• Austria (AT)

• Main messages from the Commission assessment of the NPF

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

The Austrian NPF fully 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 all fuels and modes, it establishes targets as required by Article 3 of the Directive.

The Austrian NPF puts a lot of emphasis on electric vehicles and contains, with more than 1.3% share by 2020, high estimates for the future deployment of EV, when compared with its current EV shares (0.3%). Austria has already today a relatively dense network of public recharging points. Eligibility for several support measures for EV is contingent on 100% renewable electricity contracts. This ensures zero emission electro-mobility also under a well-to-wheel perspective. Austria, already today, has a significant number of electric buses, some powered via overhead lines. Bicycles and electric bikes as well as their infrastructure also receive support. Regarding electricity supply for stationary airplanes, the Austrian NPF commits to maintaining the current infrastructure. For shore-side electricity, the NPF mentions ongoing studies to investigate the possible extension of the basic existing network.

Today, the spatial distribution of recharging points and especially high power recharging infrastructure seems to appropriately cover the needs of electric vehicles in terms of distance requirements in Austria. For the future, the targeted ratio of only one public recharging point per 18-37 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. It will be important to closely monitor this development and correct infrastructure targets in line with the market developments.

Austria currently has a sufficient network of CNG refuelling points. However, the Austrian NPF displays a sceptical view on the future prospects of CNG vehicles and does not foresee additional investments in CNG refuelling infrastructure.

Depending on market demand, 1-2 dual use LNG refuelling points for vessels and heavy-duty trucks are proposed in the NPF. If both LNG refuelling points were realised, this would guarantee that the maximum distance requirement for LNG refuelling points along the TEN-T Core Network would be fulfilled on Austrian territory.

The Austrian NPF considers hydrogen for transport and targets a slight increase of hydrogen refuelling points.

The Austrian NPF contains a very comprehensive list of measures, most already in place and their prolongation foreseen. Most of them can be considered having a medium impact on market actor's decisions. Longer periods for their validity could provide certainty for market actors and hence increase the likelihood that the national targets and objectives of the NPF can be reached. The NPF contains a comprehensive list of support measures that can promote the deployment of alternative fuels infrastructure in public transport services. The consideration of the interests of regional and local authorities, as well as stakeholders during the drafting of the Austrian NPF can be considered exemplary. Further coordination is planned in order to ensure follow-up of the implementation actions, collaboration among authorities and advice from stakeholders.

Austria is actively involved in coordinating its plans on alternative fuels infrastructure with other Member States as well as collaborating with them in this field.

• 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	Me Transport// (provideo	ode of Alternative Fuel d 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.	Rc	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, • technical and administrative procedures and legislation with regard to the authorisation of alternative fuels supply, in order to facilitate the authorisation process.	Rc	oad/All	Yes
	• consideration of the need for renewable jet fuel refuelling points in airports within the TEN-T Core Network	Air	Biofuels	No
ANNEX I: 3. Deployment and manufacturing support	 Annual public budget allocated for alternative fuels infrastructure deployment, broken down by alternative fuel and by transport mode (road, rail, water and air). 	Road, rail / Electricity, CNG		Yes
	 Annual public budget allocated to support manufacturing plants for alternative fuels technologies, broken down by alternative fuel and by transport mode. 			No
	• Consideration of any particular needs during the initial phase of the deployment of alternative fuels infrastructures.			No
ANNEX I: 4. Research, technological development and demonstration	 Annual public budget allocated to support alternative fuels RTD&D, broken down by fuel and by transport mode. 	All/All		Yes
ANNEX I: 5. Targets and objectives	• Estimation of the number of alternative fuel vehicles expected by 2020, 2025 and 2030	Road /	'Electricity	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, r	ail, air / All	Yes
	 Level of achievement of the national targets, year by year, for the deployment of alternative fuels infrastructure in the different transport modes 	Road, water CNG, LNG,	, air / Electricity, Hydrogen, LPG	Yes
	 Information on the methodology applied to take account of the charging efficiency of high power recharging points 	Road /	Yes	
ANNEX I:6 Alternative fuels infrastructure developments	Changes in supply (additional infrastructure capacity) and demand (capacity actually used)	Road /	Yes	

The checklist shows the requirements of Annex I from the Directive covered in the AT NIR.

