- **Poland (PL)**

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

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

The Polish NPF addresses most of the requirements of Article 3. It contains a description of the current state and future estimates for alternative fuels vehicles in the transport sector and establishes targets as required by Article 3 of the Directive. The analysis of agglomerations/densely populated areas and TEN-T network needs regarding AFI, including the calculation of market needs can be considered exemplary. The Polish NPF does not contain any measures that could encourage and facilitate the deployment of recharging points not accessible to the public.

The Polish NPF puts a lot of emphasis on the development of the market for electric and CNG cars; however, it is currently at a very early stage of its development. In view of the low numbers of EV and CNG cars on the road today, Poland has at the moment a sufficient network of public recharging and CNG refuelling points and this situation is going to be maintained in the time frame mentioned in the NPF. Beyond 2020, Poland, in its NPF, defined a very ambitious target of reaching more than 1 million of EVs on the road by 2025. The support measures defined in the NPF may not be sufficient to ensure target achievement, considering that the EV share in Poland is very low today. The spatial distribution of recharging points seems to appropriately cover the needs of electric vehicles in terms of distance requirements. No targets are foreseen for increasing the availability of electricity supply for stationary airplanes. Also for shore-side electricity the Polish NPF does not contain concrete targets. However, it envisages a pilot project to better assess the cost and benefits.

The planned LNG refuelling points for heavy-duty vehicles could guarantee that the maximum distance requirement for LNG refuelling points along the road TEN-T Core Network would be fulfilled on Polish territory.

LNG refuelling is planned for all maritime and inland ports in the TEN-T Core Network.

The Polish NPF displays no commitment towards hydrogen in the next future.

The Polish NPF contains a comprehensive list of measures; however, most of them are still only under consideration or in an early stage of the adoption process. Very few are already in place. Some of the measures, especially the ones targeting to improve the economics of AF, can be considered having a medium impact on market actor's decisions. Poland has also defined ambitious targets for low emitting vehicles in fleets of companies performing public services and fleets of public institutions. Direct incentives are foreseen aiming in increasing the AFV market share. The Polish NPF also contains targets for increasing shore-side electricity supply in its maritime ports.

The consideration of the interests of regional and local authorities, as well as stakeholders during the drafting of the Polish NPF is not evident throughout the text of the NPF. This issue should be strengthened.

Poland did not present any evidence of coordinating its plans on alternative fuels infrastructure with other countries, especially neighbouring. It is advised to provide evidence of existing collaborations and planning or to engage in such cooperation.

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

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

Article 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, Rail / Electricity, CNG, LNG, H2, biocomponents		Yes
ANNEX I: 2. Policy measures supporting the implementation of the national policy framework	Information on those measures shall include the following elements: • direct incentives for the purchase of means of transport using alternative fuels or for building the infrastructure, • availability of tax incentives to promote means of transport using alternative fuels and the relevant infrastructure, • use of public procurement in support of alternative fuels, including joint procurement, • demand-side non-financial incentives, for example preferential access to restricted areas, parking policy and dedicated lanes, • consideration of the need for renewable jet fuel refuelling points in airports within the TEN-T Core Network • technical and administrative procedures and legislation with regard to the authorisation of alternative fuels supply, in order to facilitate the authorisation process.	Road, Waterborne, Rail / Electricity, CNG, LNG, H2, biocomponents		Yes
	• consideration of the need for renewable jet fuel refuelling points in airports within the TEN-T Core Network	Air	Biofuels	Yes
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).	Combination / Combination		Yes
	• Annual public budget allocated to support manufacturing plants for alternative fuels technologies, broken down by alternative fuel and by transport mode.	Combination / Combination		Yes
	• Consideration of any particular needs during the initial phase of the deployment of alternative fuels infrastructures.			No
ANNEX I: 4. Research, technological development and demonstration	Annual public budget allocated to support alternative fuels RTD&D, broken down by fuel and by transport mode.	Road / All		Yes
ANNEX I: 5. Targets and objectives	• Estimation of the number of alternative fuel vehicles expected by 2020, 2025 and 2030	Road / Electricity, CNG, LNG		Yes
	• Level of achievement of the national objectives for the deployment of alternative fuels in the different transport modes (road, rail, water and air)	Road / Electricity, CNG, LNG		Yes
	• Level of achievement of the national targets, year by year, for the deployment of alternative fuels infrastructure in the different transport modes			No
	• Information on the methodology applied to take account of the charging efficiency of high power recharging points			No
ANNEX I:6 Alternative fuels infrastructure developments	Changes in supply (additional infrastructure capacity) and demand (capacity actually used)	Road, Waterborne / All		Yes

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

Regarding the combinations of AF and transport mode, electricity/road, CNG/road and LNG/road are partially covered for AFV and AFI. LPG for road is mentioned. About the remaining combinations, the Polish NIR does not offer exhaustive quantitative future AFI targets or AFV estimates.

