

Report

Deliverable 2.1.0 *Guideline document For Data Collection and National* Access Points (NAPs)

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1 Introduction

In the course of the Programme Support Action (PSA) 'Data collection related to recharging/refuelling points for alternative fuels and the unique identification codes related to e-Mobility actors' that was subsequently given the name IDACS, or 'ID and Data Collection for Sustainable fuels in Europe', the 15 member states of the consortium mandatorily have to collect data related to alternative fuels infrastructures, namely electric charging points and hydrogen refuelling stations (HRS) as part of activity 2. Other alternative fuels, such as CNG, LNG, LPG and highly-blended biofuels can be covered optionally. The Grant Agreement that has been signed by all participating countries, describes the goals and requirements of this PSA and forms the basis for all these activities.

The aim of this exercise is to address current issues facing owners of alternatively-fuelled vehicles and related anxieties about the associated infrastructure caused by the currently low coverage of infrastructure units in Europe and persisting problems with downtimes of the extant infrastructure. The 15 member states of the consortium will be able to write their national implementation plans with the help of this document.

It is the ultimate goal of IDACS to support better consumer awareness and buy-in to the use of alternative fuels by making available better information about the location and availability of these infrastructures. With the help of IDACS, member states will also address and transpose Article 7.7 of the Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure which states that, when available, data on the geographic location as well as real-time information on charging/refuelling infrastructure shall be made accessible to all users.

Categories for which data on HRS, electric charging points and other alternative fuels have to be collected comprise the location (GNSS coordinates / street name), contact info for owner/operator, the opening hours, identification and payment methods operational Status (if the station is operational/ non-operational). Additional data categories, such as the available chargers and connectors, the e-mobility code and the occupation status have to be collected for electric charging stations.

As data collection mandatorily has to take place via the National Access Points (NAP) as defined in directive 2010/40/EU on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport, it is the aim of this document to give some guidance as to how this can be achieved.

Figure 1 shows an overview of the IDACS project. The green elements are defined elements in the PSA. The white elements need to be in place to be able to execute the PSA.

Governance	Governance	Governance	Governance				
Legislation	Activity 1	NAP (ITS directive)	Activity 2				
ID code IDRO NAP Data collection	ID code system IDRO	Database Data warehouse Data market place Data register	Data collection • Electric • Hydrogen • Alternative fuels				

Figure 1: Overview from IDACS

This document was drawn up in 2019, at the start of the IDACS project. This current version was updated in 2022 with the latest insights and state of play.

2 Purpose of this document

As mentioned in the introduction, the aim of this document is to give some guidance as to how the data provision via the NAPs can be achieved.

This Common Approach and Guideline document has the following purpose:

- To support countries who do not yet have a NAP or want to have it improved, by describing country-specific developments, highlighting the possible solutions and describing best practices
- To resolve issues beyond European Directives or the Grant Agreement that need common agreement in order to have a successful project outcome. In the Grant Agreement, the following are already mentioned, but additional items can be added when needed:
 - Quality and reliability of data collected
 - Transparency of data collected
 - Independency of parties collecting data
 - o Completeness and correctness of data collected
 - Use of open standards and protocols
 - o Sustainability and continuity of data collection after the PSA
 - International access to data
- To support participating countries in developing country-specific implementation plans as required.

This Common Approach and Guideline document has the following scope:

- 1. It contains the situation per Member State in 2019, and information about the setup of a NAP, based on information gathered from each country.
- 2. It gives an overview of the requirements that form the context (legislative, project).
- 3. It points out issues that have not been described in the proposal, but need agreement within the project in order to collaboratively move forward.
- 4. It gives an overview of issues that are being encountered with a proposal how to resolve.
- 5. It describes options that are available, and provides best practices when available.
- 6. It gives points of attention that give guidance to the development of a NAP in a country.

In order to realize the above, all countries are asked to provide their feedback to this document:

- Countries can provide issues, obstacles and opportunities they encounter in implementing the NAP and delivering the project results
- Countries can provide best practices or solutions to each other, making it possible to learn from each other.

This document is therefore a living document: as we move further in the implementation of data collection and NAP, we will encounter new issues that need guidance. It is also a collaborative exercise: most implementation knowledge sits within the countries and not in the Project Management Team. If we learn from each other, each country's outcome will improve. Therefore, the guidance given in this document, in particular on the data categories and the quality criteria, might be subject to changes as the actual data collection is undertaken by the NAPs. By 2021, deliverables 2.2.2. and 2.2.3. will, however, define those elements after experiences have been made.

Having proper legislation in place is a requirement to develop a well-functioning system of data

collection and sharing. It is not formally part of the IDACS project, as it is presumed that most Member States have already arrangements for it and therefore it is only partially described in this document. Activity 1, about the e- mobility IDs and the set-up of an ID Registration Organisation (IDRO) is described in deliverables 1.1.1, 1.1.2 and 1.2.1 and therefore not in this document. Figure 2 is an example how the ID-code can be used in the data set.

evse_id	👻 owner	operator	access_t	- power	- powe	er_k - ac_dc	connector	
NL*EV8*EEV8P1847286*1848512	EV-Box NL	EV-Box NL	public	regular	L	11 ac_3_phase	IEC 62196 Type 2 Mennekes	1
					1			
ID-code					Datas	set		
Activity 1				<i>,</i>	Activit	:y 2		

Figure 2: Relation between activity 1 and 2 (Example dataset)

To carry out activity 2 a functioning NAP needs to be in place. As the obligation to have a National Access Point (NAP) containing information about recharging and refuelling point is based on the existing ITS directive from 2010, the EC assumes that member states already have them installed. Consequently, setting up NAPs is not officially part of the IDACS project. Nonetheless, this document will give some guidance on the NAP in connection with data collection on alternative fuels infrastructure as there is a strong interdependency. Furthermore, these guidelines will serve as a manual for the consortium to define common criteria for data collection.

3 Starting situation per MS (2019)

The status per member state has been described in 2018 during the Plan of Approach, and has been enriched with the help of questionnaires, interviews and email contact in 2019. Missing information was further completed in 2021.

3.1 Poland

Electric

Currently the IDRO for Poland is with two organisations. UDT issues codes for CPOs to fulfil its obligation under the Act of Electromobility and Alternative Fuels. The charging / refuelling infrastructure availability database (EIPA) is the IDRO for the charge poles. EIPA is not only functioning as a IDRO but is also containing some data. Not all the dynamic and static data from IDACS is shared yet and development on this is needed. Poland does have a NAP (KPD), charging point and hydrogen station data is not shared on this platform but via EIPA.

Hydrogen

Poland did not set itself targets for hydrogen in its NPF. Nonetheless, two HRS are under construction in Warsaw and Gdansk and will be operated by the company Lotos S.A. They will be operational by 2021 at the latest.