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

The Austrian NIR reports 159 measures. Under the Policy and Deployment & Manufacturing sections it was possible to identify five 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

		201	.8	2020		20	25	2030		
Alternative fuel / Transport mode		AFV	AFI public	AFV	AFI public	AFV	AFI public	AFV	AFI public	
	NIR	28,847	4,178	89,774	3,500	405,402	NA	960,395	NA	
Electricity / road*	Change NIR vs NPF [%]			-24.88%	-14.63%			-26.97%		
	Attainment [%]			32.13%	119.37%	7.12%		3.00%		
	NIR	7,614	161	NA	NA	NA	NA	NA	NA	
CNG / road	Change NIR vs NPF [%]									
	Attainment [%]									
	NIR	NA	1	NA	NA	NA	1	NA	NA	
LNG / road	Change NIR vs NPF [%]						0.00%			
	Attainment [%]						100.00%			
	NIR	NA	0	NA	NA	NA	1	NA	NA	
LNG / water (inland)	Change NIR vs NPF [%]						0.00%			
(mand)	Attainment [%]									
	NIR	24	5	NA	5	NA	NA	NA	NA	
H2 / road	Change NIR vs NPF [%]				0.00%					
	Attainment [%]				100.00%					
	NIR	694	45	NA	NA	NA	NA	NA	NA	
LPG / road	Change NIR vs NPF [%]									
	Attainment [%]									
Legend:	not app the valu	licable e could not b	e computed							

NA no value/information provided/available in the NIR

* The NPF value used for the calculation is based on an average of values reported in the Austrian NPF.

- Road transport
 - Electricity

Vehicles

Austria recorded 28,847 battery-electric and plug-in hybrid electric vehicles in use in 2018, of which 26,541 were passenger cars, 2,141 battery-electric LCVs, 11 battery-electric HCVs and 154 battery-electric buses and coaches (see Table Error! *No text of specified style in document.-2*). The Austrian NIR EV estimates are 89,774 for 2020 and 960,395 for 2030. These figures are respectively 24.88% and 26.97% lower than those reported in the NPF. This reflects a lower policy ambition, with a caveat: while the underlying NPF numbers used to calculate these percentages are based on an average value, the actual future EV estimates provided in the NPF were a range (low and high). This is shown for 2020 and 2030 in Figure Error! *No text of specified style in document.-1*. As it can be seen, the 2030 estimate provided in the NIR is close to the NPF low estimate. The figure also shows that Austria did not provide 2025 EV estimates in the NPF but the NIR presents an estimate (405,402 EVs). No future estimates are provided for the stock of electric HCVs. In addition, the Austrian NIR provides an estimate of 85,161 electric PTW in 2030, compared to 8,614 in 2018.



Figure Error! No text of specified style in document.-1 Future EV estimates in the Austrian NPF versus NIR

The 2018 *attainment* of future EV estimates is 32.13% for 2020 to 3.00% 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 Austria is equal to 35%.

Infrastructure

Austria recorded 4,178 publicly accessible recharging points in 2018 (Table Error! *No text of specified style in document.-2*). The NIR target for the publicly accessible electric recharging points for 2020 is 3,500, of which 500 would be high power (>22kW). This is 14.63% lower than the target set in the NPF, with a caveat: while the underlying NPF number used to calculate this

percentage is based on an average value, the actual target provided in the NPF was a range (low and high). As Figure Error! *No text of specified style in document.-2* shows, the 2020 target provided in the NIR is close to the NPF low target. The figure also indicates that neither the Austrian NPF nor the NIR provide publicly accessible electric recharging points targets for 2025 and 2030.

The Austrian NIR does not provide information on the number of private recharging points but assumes that one private recharging point will be available for each passenger car.



Figure Error! No text of specified style in document.-2 AFI targets in the Austrian NPF versus NIR: publicly accessible electric recharging points

The 2018 *attainment* of future publicly accessible recharging infrastructure target is 119.37% for 2020. The attainment >100% represents an early over-achievement of the target. According to the assessment methodology described in Section 2.1, the 2018 situation corresponds to a *fast progress* towards reaching the envisaged target. The calculated *average annual growth rate* corresponding to the period 2016-2030 for publicly accessible recharging infrastructure evolution planned by Austria is equal to 10%.

Ratio

Based on the AT NIR, the following table shows the ratio between vehicles and publicly accessible recharging points (i.e. sufficiency index) for the pair electricity/road. In 2020 the foreseen sufficiency index exceeds a value of 10 that, even considering the 14% high power share, can be regarded as inadequate. The lack of 2025 and 2030 targets precluded the calculation of the sufficiency index.

Suff	iciency Index	2016	2017	2018	2020	2025	2030
Road	Electricity	5.51	5.68	6.90	25.65		

Information on charging efficiency

In line with the information provided by the Commission (Frequently-Asked Questions document issued to the Member States on 16 September 2019), the Austrian NIR reported the following average data based on 86 high power (>22kW) recharging points along the ASFiNAG network, concluding that the utilisation rate is low: 0.4 charges/day, 7.5 kW delivered/day and

11 minutes/day. Although this data collection is part of Austria's assessment of the efficiency of high power recharging infrastructure, the NIR¹ does not disclose any detail on the methodology applied.

o CNG

Vehicles

Austria recorded 7,614 CNG vehicles in use in 2018, of which 5,542 were passenger cars, 1,846 LCVs, 55 HCVs and 171 buses and coaches (Table Error! *No text of specified style in document.-2*). The Austrian NIR does not provide future estimates of CNG vehicles because it considers them currently unfeasible. As a result, the future values in Table Error! *No text of specified style in document.-2* are shown as NA and the 2018 *attainment* and *progress* could not be computed.