The Polish NIR reports 26 measures. Under the Policy and Deployment & Manufacturing sections it was possible to identify eight 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	3,338	769[1]	76,898	6,400	1,029,470	NA	1,900,000[2]	NA
	Change NIR vs NPF [%]			0.00%	-6.69%	0.00%			
	Attainment [%]			4.34%	12.02%	0.32%		0.18%	
CNG / road	NIR	8,490	26[1]	9,592	76	54,206	102	60,871	NA
	Change NIR vs NPF [%]			0.00%	5.56%	0.00%	218.75%		
	Attainment [%]			88.51%	34.21%	15.66%	25.49%	13.95%	
LNG / road	NIR	235	3[1]	492	NA	2,745	14	4,023	NA
	Change NIR vs NPF [%]			0.00%		-8.50%	0.00%		
	Attainment [%]			47.76%		8.56%	21.43%	5.84%	
LNG / water (maritime)	NIR	NA	NA	NA	NA	NA	4	NA	NA
	Change NIR vs NPF [%]						0.00%		
	Attainment [%]								
LNG / water (inland)	NIR	NA	NA	NA	NA	NA	NA	NA	NA
	Change NIR vs NPF [%]								
	Attainment [%]								
LPG / road	NIR	2,994,644[1]	7,432[1]	NA	NA	NA	NA	NA	NA
	Change NIR vs NPF [%]								
	Attainment [%]								

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

(1) Value taken from EAFO 2018 (absent in NIR)
(2) This value is mentioned in the PL NIR but not officially reported in the accompanying excel file

- Road transport
    - Electricity

Vehicles

Poland recorded a total of 3,338 electric vehicles in use in 2018 (of which 3,018 were passenger cars and 320 buses and coaches). The Polish NIR confirms the EV estimates presented in the NPF for the years 2020 and 2025 (76,898 and 1,029,470 EVs, respectively) and adds a new estimate for 2030 (1,900,00 EVs) that was not present in the NPF. The level of ambition in the PL NIR remains the same as in the NPF. Concerning the heavy-duty sector, the Polish NIR does not provide specific information for the years 2020-2030.

The 2018 ***attainment*** of future EV estimates is 4.34% for 2020 and 0.18% 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 Poland is equal to 69%.

Infrastructure

The PL NIR does not provide information on the number of publicly accessible recharging points in Poland in 2018. The value of 769 reported in Table Error***! No text of specified style in document.***-*2* is taken from EAFO 2018 database. The target for publicly accessible recharging points in 2020 provided in the PL NIR is 6,400, almost 7% lower than in the NPF, of which 6,000 are normal power (≤22kW) points and 400 high power (>22kW) points. Similarly to the NPF, no targets for 2025 and 2030 are provided in the PL NIR. Similarly to the vehicles, the level of ambition for infrastructure in the PL NIR appears the same as in the NPF.

The 2018 ***attainment*** of future public recharging infrastructure targets is 12.02% 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 2016-2020 for publicly accessible recharging infrastructure evolution planned by Poland is equal to 111%.

Ratio

Based on the PL NIR, the following table shows the ratio between vehicles and publicly accessible recharging points (i.e. sufficiency index) for the pair electricity/road. For 2025 and 2030 the sufficiency index could not be computed, while for 2020 it exceeds the value of 10. It can be considered still adequate but the trend from the previous years raises some doubts about it adequacy also after 2020.

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	**Electricity**	3.12		4.34	12.02		

Information on charging efficiency

Information is not available in the Polish NIR.

- CNG

Vehicles

Poland reported 8,490 CNG vehicles in use in 2018, of which 5,339 were passenger cars, 2,405 LCVs, 177 HCVs and 569 buses and coaches. Concerning the years 2020 and 2025, the PL NIR confirms the NPF estimates (respectively 9,592 and 54,206 CNG vehicles). In addition, the PL NIR presents an estimate of 60,871 CNG vehicles in 2030, which was absent in the NPF. This new estimate is not accompanied by details on the heavy-duty vehicles.

The 2018 ***attainment*** of future CNG vehicles estimates is 88.51% for 2020 and 13.95% for 2030. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to an ***adequate progress*** towards reaching the envisaged CNG vehicles estimates. The calculated ***average annual growth rate*** corresponding to the period 2016-2030 for the CNG vehicle fleet evolution planned by Poland is equal to 30%.