Data is collected by the Register of Alternative Fuels Infrastructure (EIPA), a public register created by the Act on Electromobility and Alternative Fuels and kept by the Office of Technical Inspection (UDT),

a public entity. Data collection is mandatory only for charging points and LNG/CNG stations. By law, it is required to send the information about coordinates of natural gas stations and charging stations, current prices of alternative fuels and availability of charging points installed in public charging stations. In addition, electronic services shall be made available in the register allowing for:

- Registration and updating of data regarding the refuelling point for compressed natural gas (CNG), liquefied natural gas refuelling point (LNG) or charging point installed in a public charging station;
- 2. Sending up-to-date information on the availability of a charging point installed in a public charging station and current prices of alternative fuels.

The EIPA is also able to collect data for hydrogen stations. It is currently not doing so for two reasons: 1) no HRS is currently working in Poland and 2) it is not mandatory in the Act on Electromobility and Alternative Fuels to store such information for HRS. The UDT is collecting the data for other fuels. The data are publicly available, i.e. consumers receive information via the EIPA website. The raw data procured by UDT (that is later shown on the website) is available free of charge and can also be used to create other websites or apps by private entities.

Other fuels

Poland has an act for electromobility and alternative fuels that obliges all CNG and LNG operators to register in EIPA. At the moment there are 28 CNG stations and 3 LNG stations. Via the EIPA website (<u>https://eipa.udt.gov.pl/</u>) static data of publicly accessible refueling LNG and CNG stations are available for consumers. The raw data procured by the Office of Technical Inspection (UDT) are available free of charge and can be also to create other websites or apps by private entities. Data quality is sufficient, but additional work on data quality is needed to ensure it in full scope

Poland has B100 and bio CNG stations, although no data is collected in the EIPA for these high blended biofuels.

3.2 Austria

Electric

There is no law in place that contains all the parts from the directive. The company Austria Tech, owhned by the Republic, is already the appointed NAP in Austria. On this national access point there will be no public charge point data. Several private organisations are issuing EVSE-Operator-IDs, also a private initiative is running a website for e-mobilists to find charging-stations, but on voluntarily basis only. E-Control is preparing to build a charge point register. General overview on charge points is rather poor and especially price transparency is not good at the moment. A new law is proposed but currently there is no government. E-control is suggesting to put dynamic data in this new law, which is currently not the case.

Hydrogen

Currently there are just five publicly available hydrogen filling stations in Austria. They are all owned by OMV AG (which is one-third owned by the Republic). By that all Austrian hydrogen filling-stations can be found on OMVs website. Due to that there is no priority seen on legislative side to press for a public register for hydrogen filling-stations.

Other fuels

CNG is the only 'other fuel' that is currently available in a registry in Austria. Data collection for CNG stations is happening on a voluntary basis and E-Control is the body in charge to collect the data. There are currently around 100 CNG stations existing in Austria. Both static data as dynamic data on the availability of CNG and prices are publicly accessible via the website <u>www.spritpreisrechner.at</u>. A CNG filling station is always available in opening hours. The filling takes only a few minutes, therefore data on availability is not a big issue. The data quality is good.

3.3 Germany

Electric

By the end of 2019 it will be possible to create publications that refer to data from third parties outside of the German NAP. For example, a JSON feed could then be brokered. The NAP will act as a platform for metadata, i.e. there will be a description of the data source and its publisher as well as a link to the source. In the long term the current NAP will be replaced by a mobility data platform that supports different data formats while keeping all the current functionalities.

a sample of e-mobility data (showing real-time availability of recharging stations in the city of Bonn) can be found here: <u>https://new-poi.chargecloud.de/bonn</u>

There is also a dataset on the location of charging stations:

https://opendata.bonn.de/dataset/767a6a78-8c7e-46ac-ac64-33a4ebf70c4c/resource/767a6a78-8c7e-46ac-ac64-33a4ebf70c4c#{view-

graph:{graphOptions:{hooks:{processOffset:{},bindEvents:{}}},graphOptions:{hooks:{processOffset:{}
,bindEvents:{}}}

Hydrogen

The German NPF states a target of 400 publicly available HRS by 2025. As of September 2018, 76 700 bar retail stations are open to the public. By the end of 2019, the target of 100 stations is to be reached. The main operator of these stations is the company H2 MOBILITY Deutschland GmbH & Co. KG, whose shareholders consist of a consortium of the main mineral oil companies, car manufactures as well as refuelling equipment manufacturers and gas suppliers.

Data collection with regard to HRS is happening at several levels in Germany. Firstly, the National Organisation Hydrogen and Fuel Cell Technology (NOW) collects static data on the stations. Secondly, H2 MOBILITY collects static and dynamic data and makes them available through an app called H2.LIVE.

The Federal Highway Research Institute (Bundesanstalt für Straßenwesen - BASt) is the designated NAP in Germany. Intelligent transport data are being collected and made available on MobilitätsDatenMarktplatz (MDM), which is described in more detail in section 3.4. Possible setup of NAP

Other fuels

Germany has LNG, CNG and LPG stations. Furthermore there is a small market for high blended biofuels (bio CNG and E85).

Several private sector organisations collect data on gaseous fuels like the CNG and LNG sector's trade association 'Zukunft Erdgas' and the LPG sector's 'Deutscher Verband Flüssiggas'. A company called 'gibgas medien' also collects data on natural gas refuelling stations. Furthermore, private companies

maintain registers on E85. However, the data quality often cannot be accounted for. The data is publicly available via the websites and apps of the associations/companies mentioned above.

In case of the data collection on CNG and LNG by 'Zukunft Erdgas', next to static data, also dynamic data is collected. The register contains data on operability, prices, price compared to gasoline, mode of payment, supported vehicles, route planner, share of biogas, information on the refuelling process in the case of LNG. The data quality is sufficient.

3.4 Luxembourg

Electric

Over the last years efforts have already been made in order to collect and disseminate data on publicly accessible charging points. Since 2017 the publicly accessible charge points are collected by CHARGY (<u>http://chargy.lu</u>) and the data is published under an cc0 license on Luxembourg's open data portal. The provided data combines static as well as dynamic information (f.i. occupancy). Numerous reuses of the dataset, for instance a visualization of the available charge points on the national geoportal (<u>www.g-o.lu/chargy</u>), have since been created.

Since the used data format and structure needed optimization so that other stakeholders can reuse the data, the Ministry of Mobility and public Works as well as CHARGY took part in the IDACS project.

Since the beginning of the project, it became clear, that because the data is already on the NAP, the main task would be to contribute the definition of the DATEX II format and to finally implement it. Since this took longer than initially expected, Luxembourg will publish by the end of 2021 the CHARGY data in OCPI format, so that afterwards stakeholders can use this more popular format and for instance use the announced Dutch converter to change the format to DATEX II.

For 2022 a new subsidy scheme for publicly accessible charging stations is put place where the charge point operator have the obligation to publish static and dynamic data under an open format, preferably OCPI, for free on the national access point data.public.lu.*Hydrogen*

Luxembourg indicated no target for publicly available hydrogen refuelling stations in their NPF and does not plan on building up an infrastructure as of now. Consequently, there is no data being collected.