Infrastructure

The Austrian NIR provides information on the number of CNG refuelling points that have been declining over the past years (171 in 2016, 166 in 2017, 161 in 2018 and 156 in September 2019). The NIR does not provide future targets, thus the relevant values in Table Error! *No text of specified style in document.-2* are shown as NA. As in the NPF, the Austrian NIR confirms the intention of preserving the existing CNG refuelling infrastructure. The NPF had reported that five refuelling points for pure biomethane were available in Austria in 2016, whereas the NIR asserts that three such refuelling points were available in 2019.

Due to the absence of future CNG refuelling points targets, the 2018 *attainment* and *progress* could not be computed.

Ratio

Based on the AT NIR, the following table shows the ratio between vehicles and publicly accessible refuelling points (i.e. sufficiency index) for the pair CNG/road. The sufficiency index is well below the indicative value of 600 (see Section 2.1.5) for the period 2016-2018. Since there are no future CNG vehicle estimates and no refuelling points targets in the AT NIR, it is not possible to compute the sufficiency index for the period 2020-2030.

Suff	iciency Index	2016	2017	2018	2020	2025	2030
Road	CNG	40.26	43.22	47.29			

o LNG

The Austrian NIR acknowledges that the deployment of LNG infrastructure has not been a priority so far, because LNG does not play a role in Austria's heavy goods transport.

Vehicles

Information is not available in the Austrian NIR.

¹ See Section 5.20.4.1 for two Federal Acts on technical standards for recharging infrastructure.

Infrastructure

The Austrian NIR indicates the presence of one publicly accessible LNG refuelling point for road vehicles in 2018 and two in 2019. The NIR also provides a target of one public LNG refuelling point in 2025, which is in line with the value reported in the NPF (Table Error! *No text of specified style in document.-2*). The Austrian NIR states that future target setting of LNG infrastructure will depend on the market development along 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 100%, while the *progress* could not be computed.

Ratio

Due to the lack of LNG vehicle estimates in the AT NIR it was not possible to compute the sufficiency index.

• Hydrogen

Since the Austrian government considered hydrogen for transport in its NPF, it became mandatory for Austria to include hydrogen-related information in its NIR. The Austrian NIR states that concrete future estimates and targets for 2020, 2025 and 2030 are excluded from the NIR because the country's Hydrogen Strategy was being drafted at the time of notification of the NIR.

Vehicles

The Austrian NIR indicates that 24 hydrogen-powered vehicles (all of them passenger cars) were in use in 2018 (Table Error! *No text of specified style in document.-2*), but it does not provide future estimates. As a result, the future values in Table Error! *No text of specified style in document.-2* are shown as NA and the 2018 *attainment* and *progress* could not be computed.

Infrastructure

The Austrian NIR reports that hydrogen refuelling points are slowly increasing (3 in 2016, 4 in 2017 and 5 in 2018 and 2019; they are all publicly accessible 700 bar infrastructure). The NIR also presents a target of five hydrogen refuelling points for 2020 that is in line with the one indicated in the NPF (Table Error! *No text of specified style in document.-2*). In contrast to the NPF, the NIR no longer provides a target for 2025 and states that the 2025 and 2030 targets would be set only if market developments require them.

The 2018 *attainment* of future hydrogen refuelling infrastructure target could only be calculated with respect to for 2020 and is equal to 100%, while the *progress* could not be computed.

Ratio

Based on the AT NIR, the following table shows the ratio between vehicles and publicly accessible refuelling points (i.e. sufficiency index) for the pair hydrogen/road. The sufficiency index (see Section 2.1.5) remains below five for the period 2016-2018. Since there are no future vehicle estimates and refuelling points targets in the AT NIR, it is not possible to compute the sufficiency index for the period 2020-2030.

Suff	iciency Index	2016	2017	2018	2020	2025	2030
Road	Hydrogen	4.33	4.75	4.80			

o Biofuels

Vehicles

Information is not available in the Austrian NIR.

Infrastructure

Information is not available in the Austrian NIR.

o LPG

The Austrian government does not mention LPG in its main report but provides historical data in the Annex.

Vehicles

Austria recorded 694 LPG vehicles in use in 2018 (of which 329 were passenger cars, 173 LCVs, 1 HCV and 191 buses and coaches) (see Table Error! *No text of specified style in document.-2*). Most of these vehicles are bi-fuel (petrol-LPG), with the exception of buses and coaches. The Austrian NIR does not provide any justification for the lack of future estimates of LPG vehicles. As a result, the 2018 *attainment* and *progress* could not be computed.