Infrastructure

The PL NIR does not provide information on the number of CNG refuelling points in Poland in 2018. The value of 26 reported in Table Error***! No text of specified style in document.***-*2* is taken from EAFO 2018 database. However, the PL NIR does report that 28 CNG refuelling points were in place at the end of August 2019. The PL NIR also reports that Poland aims to achieve 76 CNG refuelling points in 2020 and 102 in 2025. No target for 2030 was indicated. The value for 2020 is in line with the NPF (5.56% higher) while the value for 2025 is remarkably higher (+218.75%) but this could be due to an incorrect reporting of the original value in the PL NPF.

The 2018 ***attainment*** of future public CNG refuelling infrastructure targets is 34.21% for 2020 and 25.49% for 2025. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to a ***slow progress*** towards reaching these envisaged targets. The calculated ***average annual growth rate*** corresponding to the period 2016-2025 for publicly accessible CNG refuelling infrastructure evolution planned by Poland is equal to 16%.

Ratio

Based on the PL NIR, the following table shows the ratio between vehicles and publicly accessible refuelling points (i.e. sufficiency index) for the pair CNG/road. The values not shown could not be computed as vehicle estimates and/or targets for infrastructure were not given. According to the available data, the sufficiency index is always below the indicative value of 600 (see Section 2.1.5).

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	CNG	66.23		326.54	126.21	531.43	

- LNG

Vehicles

Poland recorded 235 LNG vehicles in 2018, all in the heavy-duty sector (200 HCVs and 35 buses and coaches). Regarding next years, the PL NIR confirms the NPF estimate for 2020 (492 LNG vehicles) and decreases the estimate for 2025 (2,745 compared to 3,000 in the NPF). The PL NIR reports also that in 2030 the number of LNG vehicles is expected to increase to 4023

(this value was not present in the NPF). This estimated growth is planned mainly for the heavy-duty sector.

The 2018 ***attainment*** of future LNG vehicles estimates is 47.76% for 2020 and 5.84% for 2030. According to the assessment methodology described in Section 2.1, the ***progress*** obtained by Poland from 2016 until 2018 for LNG vehicles deployment is 4.49% of the overall planned deployment during the period 2016-2030.

Infrastructure

The PL NIR does not provide information on the number of LNG refuelling points in Poland in 2018. The value of three reported in Table Error***! No text of specified style in document.***-*2* is taken from EAFO 2018 database. As for the next decade, the PL NIR only confirms for 2025 the NPF target of 14 publicly accessible LNG refuelling points, to be developed on the TEN-T network.

The 2018 ***attainment*** of future LNG refuelling infrastructure target could only be calculated with respect to 2025 and is equal to 21.43%, while the ***progress*** could not be computed.

Ratio

Based on the PL NIR, the following table shows the ratio between vehicles and publicly accessible refuelling points (i.e. sufficiency index) for the pair LNG/road. Obviously, the sufficiency indexes for 2020 and 2030 could not be computed as targets for infrastructure were not indicated.

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	**LNG**	19.00		78.33		196.07	

- Hydrogen

Vehicles

Information is not available in the PL NIR.

Infrastructure

Information is not available in the PL NIR on the hydrogen infrastructure development, but financial support for such projects is foreseen within the Polish Low-Emission Transport Fund.

Ratio

As no information has been provided for vehicles and infrastructure, the sufficiency index could not be computed.

- Biofuels

Vehicles

Information is not available in the Polish NIR.

Infrastructure

The PL NIR reports that there is no obligation to obtain a licence for the production of bio-components used for the production of liquid fuels or liquid biofuels. Producers of bio-

components are only obliged to register with the Producer Register, kept by the National Support Centre for Agriculture.

- LPG

Vehicles

Information is not available in the Polish NIR. The value shown in Table Error***! No text of specified style in document.****-2* (2,994,644 LPG vehicles in 2018) is taken from EAFO.

Infrastructure

The Polish NIR, similarly to the NPF, does not report any past of future data on LPG infrastructure. The 2018 value of 7,432 publicly accessible LPG refuelling points, shown in Table Error***! No text of specified style in document.****-2*, is taken from EAFO.

Ratio

Based on the PL NPF 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. Only the ratios for 2016 and 2018 could be computed.

Sufficiency Index		2016	2017	2018	2020	2025	2030
Road	LPG	537.64*		402.94*			

* computed with values taken from NPF and EAFO

- Rail transport

  - Electricity

Vehicles

Information is not available in the Polish NIR.

Infrastructure

Information is not available in the Polish NIR.

- Waterborne transport (maritime)

  - Electricity

Vessels

Information is not available in the Polish NIR.

Infrastructure

Information is not available in the Polish NIR.