However, a first HRS is planned to open by the end of 2023 and the data regarding the availability of this station will be published on the national access point data.public.lu.

Other fuels

In Luxembourg, both CNG and LPG are available (12 stations in total). The data collection is happening at national level. If LNG will also be sold at a service station, this data will also be included in the data set. The dataset is published on *the national access point data.public.lu*.

3.5 Spain

Electric

There is a NAP in place in Spain, managed by the Directorate General for Traffic (Government body) (<u>http://nap.dgt.es</u>) however this NAP currently just collecting traffic and road information without including any data regarding eV charging or fuel supply.

Hydrogen

Spain aims at 20 publicly accessible hydrogen refuelling points for motor vehicles by 2025. Currently, no publicly accessible HRS is currently operating in the country.

The NAP's functions are fulfilled by a webpage managed by the Directorate General for Traffic of Spain (Ministry for home affairs), which as of now does not collect any dynamic or static data on hydrogen refuelling infrastructure.

Spanish Ministry for the Ecological Transition already collects data for other fuels (petrol & diesel but also CNG, LNG, LPG and biofuels). Data collection is mandatory for all these fuels according to Spanish Act (*Orden ITC/2308/2007*). This data, which comprises static and dynamic data is submitted by the petrol station operator using web forms and an Android app without any cost for the operator. Since 2007 the Ministry has implemented a Geoportal web showing this collected information: <u>https://geoportalgasolineras.es</u>.Within the scope of the PSA IDACS this Geoportal was extended to include Hydrogen and EVs data and linked it to Spain's NAP in DATEX format.

Other fuels

In Spain data exchange is mandatory since 2007 by law and takes place for LNG, CNG, LPG and high blended biofuels (Mostly E85 and B100). The Ministry for the Ecological Transition collects the data and manages a webpage where information is shown and freely available in several formats. (https://geoportalgasolineras.es). This webpage refreshes the information every 5 minutes and will be added to the Spanish NAP in 2020/2021 including a translation to DATEX format. Next to static data the following information is collected: price of each product in real time, discounts plans, brand and available services in the petrol station (store, water, air).

According to the feedback received, the data quality in general is sufficient for the drivers and transport professionals who are the main users of the data. Man issues are verification of the coordinates, missing stations and outdated petrol station data, which is hard to detect and solve. Collaboration of users is useful and is accomplished through several ways (warning webforms, mail box,...)

As a conclusion other fuels data collection is already done in Spain. Pending works are the inclusion of the current webpage in the Spain's NAP (which is ongoing) and the translation of data into DATEX, using the new DATEX II data model for Energy Infrastructure.

3.6 Belgium

After the kick-off of the project in June 2019, bilateral meetings have been set-up with different market parties. Based on these discussions, different scenarios for the implementation of IDACS are being developed. These scenario's will be shared with the stakeholders and worked out in stakeholder sessions.

Electric

The NAP is being set up as a register with links towards the data sets and data services. The first version of the NAP will be available at the end of 2019. Data on charging infrastructure will be implemented in the NAP at the end of 2020. Most likely via a hyperlink towards a dataset.

Belgium is considering a legal obligation for sharing data through the NAP. This legal obligation will probably be arranged on regional level, given the competences of the regions with regard to electromobility. The aspect of ID issuing will most likely be organized on BENELUX-level.

Hydrogen

As of April 2019, there are two publicly available 700 bar hydrogen stations in Flanders as well as one 350 bar station. Belgium's national policy framework (NPF) which was developed following the Alternative Fuels Infrastructure Directive, envisaged 20 HRS in Flanders by 2020, whereas there are no targets for the Brussels Capital Region and Walloon Region.

Currently, no data collection on the NAP is taking place in terms of hydrogen as a fuel. Nonetheless, the operator (DATS24) of the HRS in Halle manually transmits data to the H2.LIVE app via the H2.Operator app.

Other fuels

At the beginning of 2020, there were 137 CNG stations, 12 LNG stations and 30 ongoing projects (of which 25 CNG and 5 LNG) in Belgium. Data collection for CNG and LNG is already happening at the national level by an association of Belgian operators (www.gas.be). A CNG and LNG map can be found at https://www.gas.be/nl/rijden-op-cng/station-zoeker, for LPG there is a list at https://www.lpgwijzer.com/lpg-tanken-belgie/. On these websites, static data is shared. In Belgium there is a small marked for HVO and bio-LNG, but no data is shared on these fuels.

3.7 Hungary

Electric

At the end of September a private meeting was organised by the Hungarian Electromobility Association in the frame of the 'Electromobility Forum 2019' to introduce the project and its aims. The most important CPOs attended on this organisation and they got answers to their questions directly from the project coordinator, Anneke Bosma.

Based on the plans, the next step after the mentioned event was to take some bilateral meetings with the CPOs to gain them to join and study the project in more detail together. At these meetings the participants also discussed static and dynamic data and its structure which is managed by the CPOs.

The selected IDRO company, IFKA has also worked out the concept of their registration platform and created the webpage. Hungarian Public Roads held three Forum with the topic of NAP in the recent months on which they introduced the NAP portal (based on DATEX II data exchange standard), the existing module and the planned features for sharing the information of alternative fuel stations. Furthermore, they collected all the feedback from the NAP portal users (bug fixes, further needs for the upgrade) that they can improve the portal.

Based on the Ministry for Innovation and Technology 27/2019. (VIII.26.) Decree on the National Access Pont and road traffic information services Hungarian Public Roads operates the NAP in Hungary.

Hydrogen

There was no hydrogen filling infrastructure existing in Hungary before 2021. Therefore, the tasks related to hydrogen were not in the focus.

Other fuels

In Hungary, CNG, LNG (1 station) and LPG are available. Furthermore, bio-CNG is available for public transport (buses), but the station is not publicly accessible. Datacollection is happening at a national level, except for LNG and bio CNG. The data is collected by different organisations, both private and

public, and made available on websites (e.g. <u>holtankoljak.hu</u>; <u>mobiliti.hu/cng</u>/). Next to static data, also the fuel price is shared on these websites. The data quality is sufficient.

Regulation

Missing elements of the regulatory framework for both IDRO and NAP were recognized by the Hungarian consortium members and the related work was started. Due to the government reorganization in Hungary, the regulation framework tasks are in progress.

3.8 Czech Republic

Electric

There is a functioning NAP in Czech Republic but it's not sharing charging data yet. A technical specification for a functional new module of the National Traffic Information Center (NTIC)/NAP is currently being prepared. This is currently in the analytical phase of the project. Czech Republic would like to use the experiences of other countries to ensure that the technical specification is in line with other countries.