Infrastructure

The Austrian NIR provides information on the number of publicly accessible LPG refuelling points for the period 2016-2018 (50 points in 2016 and 45 in 2017 and 2018) but does not provide future targets. As a result, the 2018 *attainment* and *progress* could not be computed.

Ratio

Based on the AT NIR, the following table shows the ratio between vehicles and publicly accessible LPG refuelling points (i.e. sufficiency index) for the pair LPG/road. Since there are no future LPG vehicle estimates and no refuelling points targets in the AT NIR, it was not possible to compute the sufficiency index for the period 2020-2030.

Suff	iciency Index	2016	2017	2018	2020	2025	2030
Road	LPG	9.96	11.20	15.42			

*Note: The 2016 and 2017 values are calculated without taking into account the stock of buses and coaches, for which the NIR provided no information.

- Rail transport
 - \circ Electricity

Vehicles

Austria recorded 824 electric and 9 hybrid electric locomotives in 2018.

Infrastructure

According to the Austrian NIR, around 70% of the rail network is electrified and further progress is ongoing on rail electrification, with a focus on high-traffic passenger and freight routes.

• Waterborne transport (maritime)

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

- Waterborne transport (inland)
 - Electricity

Vessels

Information is not available in the Austrian NIR.

Infrastructure

As in the NPF, the Austrian NIR does not provide specific values on the number of shore-side electricity recharging points. The NIR states that a basic level of shore-side electricity supply for inland waterway vessels is available at Austria's TEN-T ports. As for the future, the Austrian NIR indicates that the aim is to maintain the existing basic infrastructure and to analyse additional needs in the context of the 'Action Programme Danube 2022'.

o LNG

Similarly to the heavy goods transport, the Austrian NIR acknowledges that LNG does not play a role in Austria's inland waterborne transport.

Vessels

Information is not available in the Austrian NIR.

Infrastructure

Austria recorded zero LNG refuelling points in inland ports for the period 2016-2018 (Table Error! *No text of specified style in document.-2*). Both the NPF and the NIR are consistent in indicating one refuelling point for 2025 (at Enns or Linz); however, in the main body of the NIR, the Austrian government considers the possibility of a second LNG refuelling point in the port of Vienna), but its deployment by 2030 will depend on the market development along the TEN-T Network.

Since there was no LNG refuelling infrastructure in 2018, the **attainment** and **progress** have not been computed.

• Air transport

• Electricity

According to the NIR, electro-mobility deployment at all airports has a high priority for Austria.

Airplanes

Information is not available in the Austrian NIR.

Infrastructure (for stationary airplanes)

The Austrian NIR provides a figure of 42 recharging points at airports for use by stationary planes over the period 2016-2018. This number is the same as the one provided in the NPF for the period 2020-2030. In addition, the Austrian NIR states that around 50 mobile GPUs are available. Austria considers that the current electricity supply at commercial airports for use by stationary airplanes is adequate. For the future, the Austrian NIR indicates that the aim is to maintain the existing electricity supply for stationary aircraft at Austrian airports until further evidence of additional needs.

o Biofuels

Airplanes

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

Infrastructure

Information is not available in the Austrian NIR.

Measures assessment

As in the NPF, the Austrian NIR contains a very comprehensive list of measures that covers various fuels and modes, with particular emphasis on electricity for road transport. The Austrian NPF had proposed the extension of existing measures and this has been reflected in the NIR.

• Legal measures

The Austrian NIR contains 52 legal measures, which represents a strong increase compared to the 16 legal measures identified in the NPF. Slightly less than half of them corresponds to measures at national level (most of the rest are regional measures). Some of the new legal measures update the measures provided in the NPF (e.g. related to the Passenger Car Consumer Information Act). The majority of the legal measures described in the NIR are existing (around 12% are under consideration). Some of these measures relate to the implementation of the provisions stipulated in the Energy Performance of Buildings Directive (2018/844/EU).

All together, the legal measures appear to address relevant needs for the realisation of the AFV/AFI ambition as described in the NPF. On the basis of the available information, it is considered that the level of ambition of the legal measures has generally increased in the NIR, compared to the NPF.

o Legislative & Regulatory

Of all the legal measures described in the Austrian NIR, 37 can be categorised as legislative and regulatory measures. The following new measures can be highlighted:

- National targets: exemptions for zero-emission lorries (BEV and FCEV) from the driving bans applicable on a section of the A12 Inntal motorway as well as the obligation to register all publicly accessible recharging points in Austria, so that information on the geographical location is available to users in a non-discriminatory and open manner.
- Norms & requirements: the NIR mentions the adoption of two relevant federal acts on technical standards since the notification of the NPF. The first one is "the Federal Act laying down uniform standards for the deployment of alternative fuels infrastructure was adopted on 12 July 2018 (Federal Law Gazette I No 38/2018)". The second one is the Federal Act laying down "uniform standards for normal-power and high-power recharging points for electric vehicles that are accessible to the public, hydrogen refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and CNG refuelling points for vehicles that are accessible to the public and conduction accessible to the public accessi
- Permits: a measure stipulating that recharging stations should be regarded as installations that require approval only in exceptional cases.