- LNG

Vessels

Information is not available in the Polish NIR.

Infrastructure

The PL NPF had claimed that "*Because of insufficient demand, there is currently no need to build fixed LNG bunkering installations in Polish ports. It is enough to use tank trucks or bunker vessels for this purpose".* Despite that, the NPF had provided a provisional plan to develop by 2025 infrastructure for provision of LNG bunkering services in the ports of Gdańsk, Gdynia, Szczecin, and Świnoujście, within the TEN-T Core Network. The PL NIR confirms this plan.

Since the current LNG refuelling infrastructure situation in the maritime ports was not provided, the 2018 ***attainment*** and ***progress*** could not be computed.

- Waterborne transport (inland)

Information is not available in the Polish NIR.

- Air transport
  - Electricity

Airplanes

Information is not available in the Polish NIR.

Infrastructure (for stationary airplanes)

Information is not available in the Polish NIR.

  - Biofuels

Airplanes

Information on flights / airplanes powered by biofuels is unavailable in the Polish NIR.

Infrastructure

The Polish NIR makes only some general considerations of the need for renewable jet fuel refuelling points in airports within the TEN-T Core Network.

- ***Measures assessment***

The measures listed in the Polish NIR are not differentiated at regional level. As the NPF, the Polish NIR contains an extensive and detailed description of measures. They cover a wide

variety of AFs and transport modes, however the vast majority focuses on electricity and natural gas as AF and on road as transport mode. In comparison to the NPF, the measures in the PL NIR include hydrogen, which is an additional value to the program. For example, there is the possibility for financing projects for hydrogen use in maritime transport. Shore-side electricity supply and LNG refuelling infrastructure for ships were in some way addressed in the NPF but after transposition of the legal acts they are not further reported in the NIR. The focus on CNG development is strong in Poland and measures continue to support further development.

- Legal measures

The Polish NIR contains 10 legal measures (versus 18 in the NPF) to promote AF, with detailed descriptions. Measures focusing on defining the legislative framework for AF deployment were not reported in the NIR, while the law is now developed and functioning. Most of the NIR measures are covered by the *Act of 11 January 2018 on electromobility and alternative fuels* that addresses entirely or partly the topic of alternative fuels and by national legal acts transposing EU Directives. The Low-Emission Transport Fund to finance the measures implementation has been established, scheduled for release on the second half of 2019 and planned to be functional until the end of 2027. This is a main implementation tool providing financial support.

In line with the overall focus on electrification in the NIR, the most numerous cluster concerns electricity/road containing 9 measures out of which three are specifically dedicated to this pair of AF/transport mode while the other six cover also other AFs. Four measures target AFI and information tools development, one addresses production of bio-components for liquid fuels or liquid biofuels, three refer to AFV and involve obligation to involve AFVs in the fleets of administrative bodies, and one refers to the Low-Emission Fund that is presented as main financing tool.

Overall, the legal measures in the PL NIR show an increased ambition level compared to that in the NPF.

- Legislative & Regulatory

Poland lists seven legal measures in its NIR that are implemented directly on the basis of by the *Act of 11 January 2018 on electromobility and alternative fuels* to allow for the implementation of principles for deployment of alternative fuels infrastructure, fuel quality and clean vehicles:

- recharging points and CNG/LNG stations development within the TEN-T Core Network,
- obligation to have electric vehicles in supreme or central state administration bodies and local self-government units
- no requirement to obtain a permit for the construction of a charging station
- no obligation to obtain a license for the production of bio-components used to produce liquid fuels or liquid biofuels
- establishing vehicle charging service as new type of business activity that does not require concession
- electronic application to provide information on the availability of infrastructure for charging electric vehicles.

- Administrative

The Polish NIR only reports one administrative measure, on rules and standards for the construction of alternative fuels infrastructure. Also this measure is implemented in the *Act of 11 January 2018 on electromobility and alternative fuels* with statutory definitions created in line with Directive 2014/94/EU.

The updated *National policy framework for alternative fuels infrastructure development*, adopted by the Council of Ministers on 17 October 2018[1], assumes the introduction into the National Framework of technical specifications for hydrogen refuelling points, in accordance with the content of AFI Directive 2014/94/EU. Technical specifications are specified in the following standards:

- ISO / TS 20100, concerning the filling of hydrogen gas[2],
- ISO 17268, concerning connection devices for filling hydrogen in gaseous state in motor vehicles,
- ISO 14687-2, concerning the purity of hydrogen issued by hydrogen refuelling points.

The national framework will also be updated with information on consumer rights to choose an electricity seller to charge electric vehicles other than the household electricity supplier.