Analysis of Ministry of Industry and Trade (MIT) and Ministry of Transport (MoT) requirements are underway in their agenda. The analysis also takes into account planned changes of legislation, including the competencies of the MoT and the MIT. Data collection is also communicated with representatives of the largest providers of charging services in the Czech Republic. By integrating the new function module into the NTIC, Czech will ensure that the distribution of static and dynamic data for the entire Czech Republic will be in DATEX II format. The aim is to gather information from the whole territory of the Czech Republic not only from the TEN-T communications network. It is likely that the new function module will also contain identification codes for each charging station. In this case, the free registration, issue and maintenance of identification at the end of 2019. In 2020, we expect the contract to be announced and the functional module to be implemented.

Hydrogen

The Czech Republic aims at five publicly accessible refuelling stations by 2025. Currently, one private station exists at Neratovice. Data collection is not yet happening or publicly available.

The NAP's functions are fulfilled by the Road and Motorway Directorate of the Czech Republic, which as of now does not collect any dynamic or static data on hydrogen refuelling infrastructure. For the future it is planned to have the NAP collect the data via an internet platform.

Other fuels

In The Czech Republic there are 2 LNG stations (planned 13 to 2022), 192 CNG stations, 938 LPG stations, 202E85 stations and B100 stations (number not available). Data is collected by the Ministry of Industry and Trade. A list of all pumping stations is available at the webpage of Ministry of Industry and Trade (https://www.mpo.cz/cz/energetika/statistika/statistika-cerpacich-stanic-pohonnych-hmot). On this website, the address and fuel availability are shared. No information on GSS-coordinates and opening hours are shared on the website of the Ministry. However consumers use several applications of individual stakeholders (operators of respective pumping/refuelling stations) or their association. These maps contain GSS-coordinates and opening hours. For example in case of LPG there is list of LPG stations available at the webpage http://www.lpg.cz/cerpaci_st/cerpacky.php. In case of CNG a relevant map of publicly accesible CNG stations in the Czech Republic can be found

the webpage <u>http://cng4you.cz/stanice/informace-na-cesty/mapa-cng-stanic.html</u>. Data quality is not sufficient, since there is no guarantee that all refuelling stations are on the application.

3.9 France

Electric

The directive for alternative fuels infrastructure (Directive 2014/94/EU) is translated into legislation and is waiting for approval by the national government. The IDRO is set up by Afirev and is now 2 years in place. The NAP is prepared for data collection. The national access point it managed by Directorate General for Infrastructure, Transport and Sea (DGITM). There is data about charging points shared by Etalab. The dynamic data is not complete yet. After the legislation is in place, the data must be added. This will speed up things.

Hydrogen

Data on hydrogen refuelling stations is not collected nor available in a gathered format.

Other fuels

France initially did not want to be involved in activity 2.1.3-2.1.6 Other fuels and therefore did not send input.

3.10 Greece

Electric

The Greek Ministry of Transportation & Infrastructure together with National Technical University of Athens have completed the system architecture for ID issuing called «MYFAH». The system is in line with the framework defined in IDACS project as well as the Electro mobility Law 4710/2020 which was published in the Official Gazette no. 142 A of 23/7/2020 and the Common Ministerial Decision No. 355033/2021 which was published in the Official Gazette 5776 / B / 10-12-2021 defining the 'Management and transmission of data related to the operation of the electric market, the points of recharging of electric vehicles and the access rights to the Register of Infrastructure and Electricity Market Bodies (M.Y.F.A.H.) of the interested parties.'. The activities for the the development and launch of the first official version of the IDRO platform related to the interconnection of electric charging system, which is composed by Charge Points, Charge Point Operators and Distribution System Operators (DSO) have been completed and the MYFAH allows charging points to be issued instantly in association with the status 'operational'.



Figure 3: MYFAH for ID issuing



Figure 4: IDRO - https://electrokinisi.yme.gov.gr/public/IDRO/?mlang=en

After the launch of the MYFAI, a wide share of electro-mobility market stakeholders and interesting parties has already responded positively to the new IDACS-based regulations by being registered to the IDRO platform and being assigned IDs, while the process of uploading static and dynamic data is on going. In the figures below, the IDRO operative environment is presented for enabling the registry of end-users.

The related link to the IDRO and the registered CPOs and EMPs is: https://electrokinisi.yme.gov.gr/public/IDRO/

Hydrogen

In Greece, there are only two (2) experimental units for the production of hydrogen; the first in the Center for Renewable Energy Sources & Savings (Pikermi, Attica) and the second in the Centre for Research and Technology (Thessaloniki). In the near future, it is not expected the wide-ranged application of hydrogen in the transport sector due the need for the development of proper infrastructure (77226/1-31 October 2017). Consequently, no data collection related to hydrogen is performed. Moreover, Greece has an operational NAP accommodating static and historical data.

Other fuels

In Greece, LNG (only sea transport) (2 stations), CNG (27 stations and 4 under construction) and LPG (1.197 stations) are available. Currently, biodiesel (blended with conventional fuels) is the only biofuel on the Greek market. However, new efforts have been undertaken in order to boost the production of biofuels on the local fuel market.

Greece promotes the application of alternative fuels for the transportation on a national level. For this reason, data collection is performed to facilitate the consumers. In case of LPG, the data is collected and presented by http://www.fuelprices.gr/supervised by the Greek Ministry of Transportation & Infrastructure, whereas for CNG the data collection and presentation is performed by the portal https://www.fisikon.gr/ and is supervised by private a organizations. On these websites, consumers are informed about prices and other issues relevant to the operational status of a fueling station. No information is available on the available amount of fuels. The data quality is sufficient.

3.11 Portugal

Electric

There is no functioning NAP in Portugal. It is expected that the NAP will be active in the first half of 2020. Regarding data collection, MOBI.E have almost all the static data required in the Grant Agreement. The mobility sector is obliged to give information to MOBI.E. There will probably be need of new regulation with changes in the data requirements . As in Portugal, for now, only payment via contract with a EMP is available, there is no information about identification and payment methods. Portugal also have most of the dynamic data required for the EVSE, with the exception of the price for ad-hoc charging. This type of payment is expected to be available by the end of 2019, beginning of 2020.

In Portugal, publicly accessible charging infrastructure is all that is open to public. They can be at public spaces or at private spaces and are not obliged to be open 24/7, providing that they have a defined schedule. All the charging points must be registered in MOBI.E national network.

MOBI.E considers that pricing data combined with availability is a sensitive information and shouldn't be publicly and simultaneously available in short period of time like fifteen minutes.

Hydrogen

No national targets for hydrogen refuelling infrastructure were established in the Portuguese NPF. Consequently, there are no hydrogen refuelling points for motor vehicles and no data collection is taking place.

Other fuels

Since 2009, Portugal introduced a web platform of fuel prices, <u>www.precoscombustiveis.dgeg.gov.pt</u>, created by national legislation, Decree-Law n.º243/2008 of 18th December, where filling stations

operators located on the mainland of Portugal are obliged to register the retail prices of fuels sold in their filling stations, before applied there.