o Administrative

Of all the legal measures described in the Austrian NIR, 15 can be categorised as administrative (basically regional) measures. The following new measures can be highlighted:

- AFV classification on environmental performance: possibility to switch all public bus routes to alternative drive technologies in Vorarlberg.
- Certification of the environmental performance of businesses: commercial recharging stations for EVs do not require approval under plant permit law in Upper Austria.
- EU & international standards implementation: all the electricity delivered by publicly accessible recharging stations in Vienna must be 'green'.
- Other: prioritisation of EVs in the procurement of company cars in Vorarlberg ('Mission ZeroV'); (ii) cross-border electro-mobility strategy for the area Burgenland-West Hungary (INTERREG 'Low Carb Mobility' project); and (iii) international cooperation on electro-mobility in the Lake Constance area (E-Charter).
 - Policy measures

The Austrian NIR contains 56 policy measures that represent a strong increase compared to the 14 policy measures identified in the NPF. Almost 40% of them corresponds to measures at national level (most of the rest are regional measures). Some of the new policy measures update those provided in the NPF. Most of the policy measures are in place. Almost 30% of them have expired by 2019 and around 2% were under consideration. The vast majority of the policy measures described in the NIR refer to road transport.

• Measures to ensure national targets and objectives

Of all the policy measures described in the Austrian NIR, 46 can be categorised as measures to ensure national targets and objectives. Around 70% of these measures provide financial support.

Road transport

As the Austrian NIR states, financial incentives for the acquisition of vehicles powered by the following alternative fuels continue to be available:

- Electricity: federal subsidies are available for enterprises (a maximum funding rate of 30% applies) and private individuals. For M1 vehicles, the subsidy ranges from €1,500 for PHEVs to €3,000 for BEV and FCEVs. Funding is also available for freight vehicles (€1,500-€10,000 for N1; €20,000 for N2; €50,000 for N3) and for public vehicles (taxis and buses (up to €100,000)). Subsidies in some regions complement the federal subsidies for one or more vehicle categories. Moreover, funding is available for motorcycles as well as for electric bikes (including electric cargo bikes), as in the NPF.
- CNG: tax concessions continue to be available and several regions offer subsidies for new CNG vehicles.
- Hydrogen: certain tax concessions are available for FCEVs.

Financial incentives are also available for the deployment of private recharging infrastructure, including for multi-family dwellings, both at the federal level and in certain regions.

Among the non-financial incentives, it is worth mentioning exemptions for BEVs and FCEVs from the speed limit (100 km/h under the Ambient Air Quality Act) on motorways and dual carriageways.

In terms of measures at local level, the number of Austrian cities and towns with parking fee exemptions for EVs and hydrogen-powered vehicles rose from 14 in mid-2016 to 33 in late 2019. This exemplifies an increased level of ambition in support measures for zero-emission vehicles at local level.

Rail transport

The Austrian NIR lists two policy measures in Burgenland Upper Austria on rail transport: both are existing public procurement incentives targeting electricity, though their budgets vary greatly. Besides, the Austrian NIR indicates that the Zillertal Railway in Tyrol is scheduled to switch from diesel to hydrogen.

Waterborne transport

In addition to the aforementioned 'Action Programme Danube 2022', the Austrian NIR mentions the 'LNG Master Plan Rhine-Main-Danube' project (but without providing details).

• Measures that can promote AFI in public transport services

The main report of the Austrian NIR highlights three examples of best practice at sub-national level that concern public transport: electric bus tests in Carinthia; the promotion of multimodal transport (including electric taxis) in Styria; and funding for zero-emission taxis in Upper Austria.

Of all the policy measures described in the Annex of the Austrian NIR, two can be categorised as measures to promote AFI in public transport services (both of them in Vorarlberg).

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

The main report of the Austrian NIR highlights funding for the deployment of recharging infrastructure in multi-family dwellings in Vorarlberg as an example of best practice at subnational level.

Of all the policy measures described in the Annex of the Austrian NIR, eight can be categorised as measures to promote the deployment of private electro-mobility infrastructure. All of these are regional measures. In addition, the main report of the NIR indicates that funding is available for wall boxes for multi-family dwellings at the federal level.

• Deployment and manufacturing support

• AFI deployment

The Austrian NIR contains 19 deployment support measures, which represents a significant increase compared to the three measures identified in the NPF. Twelve of the measures were in place. Most of the support concerns electricity for road. The total estimated budget for AFI deployment reported in the NIR amounts to around 36.7 million \in for the period 2016-2030 (though most of it reflects the period 2016-2020 and information on the budget is incomplete).