- Policy measures

The PL NIR states that the policy direction in Poland is to encourage the introduction of alternative fuels vehicles and other sustainable transport modes. The main focus in the Polish NIR is on electric and CNG vehicles, where financial instruments are introduced for different vehicle categories. In comparison to the NPF, hydrogen is also acknowledged and supported in the NIR.

- Measures to ensure national targets and objectives

Road transport

Most of the policy measures described in the Polish NIR can be categorised as measures to ensure national targets and objectives.

The implementation report lists a series of twelve (of which six financial, and six non-financial) policy measures, all related mainly to road transport, but not excluding other modes if the potential project would pass the eligibility criteria. Two of them involve taxation: tax reductions or exemptions for alternative fuels or for vehicle registration. Although both of them were present also in the NPF, changes have been implemented. Since then new caps are proposed for excise duty on all vehicles, starting from 1 January 2020 (50% lower than in the NPF), which could stimulate the economy, but at the same time the incentives to buy electric or hydrogen car dropped by 50% in comparison to the NPF level. The support for plug-in hybrid electric vehicles will be stopped in 2021.

The second tax incentive is a more favourable tax depreciation for electric vehicles purchased by companies and put into service after 18 December 2018. From January 2019, the tax-

[1] https://bip.kprm.gov.pl/kpr/form/r54402924429635,Krajowe-ramy-polityki-rozwoju-infrastruktury-paliw-alternatywnych.html

[2] Hydrogen standards have been amended by the Commission Delegated Regulation (EU) 2019/1745.

deductible costs have been increased by 70% for all types of vehicles. This change incentivises the purchase of the more expensive cars in general.

The draft implementing act to operationalise the Low-Emission Transport Fund foresees support through competitive and non-competitive procedures for all transport modes and AF. It covers projects indicated in the Electro-mobility Development Plan in Poland, in the NPF and in the Act on electro-mobility and alternative fuels. The values and types of support for investments linked to alternative fuels infrastructure and the purchase of vehicles are simply tabularised. Substantial support is available for purchase of EV, CNG/LNG and hydrogen vehicles (types M1, M2, N1-N3, L up to 30% of the purchase cost).

Other transport modes

The PL NIR does not report measures specifically addressing other transport modes (waterborne, air, railway). However, other modes are not excluded if the potential project would pass the eligibility criteria. The main instrument for financing the projects remains the Low-Emission Transport Fund.

- Measures that can promote AFI in public transport services

Five of the policy measures described in the Polish NIR, can be categorised also as measures that can promote AFI in public transport services. All of them are existing measures: one is dealing with research on alternative fuels, and the remaining four provide financial support for buses and trolley buses at national level.

Buses

The draft implementing act to operationalise the Low-Emission Transport Fund foresees support through competitive and non-competitive procedures for all transport modes and AFs. The values and types of support for investments linked to alternative fuels infrastructure and the purchase of vehicles are simply tabularised. Substantial support is available for EV (55% of the purchase cost), CNG/LNG (15%) and hydrogen (55%) fuelled buses and electric trolley buses (45%).

Also research aimed at developing new types of bio-components, liquid biofuels, other renewable fuels, or the use of CNG or LNG, including that derived from biomethane, or hydrogen, or electricity is subsidised. Transport projects or research towards new design-related solutions in this area, up to PLN 5,000,000, can obtain financing up to 25%, 50% or even 100% of eligible costs per project.

Other transport modes

Transport modes other than those indicated directly in Directive 2014/94/EU (inter alia, railway transport) may be taken into account under that Directive, but these measures are not a mandatory part of Directive. As railway transport is not a transport mode for which limited alternatives to fossil fuels are available in Poland, it is not considered necessary to set targets for railway transport in the NIR.

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

Support for private electro-mobility infrastructure is provided as the possibility of financial support for normal power (≤22kW) recharging stations, up to 50% of eligible costs, but with a cap of PLN 25,500 per station. The main instrument for financing the projects remains the Low-Emission Transport Fund, but no allocations/denominations have been indicated.

- Deployment and manufacturing support

- AFI deployment

Both categories, AFI deployment and support of manufacturing plants for AF technologies, fall under funding from the Low-Emission Transport Fund with no denominations given. As no allocations have been given, the quantitative assessment is not possible.

- Support of manufacturing plants for AF technologies

Both categories, AFI deployment and support of manufacturing plants for AF technologies, fall under funding from the Low-Emission Transport Fund with no denominations given. As no allocations have been given, the quantitative assessment is not possible.