The same operators are required to report, annually, the volume sales of previous year, made in there filling stations, (also considering the volumes with discounts), by type of fuels, in order to obtain a daily weighted average price, by type of fuel. This volume of sales, is, obviously, confidential. These weighted average prices are useful to be sent, once a week, to European Commission, according to our community obligations.

In addition, the operators are required to send and update information about location, opening hours, state of operation i.e, if filling station is open or closed, between other elements, such as schedules and support services present in the filling stations.

DGEG – Directorate General for Energy and Geology, is the public entity responsible for the management of this publicly available web platform.

In Portugal there is a small market for highly blended biofuels (B10, B15 and B20), but not yet truly developed. That's why only 5 filling station of Biofuel B15 is available in the webpage

Regarding other alternative fuels, Natural Gas is commercialized in 8 filling stations and LPG in nearly 350 filling stations, in a total of nearly 3000 filling stations registered in this webpage.

At the home page of that website, it is possible to see the top of the five cheapest filling stations operating in the mainland of Portugal. It also offers the possibility to search on the map of Portugal, the filling stations containing information by fuel sold and respective prices, by brand, by address, by geographical location and by opening and closing hours.

This web platform and it's database, will act as a data source that will be pointed by the Portuguese NAP. It will be necessary to prepare technically this integration, namely the data conversion to DATEX II.

3.12 Croatia

Electric

In Croatia charging services are currently provided by Hrvatski telekom d.d (<u>http://puni.hr/index.php</u>) and HEP d.o.o (<u>https://elen.hep.hr/</u>), which provide access to the most publicly available chargers (they are both CPOs and MSPs). It is expected that with the development of the electric mobility market in Croatia new providers of charging services for electric vehicles will start to appear.

Croatia has created the preconditions and basis for the exchange and collection of data by amending the Law on the establishment of infrastructure for alternative fuels, which entered into force in May 2022 (https://narodne-novine.nn.hr/clanci/sluzbeni/2022_06_63_909.html). Based on the law, an Ordinance is expected to enter into force by the end of June, which will regulate in detail the exchange and collection of real-time static and dynamic data. The Ordinance has passed consultations in working bodies, and is expected to meet in consultation with the interested public by the end of June, after which it will enter into force. Croatia has developed an IT system for the functioning of IDRO and NAP, which can be found at the following link: https://pametnamobilnost.hr/, and which will become fully functional once the Ordinance enters into force and becomes applicable.

Hydrogen

There is no hydrogen infrastructure in the Republic of Croatia, but there are four hydrogen vehicles registered, of which 4 cars (which are hydrogen used in alternative to classical fuels). According to the estimation made for the needs of the National Policy Framework, in the scenario of the faster development of the market for hydrogen-fuelled vehicles, the implementation of projects for construction of a pilot filling station in Zagreb and/or Rijeka is planned to ensure their traffic along the Mediterranean Corridor of the basic TEN-T network which is located in the territory of the Republic of Croatia.

In the long run, hydrogen is projected / included as one of the strategic energy sources in the context of the New Energy Strategy (especially by 2050), which is currently in public debate in Croatia.

Other fuels

There are about 350 LPG filling stations in the Republic of Croatia, 4 CNG filling stations, and last year the first LNG filling station was opened as part of the Blue Corridor project. Biofuels in Croatia are mainly used blended in petrol or diesel fuel in a share of up to 5 % and 7 %, and such fuel does not have to be displayed at the point of sale (filling stations), therefore the information on the number of public filling stations is not available. Biofuel mixtures from 5 % -10 % into petrol, or above 7 % in diesel fuel must be displayed at points of sale; such mixtures are mainly used by transport companies, in either passenger or freight transport, on the basis of contracts with producers/traders of biofuels.

Retailers must provide price information on gasoline, diesel, LPG, biofuels, fuel oil and blue diesel on a daily basis, and average fuel prices are calculated on this basis. Information on the availability of these fuels, location of filling stations, opening hours and fuel prices can be found at the Ministry of Economy's website https://min-go.hr/#/

For the following fuels data are collected on the website of the Croation Minstry of Environment and Energy: LPG, bioethanol, biodiesel, biogas, biomethanol, biodimethylether, Bio-ETBE and Bio-MTBE. Currently there is no market for highly blended bio-fuels, but if they hit the market, the information will be provided. Information on CNG and LNG is not available.

It is possible to search for available fuels at gas stations on the map. Additionally, daily average fuel prices can be seen, and those retailers with the cheapest prices can be identified.

3.13 Lithuania

Electric

IDRO was approved and signed by the Minister of Transport and Communications of the Republic of Lithuania 14 of May, 2020.

IDRO is set-up as Lithuanian Road Administration. The Road Administration has been issuing ID codes since 1 of July.

The registration of EV operators and the issuance of codes take place in an automated way on web side ev.lakd.lt. Operators have to complete a electronic application in order to receive a code. The information system can collect both static and dynamic data from Operators. All data currently can be displayed publicly on Lithuanian Road Administration's web page

Tools for the transmission of data through the NAP have already been developed. Currently, all EV data can be accessed via the following links <u>https://ev.lakd.lt/open_source</u> and <u>https://maps.eismoinfo.lt/portal/apps/sites/#/npp</u>. NAP support DATEX II.

Hydrogen

There is no hydrogen infrastructure in Lithuania. However, the Lithuanian Ministry of Transport and Communications is developing a strategy on how hydrogen infrastructure could emerge on the Tten-t network. First hydrogen station is planned to be built by 2025.

Other fuels

In Lithuania, there are more than 526* LPG station and highly blended biofuels are available. Lithuania has 8** CNG stations, 4 of them are publicly accessible , but still has no LNG stations. No data collection is happening at the national level. Information on transport fuels is available on the websites of gas station operators and there are a few private initiatives. However, the information is fragmented and does not include all stations. 1st July 2021 The Law on Alternative Fuels entered into force, which obliges operators of all public and semi-public electric vehicle charging points to register and provide data to the Public and Semi-Public Electric Vehicle Charging Access Information System.

- * https://www.eafo.eu/countries/lithuania/1742/summary
- ** https://sgdujos.lt/lt/uzpildymo-stotys

3.14 Slovenia

Electric

In compliance with EU Directive 2010/40 and its Delegated Regulations 2015/962 and 2017/1926, the NAP of Slovenia has already been set up for real time transport and traveling data. NAP is managed by National Traffic Management Centre, division within Ministry of Infrastructure.

After coordinator of the IDACS project was appointed at the beginning of the 2020, Kick Off event was organized for the stakeholders and intensive internal talks were held about the national approach to fullfil the requirements of the project. It was discovered that Slovenia doesn't have any register of charging points (CPs), there is no official record about the number of CPs, technical specifications and locations and there is no national legislation for alternative fuels infrastructure deployment (AFI). There were also no official record of the entities acting as Charging Point Operators (CPOs) or Mobility Service Providers (MSPs). However several web portals and APPs have already existed set up by major CPOs like – www.gremonaelektriko, www.onecharge, www.polni.si. Static and dynamic data of existing CPs available on this portals were not comprehensive and reliable.