• Support of manufacturing plants for AF technologies

Although the Austrian NIR states that the Province of Lower Austria has collaborated with recharging stations manufacturers and will be offering support for the development of recharging stations, no concrete measure regarding support of manufacturing plants for AF technologies is presented in the Annex of the Austrian NIR.

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

Information is not available in the Austrian 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, in addition to electricity for various transport modes, clusters of measures for the pairs CNG/road and hydrogen/road could also be identified in the Austrian NIR. Similarly to the NPF, nothing assessable could be defined for LNG and for the other AFs. All the assessable measures mentioned in the NIR score low or medium. Only the clusters of measures for the pairs electricity/road and electricity/bicycles are comprehensive. In terms of expected impact of these measures to support the realisation of the AFV/AFI objectives as presented in the NPF and revised in the NIR, the lack of a complete plan regarding future targets and estimates does not facilitate the task of putting this assessment into perspective. Based on the impact seen during the implementation period, for the future it can be said that the measures for the pairs electricity/road and electricity/bicycles have a medium impact, those for the pairs CNG/road, hydrogen/road and electricity/rail have a low impact.

Compared to the NPF, the level of ambition increases only for the electricity-related measures.

AF	Transport mode	Score	Comprehensiveness	Impact	Ambition (IR vs NPF)
Electricity	Road	М	С	м	+
CNG	Road	М	Ν	L	=
	Road				
LING	Water- inland				
Hydrogen	Road	L	Ν	L	=
Electricity	Bicycles	М	С	м	+
	Rail	L	N	L	+

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

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

• Research, Technological Development & Demonstration

The Austrian NIR contains 32 RTD&D projects, which represents a significant increase compared to the 17 RTD&D projects identified in the NPF. Some of the new projects are follow-ups or expansions of the projects listed in the NPF (e.g. the 'Zero-Emission Mobility' project). A significant proportion of the RTD&D projects described in the NIR are probably concluded at the time of writing this assessment. The vast majority of the RTD&D projects, but hydrogen, LNG and combinations of alternative fuels are also addressed. The total estimated budget for RTD&D projects reported in the NIR amounts to 148 million \notin for the period 2016-2025 (though most of it reflects the period 2016-2020 and information on the budget is not complete). The reported budget includes sub-national, national and supra-national funding.

On the basis of the available information, it can be considered that, compared to the NPF, the level of ambition in the NIR has increased only for the clusters electricity / road and hydrogen / road.

Additional information on alternative fuels infrastructure developments

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

• Summary of the assessment

Tabular overview

			Alternative fuel / transport mode								
		Indicators	Electricity / road	CNG / road	LNG / road	LNG / water (inland)	H2 / road	LPG / road			
		Past situation (2016)	12,977	6,884	NA	NA	13	498			
		Situation (2018)	28,847	7,614	NA	NA	24	694			
		Estimate (2030)	960,395	NA	NA	NA	NA	NA			
AF	Vehicles / Vessels	Future share (2030) [%]	16.15%								
		Estimate attainment (2018 vs 2030) [%]	3.00%								
		Progress (2018)	adequate								
		Past situation (2016)	2,356	171	0	0	3	50			
		Situation (2018)	4,178	161	1	0	5	45			
P	ublicly accessible	Target (2030)	NA	NA	NA	NA	NA	NA			
4	AF Infrastructure	Target attainment									
		(2018 vs 2030) [%]									
		Progress (2018)	fast								
		2016	5.51	40.26			4.33	9.96			
		2018	6.90	47.29			4.80	15.42			
S	ufficiency Index	2020	25.65								
		2025									
		2030									
	Legal measures	Ambition (NIR vs NPF)	+	+	+	=	+	+			
	Policy measures	Score	М	М			L				
Measures	+	Comprehensiveness	С	N			Ν				
wiedsures	Deployment &	Impact	М	L			L				
	manufacturing support	Ambition (NIR vs NPF)	+	=			=				
	RTD&D	Ambition (NIR vs NPF)	+	=	=	=	+	=			

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

 Inot applicable

 Legend:
 the value could not be computed

 NA
 no value/information provided/available in the NIR

As stated in the NIR, the Austrian government aims at limiting transport GHG emissions to 15.7 million tCO₂ by 2030. As road transport currently accounts for most of Austria's GHG emissions in the transport sector, road transport decarbonisation is crucial. Moreover, the Austrian NIR asserts that the country is well positioned to make the transition to a transport sector powered by electricity, thanks to its high share of renewables in electricity generation. Since the notification of the NIR, Austria has published its National Energy and Climate Plan. The NIR indicates that Austria is drafting its Hydrogen Strategy.