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

Information is not available in the Polish 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, all the identified clusters can be considered comprehensive, however all get a low overall score with the exception of the electricity/road cluster that obtains a medium score. The reason for this overall situation is that, although in principle the measures look quite promising and with a wide scope, they cannot be properly assessed, as the specific allocations to support the attainment of the declared targets and objectives were not given. 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 partial lack of objectives (especially regarding future infrastructure) and information related to budget allocations, does not allow to put this assessment in the right perspective. However, on the basis of a comparison of the Polish measures with those provided by other Member States, it can be

said that the measures for the pair electricity/road might have a medium impact while all the other might have a low impact.

Compared to the NPF, the level of ambition of the Policy and Deployment & Manufacturing support measures has increased for all pairs.

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

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

Four measures for financing the RTD&D activities are given for Poland. The first one is the Low-Emission Transport Fund, where by the end of 2027, the resources available to the Fund will have amounted to more than PLN 6.7 billion. All projects indicated in the *Electromobility Development Plan in Poland*, NPF and *Act on electromobility and alternative fuels* are supposed to be financed from the Low-Emission Transport Fund.

On top of that, financial support for R&D is granted by the National Centre for Research and Development. Funding amounting to:

a) PLN 1,579,000 has been established to co-fund R&D related to road transport based on natural gas,

b) PLN 11,030,800 has been established to co-fund R&D related to road transport based on hydrogen,

c) PLN 14,069,404 has been established to co-fund R&D related to road transport based on electricity.

Compared to the NPF, the PL NIR shows that the financing instruments for RTD&D projects have been established.

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

The Polish NIR provides information on the changes in fuel use but only until 2018 (see Table Error***! No text of specified style in document.***-4). As no future estimates were provided, one can only comment on the slight decrease of gasoline and LPG use for road transport, accompanied with

a growing use of biofuels and, to a much lesser extent, of CNG. The use of electricity as a fuel for transport is still marginal.

No noticeable LNG use in maritime transport is reported. Marine gas oil is the dominant fuel for maritime and inland waterways.

*Table **Error! No text of specified style in document.**-4 Changes in fuel use in transport sector (2016-2018)*

MODE OF TRANSPORT	FUEL	Fuels use [%]		
		2016	2017	2018
Road	Gasoline	**21.69%**	**20.42%**	**20.31%**
	Diesel	**65.00%**	**66.84%**	**65.49%**
	Electricity	0.01%	0.01%	0.01%
	CNG	0.09%	0.06%	0.41%
	LPG	10.66%	9.74%	9.56%
	Biofuels	2.55%	2.93%	4.22%
	Other AF			
	Total Road	**100.00%**	**100.00%**	**100.00%**
Maritime	Marine gas oil	72.35%	81.07%	72.40%
	Marine diesel oil	27.65%	18.93%	27.60%
Inland waterways	Marine gas oil	100%	100%	100%

- ***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 (maritime)	LNG / water (inland)	H2 / road	LPG / road
AF Vehicles / Vessels		Past situation (2016)	1,010**	1,722**	57**	NA	NA	NA	2,914,000**
		Situation (2018)	3,338	8,490	235	NA	NA	NA	2,994,644**
		Estimate (2030)	1,900,000***	60,871	4,023	NA	NA	NA	NA
		Future share (2030) [%]	6.86%	0.22%	0.25%				
		Estimate attainment (2018 vs 2030) [%]	0.18%	13.95%	5.84%				
		Progress (2018)	adequate	adequate					
Publicly accessible AF Infrastructure		Past situation (2016)	324	26	3*	NA	NA	0	5,420*
		Situation (2018)	769**	26**	3**	NA	NA	0	7,432**
		Target (2030)	NA	NA	NA	NA	NA	NA	NA
		Target attainment (2018 vs 2030) [%]							
		Progress (2018)	slow	slow					
Sufficiency Index		2016	3.12	66.23	19.00				537.64
		2018	4.34	326.54	78.33				402.94
		2020	12.02	126.21					
		2025		531.43	196.07				
		2030							
Measures	Legal measures	Ambition (NIR vs NPF)	+	+	+	+		+	=
	Policy measures + Deployment & manufacturing support	Score	M	L	L	L		L	
		Comprehensiveness	C	C	C	C		C	
		Impact	M	L	L	L		L	
		Ambition (NIR vs NPF)	+	+	+	+		+	
	RTD&D	Ambition (NIR vs NPF)							

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

* Value taken or calculated from PL NPF; ** Value taken from EAFO (absent in both NPF and NIR); ***Value mentioned in the PL NIR but not officially reported in the accompanying excel file.