On the basis of findings several decisions were made: the existing NAP will be upgraded with additional layer of static and dynamic data of CPs, ID Registration Organisation (IDRO) will be for the time being organized within Ministry of Infrastructure (until the national Alternative Fuels Infrastructure Act will be adopted) and there will be also the obligations for EVSE ID code registration, Ministry of Infrastructure shall begin with the preparations of national legislations for AFI (DG Reform, Structural Reform Support Programme).

Hydrogen

There has been only one hydrogen refuelling station (HRS) set up in Lesce, which was part of a demonstration project but is no longer operational. At the moment, there is no knowledge that some additional HRS might be set up.

Other fuels

There is no reliable data about the refuelling points (RPs) for other alternative fuels in Slovenia. LNG, CNG and LPG RPs are being set up within EU projects, mainly CEF programme and with private initiative. There is no web portal where the locations and other data of RPs are available.

By the end of 2021 as a part of MULTI-E CEF project 15 CNG RPs will be set up along TEN-T corridors by Petrol d.d., and 2 LNG RPs will be set up withing SiLNGt CEF project by Butan Plin d.d. in Sežana and Ljubljana.

3.15 Netherlands

Electric

After the national Kick-Off for the IDACS project, several meetings with experts in the national working groups were held to discuss the national approach for both the ID issuing and the data collection. The discussions with the stakeholders are ongoing and their expertise is being used as input for the discussions on the European level.

Several options of the set-up of the National Access Point and the IDRO are being discussed and explored. There is a NAP in place: <u>NDW</u>. Right now, the set-up of the NAP is foreseen as a register (so not a database), consisting of hyperlinks to a CPO or data aggregator, where a database can be found. The CPOs can therefore set conditions for data provision and usage between them and the user of the data. There will be no database funded by the government. Quality criteria, monitoring and other criteria for data collection will be organized separately.

Concerning Data Collection, a proposal has been prepared for an amendment of the national legislation on Alternative Fuels to oblige the exchange of data as determined in the Grant Agreement through the designated National Access Point. The common goal of both the project and the concept law amendment is to inform the EV driver as good as possible. The Dutch legislation (implementing the EU Alternative Fuels Infrastructure Directive) will leave as much room for market solutions and interpretation as possible. Also, the legal status of the ID Registration Organisation (IDRO) eViolin is under discussion, because its status is also relevant for Belgium and Luxembourg, as they are being serviced by the same organisation.

Hydrogen

As of May 2019, there are 2 publicly available 700 bar hydrogen retail stations in the Netherlands as well as two 350 bar stations. By 2020, the Netherlands envisage a total of 20 HRS, whereas the preliminary target for 2025 is 50 stations. Currently, there are two operators in charge of these stations, however, other industry players plan to deploy hydrogen refuelling infrastructure.

Currently, no data collection on hydrogen refuelling infrastructure is taking place via the NAP. Nonetheless, there is a Whatsapp-Group in place that informs FECEV drivers about the statuses of HRS (down/out of service/ expected time starting service again). Furthermore, the operator of the HRS in Helmond (WaterstofNet) manually transmits data to the H2.LIVE app via the app H2.Operator.

Officially, there is not yet a NAP in place, however the *Nationaal Toegangspunt* is a candidate.

Other fuels

In the Netherlands, there are 28 LNG stations, 160 CNG stations and 1200 LPG stations. Furthermore, there are some stations for biofuels (bio-CNG, bio-LNG, E85, B20, B30, B50 and B100).

Data is shared on the websites of fuel suppliers. For CNG, an overview of all tank locations can be found at the website of Pitpoint (<u>https://www.pitpointcleanfuels.com/nl/</u>). For LPG, an overview of tank locations is given at the website autogas.nl. On these websites, static data are shared. Furthermore the Dutch private biofuels platform runs a map with data on highly blended biofuels (bio-CNG, bio-LNG, E85, B20, B30, B50 and B100). ((<u>https://drivenbynature.org/</u>). The information on this map is however not accurate, for the website is updated only once a year.

3.16 Overview all member states

An overview of the work currently being done is made via email, calls and workshops. It can be seen as a summary of the current situation. The green parts are done, for example setting up a NAP that can function as the NAP for electric charge points, hydrogen stations and other fuel stations. This doesn't mean that data is collected in it, as seen in the next question. The orange parts are being worked on at the moment. The red parts are not yet being worked on or available.

Country	Poland	Austria	Germany	Luxembourg	Spain	Belgium	Hungary	Czech Republic	France	Greece	Portugal	Croatia	Lithuania	Slovenia	Netherlands
IDRO															
Is there a NAP?															
Data collected in NAP?															
Electric															
Hydrogen															
Other fuels															

Figure 5: Overview of work being done in 2019

Country	Poland	Austria	Germany	Luxembourg	Spain	Belgium	Hungary	Czech Republic	France	Greece	Portugal	Croatia	Lithuania	Slovenia	Netherlands
IDRO															
Is there a NAP?															
Data provision at NAP	?														
Data collection national level?															
Electric															
Hydrogen															
Other fuels															

Figure 6: Overview of work being done in 2021

The above tables on progress have been further updated in the Deliverables 2.1.1 - 2.1.6. Here is described which static and dynamic data is collected from electric charging points, hydrogen stations and other fuels filling stations. Deliverable 2.2.1 highlights the provision of data available at the NAPs.

4 National Implementation report (2021)

4.1 Poland

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Set-up NAP

Poland was decided to use the existing NAP for the data provision of alternative fuels. This task is carried out by General Directorate for National Roads and Motorways (GDDKiA) with cooperation with Polish IDRO (UDT). GDDKiA downloads data from IDRO and displays them via NAP.

Set-up IDRO

From the beginning of the project, the IDRO tasks are executed by UDT. UDT is a government authority that also authorizes publicly accessible alternative fuels stations. In line with the Electromobility and Other Alternative Fuel Act, one of the obligations of the operators is to register the public charging station in the IDRO (Article 42 of the Act). This register is public and the data it contains are accessible to any Internet user. This applies only to those stations that are open to the public. All information listed below is provided via the ICT system. Polish IDRO collect, process, display via web and convert data from JSON to DATEXII format.

The data collected in the IDRO are made available to the public in at least two forms - an interactive map and files in JSON format, available at eipa.udt.gov.pl.

Procurement

All tasks related with implementation IDACS project were carried out by UDT.

In November 2021 a study was commissioned to anlyze how the IDRO system and website function in terms of usability for various entities.