The NIR does not establish infrastructure targets / vehicle estimates for all fuels and modes for each of the years of reference (2020, 2025 and 2030). Therefore, it cannot be stated that the Austrian NIR covers the whole AFID period (2016-2030). Compared to the Austrian NPF that had fully addressed the requirements of Article 3 of the Directive, the Austrian NIR almost fully addresses the requirements of Annex I of the Directive, with the exception of: a) information on the need for renewable jet fuel refuelling points in airports within the TEN-T Core Network; b) information on the annual public budget allocated to support manufacturing plants for

alternative fuels technologies; c) information on any particular needs during the initial phase of AFI deployment.

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

Road transport

- Electricity With 28,847 electric vehicles registered in 2018, the Austrian NIR puts a lot of emphasis on road electrification, to be led by the passenger car market, though electric LCVs, HCVs and buses and coaches are also indicated for 2018 (2,141 battery-electric LCVs, 11 battery-electric HCVs and 154 battery-electric buses and coaches). With regards to future EV estimates and publicly accessible recharging points targets, the Austrian government updates its policy goals by indicating values in the NIR that are closer to the least ambitious scenario of the two reported in its NPF and does not provide details on the heavy-duty vehicles. As for recharging infrastructure, the NIR only reports a target for 2020, which was already exceeded by the 2018 value, meaning a fast progress. The 2018 progress for EVs is adequate, but when the estimated number of EVs in 2020 is compared to the corresponding infrastructure, the result is a rather deteriorated sufficiency index in 2020.
- **CNG** Austria recorded 7,614 CNG vehicles in use in 2018, of which 55 HCVs and 171 buses and coaches. Biomethane was available in three out of the 156 Austrian CNG refuelling points in use in 2019. The NIR signals the intention to maintain the existing CNG infrastructure. As in the NPF, the Austrian NIR exhibits a sceptical view on the future prospects of CNG vehicles. Due to the lack data, the attainment, progress and sufficiency index could not be calculated.
- **LNG** Due to the high focus on the national electricity generation based on renewable energy, the Austrian NIR is cautious also about the development of LNG for transport. The Austrian NIR only notes the intention to maintain one LNG refuelling point for 2025, and keep future target development open.
- **Hydrogen** As in the NPF, the Austrian NIR considers hydrogen for transport. However, the information contained in the NIR is rather limited. It is expected that the upcoming Austrian Hydrogen Strategy will shed more light into the future developments Austria envisages for this alternative fuel in transport.
- **Biofuels** The Austrian NIR provides no relevant information on biofuels for transport.
- **LPG** The Austrian NIR provides only past information on LPG vehicles and refuelling infrastructure.

Rail transport

- **Electricity** According to the NIR, electrification efforts have taken place, although the information provided is rather scarce.
- Hydrogen The Austrian NIR indicates the promotion of hydrogen trains in Tyrol.

Waterborne transport (inland)

- **Electricity** The Austrian NIR indicates that shore-side electricity supply is available at Austria's TEN-T inland ports but provides no information on battery-powered vessels as well as on specific future developments in this sector.
- **LNG** None of the Austrian inland ports had LNG supply available in 2018. Following the Austrian NIR, at least one inland port is expected to supply LNG by 2025. No information on LNG vessels could be found in the NIR.

Air transport

• **Biofuels** – The Austrian government did not consider the need for renewable jet fuel refuelling points in airports within the TEN-T Core Network in its NIR.

The Austrian NIR contains a lengthy list of measures, of which: 108 are legal and policy measures, 19 are deployment support measures and 32 RTD&D projects. Overall, the Austrian NIR contains a very comprehensive list of measures to support the AF infrastructure and vehicles, many of them still in place and financially supported. Concerning the Policy and Deployment & Manufacturing support measures, the Austrian NIR continues to provide a large amount of measures to support the uptake of alternative fuels for transport but the vast majority of them focuses on electricity for road. As in the NPF, nothing assessable could be defined for LNG. 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 lack of a complete plan regarding future targets and estimates does not facilitate the task of putting this assessment into perspective. Based on the impact seen during the implementation period, for the future it can be said that the measures for the pairs electricity/road and electricity/bicycles have a medium impact, those for the pairs CNG/road, hydrogen/road and electricity/rail have a low impact. Compared to the NPF, the NIR features an increased level of ambition for support actions to the electrification, in particular, of road transport. The key to success may lie in the measures supporting private recharging infrastructure, but at the moment, the effectiveness of the measures in place remains to be seen.

The Austrian NIR contains 32 RTD&D projects, which represents a significant increase compared to the 17 RTD&D projects identified in the NPF.