The Polish NIR only partially covers the whole AFID period (2016-2030). The Polish government took actions to fulfil its NPF, specifically implementing legal changes announced in the NPF, as well as by constituting the Low-Emission Transport Fund. The Polish NIR addresses several requirements of Annex I of the Directive, but it does not provide information on the methodology applied to take account of the charging efficiency of high power recharging points and it does not provide considerations on any particular needs during the initial phase of AFI deployment.

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

Road transport

- **Electricity** - Poland recorded a total of 3,338 electric vehicles in use in 2018 (of which 3,018 were passenger cars and 320 buses and coaches). Poland is progressing adequately towards reaching the envisaged EV estimates but slowly in terms of recharging infrastructure. With regards to the latter, the targeted number of publicly accessible recharging points in 2020 is slightly less ambitious in the NIR than in the NPF (-6.69%). The sufficiency index deteriorates slightly over time. In 2020 it can still be considered adequate, but the trend raises some doubts about it adequacy also after 2020. The Polish NIR does not give information on the foreseen electric heavy-duty vehicles by 2030.
- **CNG** - The second fastest growing alternative fuel in Poland is CNG. According to the Polish NIR, the number of CNG vehicles will be growing from 8,490 reported for 2018, up to 60,871 in 2030, which corresponds to adequate progress. While the number of heavy-duty vehicles is reported for 2018 (177 HCVs and 569 buses and coaches) no information is given for 2030. As for CNG infrastructure, the targeted number of CNG refuelling points for 2020 is higher (5.56%) in the NIR than in NPF. Also, the target value for 2025 in the NIR is remarkably higher (+218.75%) but this could be due to an incorrect reporting of the original value in the PL NPF. The 2018 situation corresponds to a slow progress towards reaching these envisaged targets. The sufficiency index is always below 600.
- **LNG** - The Polish NIR foresees a development of LNG for road transport. It is worth noting that the whole LNG/road pair is reported mainly for the heavy-duty sector (200 HCVs and 35 buses and coaches were recorded in 2018). The progress obtained from 2016 till 2018 by Poland for LNG vehicles deployment is 4.49% of the overall planned deployment during the period 2016-2030. By 2025, the construction and deployment of 14 public LNG refuelling points is planned on the TEN-T network.
- **Hydrogen** – Similarly to the NPF, the NIR does not report any vehicle estimate or infrastructure target until 2030, but foresees the possibility of financial support for eligible projects on hydrogen vehicles and refuelling infrastructure within the Low-Emission Transport Fund.
- **Biofuels** – The PL NIR only reports on the lack of obligation to obtain a licence for the production of bio-components used for the production of liquid fuels or liquid biofuels.

- **LPG** – LPG is not taken into consideration in the Polish NIR, even if in practice it plays a considerable role in the Polish transport system.

Rail transport

Information is not available in the Polish NIR.

Waterborne transport (maritime)

- **Electricity –** Information is not available in the Polish NIR.
- **LNG** - While in the NPF Poland claimed that "*Because of insufficient demand, there is currently no need to build fixed LNG bunkering installations in Polish ports. It is enough to use tank trucks or bunker vessels for this purpose.",* the PL NIR provides some new elements, as Poland plans to develop 4 LNG refuelling points in the TEN-T Core maritime ports by 2025. At the same time, no plans for LNG vessels are revealed.

Waterborne transport (inland)

Information is not available in the Polish NIR.

Air transport

Information is not available in the Polish NIR.

The Polish NIR contains an extensive and detailed description of **measures**. They cover a wide variety of AFs and transport modes, however the vast majority focuses on electricity and natural gas as AF and on road as transport mode. An overall assessment of the legal measures is that the PL NIR shows an increased ambition level compared to the NPF.
With reference to the Policy and Deployment & Manufacturing support measures, financial instruments are introduced for different vehicle categories. In comparison to NPF, hydrogen is also acknowledged and supported in the NIR. In terms of expected impact of the measures to support the realisation of the AFV/AFI objectives as presented in the NPF and revised in the NIR, the partial lack of objectives (especially regarding future infrastructure) and information related to budget allocations, does not allow to put this assessment in the right perspective. However, on the basis of a comparison of the Polish measures with those provided by other Member States, it can be said that the measures for the pair electricity/road might have a medium impact while all the other might have a low impact. Compared to the NPF, the level of ambition of the Policy and Deployment & Manufacturing measures support measures has increased for all pairs.
The financial support for the measures implementation will be provided mainly from the national Low-Emission Transport Fund, but some support from EU funds is also taken into consideration, mainly in case of RTD&D. Although the government of Poland officially excludes hydrogen from its plans, the prominence of this alternative fuel in support measures, particularly RTD&D funding, is noteworthy.

