and industry in the development of alternative fuels in Czechia.

With reference to Policy and Deployment & Manufacturing measures, the effort to focus on implementing a few initiatives is evident. The NPF contained 26 measures that could be considered as Policy measures. Of these, only four were implemented, while the other 22 were under discussion. In the NIR, only eight Policy measures have been counted, but all are in place. Six measures are related to ensure national targets and objectives, one measure can be associated to the promotion of AFI in public transport services and one measure is related to the promotion of deployment of private electro-mobility infrastructure. All of them are only related to road transport. The implementation of these measures has produced some tangible results in terms of deployment of recharging points and refuelling infrastructures in the implementation period 2016-2018. In terms of the expected impact of these measures to support the realisation of the AFV/AFI objectives as presented in the NPF and revised in the NIR for the next decade, the measures for the pairs electricity/road, LNG/road and hydrogen/road result to have a medium impact, while those for the pair CNG/road have a low impact.

With RTD&D measures, the CZ NIR shows continuity with the approach taken in the NPF, i.e. participation in several EU RTD&D projects (Alpha, Beta, Gamma, Delta, etc.). In particular, the CZ NIR reports a project on electro-mobility and links with the distribution system/Smart Grids. Two projects focus on the development of hydrogen for road transport. A fourth project is dedicated to the analysis of the potential use of CNG/LNG in inland water transport. Overall, the approach shown in the CZ NIR appears to have a similar level of ambition to that of the NPF.



- *Final remarks*

The Czech NIR presents a quite comprehensive report on the efforts to implement the Directive. It largely complies with the provisions of Annex I to the Directive, with only a few exceptions. The NIR provides estimates for vehicles and vessels, and targets for recharging and refuelling points for all alternative fuels with the exception of shore-side electricity supply in inland ports. The report also sets targets for hydrogen, which is not mandatory under the Directive. The NIR presents a large array of measures, in particular in the field of road transport. However, its level of ambition falls short regarding zero emission vehicles and their infrastructure needs. Range and ambition of measures could also be increased as regards the use of alternative fuels in modes of transport other than road.

With regard to electricity, the NIR estimates a fleet of 217,179 electric vehicles on the roads by 2030, representing about 4% of the fleet by that time. Taking into account the current situation and expected trend development, 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. The targets for publicly accessible recharging infrastructure correspond to the estimated number of vehicles. Because of the low vehicles estimate, infrastructure planning is likely to not result in a necessary comprehensive network of recharging points throughout the country. An increase in ambition would contribute to better meeting the needs of a dense, wide-spread and easy to use network of recharging and refuelling infrastructure throughout the EU. No information on charging efficiency is provided. Further, there is no information on shore-side electricity supply in inland ports. Only Prague's Václav Havel airport is equipped with power connections for stationary aircraft. The NIR does not provide information on the share of electrification of the rail network. However, the use of electricity in rail is expected to slightly increase until 2030.

Regarding hydrogen for transport, the NIR shows Czechia's interest in promoting hydrogen in road and inland waterway transport. The NIR estimates a number of 62,559 FCHVs and around 95 refuelling stations by 2030. The number of hydrogen refuelling points for 2030 seems sufficient taking into account the length of Czechia's TEN-T Core Network, provided that the refuelling points are widely distributed along the network.

Concerning natural gas for transport, the estimates for vehicle uptake have been significantly reduced compared to those presented in the NPF. The NIR accounts for a share of CNG vehicles in 2030 below 1% of the fleet. In comparison to the fleet estimate, the deployment targets for CNG refuelling infrastructure remain rather high. A significant increase in LNG heavy-duty vehicles is expected in the coming years. In addition, the number of 30 LNG refuelling points planned for 2030 seems sufficient taking into account the length of Czechia's TEN-T Core Network, provided that the refuelling points are widely distributed along the network. Only two inland ports of the TEN-T Core Network are planned to supply LNG to ships. Czechia should ensure that the other two ports are also equipped with LNG infrastructure to ensure that LNG vessels can circulate throughout the TEN-T Core Network.

A fleet of 170,300 LPG vehicles already exists and their number is expected to increase to 256,050 vehicles until 2025. However, similarly to electric and CNG vehicles, the share in the total fleet is expected to remain very limited.

Further information should be provided on the use of biofuels in road and air transport. Czechia should provide more information 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 78,900 km<sup>2</sup>, Czechia has a population of 10.610 million people in 2010, which makes up for a population density of 134 inhabitants/km<sup>2</sup>.

*Number of main urban agglomerations*

- 17 urban agglomerations > 50,000 inhabitants

In 2018, Czechia achieves a per capita gross domestic product at market prices of €19,530, which represents a per capita gross domestic product in purchasing power standards of 92 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 Czechia is 1,017 km. The total road network length is 55,740 km, of which 1,252 km are motorways.

The following lengths of TEN-T Road Corridors are present in Czechia: 6% (230 km) of the Baltic - Adriatic Corridor, 9% (473 km) of the Orient/East - Mediterranean Corridor and 11 % (495 km) of the Rhine - Danube Corridor.

Through the TEN-T Road Corridors, Czechia is connected with the following Member States:

- Austria (through the Baltic - Adriatic and the Orient/East - Mediterranean Corridor)
- Poland (through the Baltic - Adriatic Corridor)
- Germany (through the Orient/East Mediterranean Corridor and the Rhine - Danube Corridor)
- Slovakia (through the Orient/East Mediterranean Corridor and the Rhine - Danube Corridor)

*Number of registered road vehicles*

At the end of 2018, Czechia accounts for 7,582,962 registered road vehicles of which 5,747,913 are categorized as passenger cars, 441,303 as light goods vehicles, 269,319 as heavy goods vehicles and 22,027 as buses and coaches. The motorisation rate is 542 passenger cars per 1,000 inhabitants.

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

- No maritime ports
- 4 inland ports in the TEN-T Core Network (Děčín, Mělník, Pardubice, Praha-Holešovice)
- 5 inland ports in the TEN-T Comprehensive Network

Through the 333 km inland waterways TEN-T Core Network, Czechia is connected with Germany by the Orient – East Mediterranean Corridor.

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

- 2 airports in the TEN-T Core Network (Ostrava, Praha-Václav Havel)

- 1 airport in the TEN-T Comprehensive Network