• Final remarks

The Austrian NIR provides a rather comprehensive report on the efforts made to implement the Directive. The NIR is, to a certain extent, in line with most of the provisions of Annex I of the Directive with the main exception that the Austrian NIR does not provide estimates for CNG vehicles and LNG vehicles and inland navigation vessels. Furthermore, concerning the infrastructure, targets for road recharging points are provided only for 2020 but not for 2025 and 2030, and for road and inland navigation LNG refuelling points for 2025; no information is provided for CNG, and LNG refuelling point targets for road and inland navigation are provided only for 2025. The NIR includes a very comprehensive list of measures which support particularly the electrification of transport (including bicycles), but also research and innovation and support for deployment and manufacturing.

Regarding electricity, the NIR estimates that there will be some 960,000 electric vehicles on the roads by 2030, representing about 16% of the fleet by that time. Taking into account the current situation and expected trend development, this level of ambition appears to be broadly consistent with the pace of deployment of electric vehicles estimated as necessary for the transition to carbon neutrality by 2050. However, the Austrian NIR does not provide targets for publicly accessible recharging points for 2025 and 2030. It would be beneficial to provide further information. Information on charging efficiency is provided. A basic level of shore side electricity is already supplied in the inland navigation ports of the TEN-T Core Network; however, no numbers are provided. Electricity to stationary aircraft is supplied in most Austrian airports. The Austrian NIR reports 42 recharging points at airports in 2018. Around 50 mobile ground power units are available. The NIR indicates that Austria aims at maintaining the existing electricity supply for stationary aircraft. Approximately 70% of the Austrian rail network is electrified. Further progress on rail electrification is ongoing, with a focus on high-traffic passenger and freight routes.

Regarding hydrogen for road transport, the NIR shows Austria's interest in developing hydrogen as a fuel for road transport. There are currently five hydrogen refuelling points and a small number of hydrogen fuel cell vehicles. However, no estimates are provided on vehicles and infrastructure for 2025 and 2030. Nevertheless, the NIR announces that a "Hydrogen Strategy" was in process of elaboration.

With regard to natural gas for transport, there is already a small number of CNG vehicles and a significant number of CNG refuelling points in Austria. Only one road LNG refuelling point is foreseen until 2025; this number seems insufficient taking into account the length of the Austrian TEN-T Core Network. Furthermore, only one of the two Austrian inland ports in the TEN-T Core Network will have a LNG refuelling point by 2025. Finally, the NIR considers no need for additional measures to support the development of the market for LNG vehicles and inland waterway vessels and their necessary infrastructure. Austria should corroborate its position in this respect.

Concerning LPG, the NIR shows that Austria already had a small LPG vehicle fleet and infrastructure in 2018, but the NIR does not provide any estimates of vehicles and targets for infrastructure by 2020, 2025 and 2030.

Further information should be provided on the consumption of biofuels in road transport and particularly aviation transport, where the promotion of such fuels is essential to contribute to emission reduction.

• ANNEX - Description of the Member State

On a surface area of 83,900 km², Austria has a population of 8.822 million people in 2018, which makes up for a population density of 105 inhabitants/km².

Number of main urban agglomerations

• 6 urban agglomerations > 50,000 inhabitants

In 2018, Austria achieves a per capita gross domestic product at market prices of \notin 43,640, which represents a per capita gross domestic product in purchasing power standards of 127 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 Austria is 1,084 km. The total road network length is 36,242 km, of which 1,743 km are motorways.

The following lengths of the TEN-T Road Corridors are present in Austria: 15% (559 km) of the Baltic - Adriatic Corridor, 3% (142 km) of the Orient / East Mediterranean Corridor, 2% (110 km) of the Scandinavian - Mediterranean Corridor and 11% (485 km) of the Rhine - Danube Corridor.

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

- Czechia (through the Baltic Adriatic and the Orient / East Mediterranean Corridor),
- Slovakia (through the Baltic Adriatic and the Rhine Danube Corridor),
- Slovenia (through the Baltic Adriatic Corridor),
- Italy (through the Baltic Adriatic and the Scandinavian Mediterranean Corridor),
- Germany (through the Scandinavian Mediterranean and the Rhine Danube Corridor) and
- Hungary (through the Orient / East Mediterranean and the Rhine Danube Corridor)

Number of registered road vehicles

At the end of 2018, Austria accounts for 6,316,320 registered road vehicles of which 4,978,852 are categorized as passenger cars, 422,745 as light goods vehicles, 72,486 as heavy goods vehicles and 10,037 as buses and coaches. The motorisation rate is 564 passenger cars per 1,000 inhabitants.

Number of ports in the TEN-T Core Network

- No maritime ports
- 2 inland ports in the TEN-T Core Network (Enns, Vienna)
- 2 inland ports in the TEN-T Comprehensive Network (Krems, Linz)

Through the 343 km inland waterways TEN-T Core Network, Austria is connected with Germany and Slovakia by the Rhine - Danube Corridor.

Number of airports in the TEN-T Core Network

- 1 airport in the TEN-T Core Network (Vienna/Schwechat)
- 5 airports in the TEN-T Comprehensive Network