Legislation

In the first days of December 2021 an amendment to the Electromobility and Other Alternative Fuels Act was finally adopted. In terms of implementation, ID codes are being assigned and the collection of static and dynamic data for charging points and natural gas refueling points (both CNG and LNG) continues. Now, that the law has been passed, the system also has been required to assign IDs and collecting data for HRS. Fees have been introduced for assigning an ID codes for all alternative fuels, which is now 10 PLN per month (summary 120 PLN per year ~ 28 EUR), payable monthly by every CPO.

DATEXII

A JSON to DATEXII data conversion has been developed for all alternative fuel data collected by IDRO.

4.2 Austria

Contact person Name: Daniel Hantigk Contact details: <u>daniel.hantigk@e-control.at</u> Organisation: Energie-Control Austria für die Regulierung der Elektrizitäts- und Erdgaswirtschaft (E-Control)

Set-up NAP

The European ITS Directive was transposed into the national ITS Act (IVS-G) in Austria in 2013 as the 'Federal Act on the Introduction of Intelligent Transport Systems in Road Traffic and their Interfaces with Other Transport Modes'. AustriaTech was commissioned by the Federal Ministry for Climate Protection, Environment, Energy, Mobility, Innovation and Technology to establish and maintain this body.

The Austrian NAP is set up as a data register. It's public website <u>https://mobilitydata.gv.at/</u> went online in 2019. In 2020 E-Control registered and connected it's Austrian charge-point directory (<u>www.ladestellen.at</u>) with AustriaTech. All data from publicly available charge-points in Austria that are collected by E-Control are available via an API free of charge. The data can be accessed by E-Controls self-defined format – basically following the OCPP standards – or in DATEX II. Since 2021 all access-urls, information and documentation for third-party users are available at the Austrian NAP.

Set-up IDRO

Historically several associations devoted to e-mobility were issuing IDs within their community. Most of the free of charge one of the semi-commercially. Already 2019 – with Austria already being part of the IDACS project – a huge package of legislation was in the making, dealing mainly with the funding of renewable energy (later being called 'Renewables Development Act'). As a part of this, it was planned to appoint E-Control as IDRO for Austria since it was already running the national charge-point directory and by that already had a consolidated collection of all existing IDs. Due to several changes in government this package was delayed until summer 2021 when it finally passed the floor of Austrian parliament. Since than E-Control implemented a self-service ID assignment application into the administration-website of the charge-point database, making the application for an ID and the registration of a new charging-station one simple process for operators new on the market. The application includes the possibility to download a certificate with official signature to prove ownership of the respective ID. This application went live in January 2022. Since then, about 140 new IDs have been issued.

Procurement

Procurement is used for all of E-Control's software development projects. For this purpose, E-Control has concluded framework agreements with several suppliers, each of which is invited to compete for new projects. In the case of projects regarding charging stations two suppliers were involved for software development. One, that already developed E-Control's fuel price calculator which is online since 2011. For reasons of cost and efficiency, its database and software structure, as well as the basic features of the graphical user interface, were used as the basis for the charging-point directory. This supplier also developed the ID assignment application. Another supplier developed the DATEX II translator that is implemented in the charging-point directory's API. The scope, specifications and development requirements are always worked out in workshops with E-Control's experts, E-Control's IT project managers and the external company.

Legislation

As stated earlier, originally most of the data that operators were reported to the directory had been voluntary. By law they were only required to report the location (address, geo-data). While the rate of reported data for most of the categories also defined within the IDACS project were pretty good (around 90%) some of the crucial information were reported just badly. This was the case especially with ad-hoc-prices. Also CPOs made it clear pretty early that they would not report real-time data about the availability of charge points voluntarily since they considered that to be a asset for business cases or at least customer- loyalty. On the other side the whole e-mobility market is still a

young and very dynamic market and since in Austria most legislation dealing with energy has to pass the floor with a 2/3 majority, which makes it very hard to adopt legislation to new, fast moving development on an emerging market, E-Control came up with the suggestion not to define data categories that have to be reported by CPOs within a law, but rather to have an authorisation for the minister to issue ordinances defining those categories in the above mentioned 'Renewables Development Act'. This ordinance is about to be finalized by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) and is expected to come into effect in the third quarter of 2022.

DATEX II

Once Austria was part of IDACS, it was decided on E-Controls side to develop and implement DATEX II directly into its API parallel to the projects progress. During the implementation progress E-Control's IT project manager presented the concept to IDACS' members and although the translator is not a stand-alone application that could be directly used by third parties, its documentation is publicly open and E-Control as well as E-Control's development partner in that case, are happy to share their knowledge to any member state planning to also implement DATEX II directly to their application and help them during the process.

4.3 Germany

Contact person	
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Set-up NAP

In Germany, the Mobility Data Marketplace (MDM) takes up the role of the National Access Point. The MDM provides two functions. First, the portal function as an interactive website for providing, searching and subscribing to traffic data. The necessary contractual and commercial requirements are completely up to the participators, the MDM provides an organisational framework with its terms and conditions. Second, the broker function, that primarily provides the reliable data exchange between data supplier and data consumer. Data delivery and reception are securely logged. The MDM is a mere 'delivery platform', i.e. user data is neither amended nor saved. Prevalent internet standards serve as communication protocols. Certificates, signatures and logging of processes ensure high security regarding data exchange. (Technical Details - MDM Portal (mdm-portal.de))

Set-up IDRO

Germany has mandated the activity to their association for Energy and Water Industries (BDEW). The bdew has been commissioned in 2014 to assign e-Mobility ID. In 2018, the Energie Codes and Services GmbH has taken over the issuing and management of e-Mobility ID, including all existing contracts. By December 2021, 978 Operator IDs and 875 Provider IDs has been issued.

Procurement

The consulting mission on data collection for electric recharging stations was awarded to Cosmic Cat GmbH and has been launched in May. In six workshops a concept for a viable way for collecting static and dynamic data of charging stations whilst ensuring market buy-in in the absence of regulatory provisions was worked out.

Based on these results, a procurement process for the development and implementation of an DATEX II protocol converter has been launched. It will start in December 2021.

A procurement procedure for procuring static and dynamic data of hydrogen refuelling stations in Germany on the NAP in the DATEX II format has been started in the second quarter 2021.

Legislation

The Charging Infrastructure Ordinance (Ladesäulenverordnung, LSV) has been updated in September 2021. In the new version, charging station must provide an interface to make dynamic data such as the occupancy status available.

DATEXII

A converter from OICP and OCHP to DATEX II will be developed and published under open-source licence.

4.4 Luxembourg

Contact person Name: Gilles Caspar Contact details: gilles.caspar@tr.etat.lu Organisation: Ministry of Mobility and public Works

Set-up NAP

In Luxembourg it was decided to use the existing NAP also used under the ITS directive. All the required dataset are therefore published on the national open data portal (<u>https://data.public.lu/</u>) and this in general a cc0 license. Even if the open data portal was not initially designed to also figure as a NAP, the site has so far proven to be effective in order to host the different static and dynamic datasets for the project.