- ***Final remarks***

The Polish NIR provides a rather comprehensive report on the efforts to implement the Directive. The NIR complies, to a certain extent, with the requirements of Annex I to the

Directive. However, the NIR does not set targets for electricity recharging points for 2025 and 2030 as well as for CNG and LNG refuelling points for road and maritime transport in 2030. Information is not available on the LNG planning for inland water transport. Furthermore, the NIR does not provide information on existing and future plans for the supply of electricity in ports and airports. The NIR includes an elaborated list of measures; however, they are mainly focused on road transport and, in particular, on its electrification.

For electricity, the NIR estimates that approximately more than one million electric vehicles could be on the road in Poland by 2025 and almost two million by 2030, representing about 7% of the fleet by that time. Taking into account the current situation, fleet and existing trends, this level of ambition does not appear to be fully compatible with the pace of deployment of electric vehicles considered necessary for a full transition to carbon neutrality by 2050. Furthermore, Poland should provide further information on its targets for recharging points by 2025 and 2030. No information on charging efficiency is provided. Further information should be given on shore side electricity, electricity supply for stationary aircraft and rail transport. Poland should also report on its plans for further electrification of these modes of transport.

Regarding hydrogen for transport, the NIR does not report any vehicle estimates or infrastructure target until 2030, merely indicating that Poland provides financial support to vehicles and refuelling infrastructure as part of its Low-Emission Transport Fund. It would be relevant that Poland provides more information on how to ensure EU-wide connectivity for HCEV.

Concerning natural gas, the NIR shows a target of 60,871 CNG vehicles in 2030. Although the number of CNG vehicles is considered to increase in Poland until 2030, they would only represent 0.22% of the future fleet in 2030 according to the NIR. For 2025, 102 CNG refuelling points are planned, which seems sufficient for the estimated CNG fleet. For LNG, only a moderate increase of heavy-duty vehicles is expected in the next years. Furthermore, the NIR estimates 14 LNG refuelling stations by 2025. The number of LNG refuelling points seem sufficient considering the length of Poland's TEN-T Core Network, provided that the refuelling points are widely distributed along the network. The current target is that LNG refuelling points will be installed in the four Polish ports in the TEN-T Core Network by 2025, thus complying with the requirements of the Directive. However, Poland should provide information on estimates for LNG vessels in its fleet. Nevertheless, no information is provided to ensure LNG refuelling in the two inland ports of the TEN-T Core Network by 2030.

Future LPG development is not taken into consideration in the Polish NIR, even if in practice it plays a considerable role in the Polish transport system (three million LPG vehicles and around 7,400 refuelling points). Future reporting should provide more information on LPG development.

Poland 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 312,700 km², Poland has a population of 37.977 million people in 2018, which makes up for a population density of 121 inhabitants/km².

Number of main urban agglomerations

- 69 urban agglomerations > 50,000 inhabitants

In 2018, Poland achieves a per capita gross domestic product at market prices of €12,920, which represents a per capita gross domestic product in purchasing power standards of 70 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 Poland is 3,834 km. The total road network length is 156,822 km, of which 1,637 km are motorways.

The following lengths of TEN-T Road Corridors are present in Poland: 1,832 km (51%) of the Baltic - Adriatic Corridor and 975 km (24%) of the North Sea - Baltic Corridor.

Through the TEN-T Road Corridors, Poland is connected with the following Member States:
- Germany (through the North Sea - Baltic Corridor)
- Lithuania (through the North Sea - Baltic Corridor)
- Slovakia (through the Baltic - Adriatic Corridor)
- Czechia (through the Baltic - Adriatic Corridor)

Number of registered road vehicles

At the end of 2018, Poland accounts for 30,061,644 registered road vehicles of which 23,429,016 are categorized as passenger cars, 2,649,198 as light goods vehicles, 1,108,075 as heavy goods vehicles and 119,471 as buses and coaches. The motorisation rate is 617 passenger cars per 1,000 inhabitants.

Number of ports in the TEN-T Core Network

- 4 maritime ports in the TEN-T Core Network (Gdánsk, Gdynia, Świnoujście, Szczecin)
- 1 maritime port in the TEN-T Comprehensive Network
- 2 inland ports in the TEN-T Core Network (Świnoujście, Szczecin)
- 1 inland port in the TEN-T Comprehensive Network

Through the 65 km inland waterways TEN-T Core Network, Poland is connected with Germany through the North Sea – Baltic Corridor.

Number of airports in the TEN-T Core Network

- 8 airports in the TEN-T Core Network (Gdánsk, Katowice-Pyrzowice, Kraków, Łódź, Poznań, Szczecin, Warszawa, Wrocław)
- 2 airports in the TEN-T Comprehensive Network