Set-up IDRO

At the beginning of the project, the ID issuing activities from Belgium, the Netherlands and also Luxembourg were because of a political agreement back in 2017 executed by <u>eViolin</u>, an association by CPOs and MSPs. The preference of the BENELUX countries was to set up a sustainable governmental organisation for the IDRO. Together with Belgium and the Netherlands, a Benelux common service to manage ID issuing is finalized in the second quarter of 2021 in collaboration between the Benelux Secretariat-General and the involved regions and countries. This <u>Benelux-IDRO</u> launched in July, simultaneously with the hand-over of ID issuing activities from eViolin to the Benelux Secretariat-General. Agreements with the current IDRO were made to formally take over the tasks once the system is ready.

This Benelux IDRO is also appointed to perform the IDRR tasks.

Procurement

Procurement was mainly used for the set-up of the IDRO. For the IDRO, based on the quotations, a company is chosen to design the technical set up and the web portal. To specify the requirements, the results of Deliverable 1.2 and 1.3 were closely examined.

Legislation

So far the current legislation that has been put in place since the transposition of AFID has not been modified. However, AFIR and in particular its data collection provisions will probably modify the current legislation and further changes will also be needed.

DATEXII

The dataset of the public charging infrastructure, which is maintained by CHARGY, will be published by the end of 2021 in OCPI format on the NAP. From there stakeholders can for instance use the announced Dutch converter to change the format to DATEX II.

At the beginning Luxembourg investigated to directly implement an DATEX II conversions of the CHARGY dataset. However, due to time constraints and the pending end of the IDACS project, this was finally no implemented.

For hydrogen, no HRS exists at the moment. However, the operator of the planned station is registered on H2.LIVE and the data from the HRS will be offered in DATEXII format.

4.5 Spain

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Set-up NAP

In Spain it was decided to use the existing NAP for the data provision of traffic information (Directorate General for Traffic) (<u>https://nap.dgt.es</u>) and the geoportal of petrol stations (traditional and alternative fuels) hosted by the Ministry for the Ecological Transition (MITERD) <u>https://geoportalgasolineras.es</u>.

Data collection tasks are being executed by MITERD and its architecture is a national register. National legislation is currently under approval procedure and is expected to be approved before summer2022. This new Ministerial regulation will obligate CPOs to make their data accessible for electric charging points via this NAP. This has been communicated and worked extensively with CPOs association. Meanwhile IT developments of the national registry are undergoing. Static data submission procedures are already developed and dynamic data are expected to be ready late 2022 following OCPI data structure.

For Hydrogen and other alternative fuels there is already an obligation in place for petrol stations to send static data and prices to the MITERD registry. Alternative fuels (CNG, LNG and biofuels) data are being collected. There is no HRS information at the moment since no publicly accessible HRS is currently operating in the country.

Set-up IDRO

Ministry for the Ecological Transition will perform the IDRO tasks in Spain. For this purposes CPOs and EMPS will be obligated to ask for a ID code and ID codes will be issued. ID issuing will be a requisite to submit charge points information to the NAP. This obligation is included in the Ministerial regulation to be approved in 2022. IDRO webpage will be included in the Ministry's webpage for data collection.

Procurement

Procurement was mainly used for the IT development of data collection & IDRO webpage.

Legislation

Ministerial Order 'ITC/2308/2007' forces petrol station owners and operators to register petrol

stations and send static and dynamic information to the Ministry for the Ecological Transition. This information is published and updated in real time in a webpage (<u>https://geoportalgasolineras.es</u>). This information includes alternative fuels such LPG, CNG, LNG and biofuels. In 2020 this regulation was amended to include hydrogen information.

On the contrary there was no obligation in place to send charging points information to the Ministry nor registration of chargers and companies in any register. In order to set this obligation and as a result from PSA IDACS needs a new regulation framework is being developed. In the first place, some provisions were included in the Energy Transition and Climate Change Act (Ley 7/2020, de Cambio Climático y Transición Energética) in order to set a mandate to the Government to develop an information system for EV chargers and publish this information in the Spain's NAP. MITERD was also appointed by this act to regulate the data collection procedure and content of information. In application of this MITERD is currently processing a Ministerial Regulation that stablish the static and dynamic information to be collected –following PSA IDACS agreements- and the obligation of CPO and EMSP to ask for an ID. This regulation is facing its last steps to be approved in 2022 and was submitted to public consultation in late 2021 (<u>https://energia.gob.es/es-es/Participacion/Paginas/DetalleParticipacionPublica.aspx?k=407</u>)

DATEXII

Most CPOs in Spain use the OCPI protocol. Data will be collected in the NAP following OCPI data structure. This data will be translated to DATEXII format following PSA IDACS best practices.

4.6 Belgium

Contact person

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Set-up NAP

The Belgian NAP was developed in parallel with the start of the IDACS-project and was launched in February 2020 (www.transportdata.be). The NAP is mostly set-up as a register with links to external datasets, although small/static datasets can be uploaded directly on the NAP. Instructions on registration and adding data are available on the NAP. Data on charging infrastructure is shared through the NAP. From the first of January 2022, a legal obligation for data sharing entered into force in Flanders. For Hydrogen, the platforms E-HRS-AS and H2.LIVE have been registered at the NAP, with links to their POI data via open APIs. For other fuels, a static dataset with LNG/CNG stations is shared through the NAP. The instructions on the NAP are complemented with specific information on data sharing of alternative fuels (e.g. data categories,. Throughout the project, the approach for data sharing through the NAP was closely aligned with the Netherlands, as market players in both countries are more or less the same.

Set-up IDRO

At the beginning of the project, the ID issuing activities for all BENELUX countries were executed by <u>eViolin</u>, a Dutch association of CPOs and MSPs. The preference of the BENELUX countries was to set up a sustainable governmental organisation for the IDRO. A Benelux common service to manage ID issuing was finalized in collaboration between the Benelux Secretariat-General and the involved regions and countries. This <u>Benelux-IDRO was</u> launched in July 2021, simultaneously with the hand-

over of ID issuing activities from eViolin to the Benelux Secretariat-General. This Benelux IDRO is also appointed to perform the IDRR tasks.

Procurement

Procurement was mainly used for external expertise in the project, focusing mainly on developing an implementation plan for Belgium and stakeholder involvement. In addition, Belgium contributed to the procurement for the set-up of the IDRO BENELUX, more specifically for the design and technical set up of the web portal. To specify the requirements, the results of Deliverable 1.2 and 1.3 were closely examined.

Legislation

The need for a legal obligation for data sharing was extensively discussed with the Belgian stakeholders. In addition, Belgium closely followed the Dutch process for a legal obligation, as market players in both countries are more or less the same. Flanders decided in 2021 to develop a similar obligation as the Netherlands, which was included in a more general regulation on charging infrastructure deployment. The other regions in Belgium are closely following the Flanders initiative, to evaluate whether a similar regulation is necessary.

DATEXII

The implementation of DATEX II requirements was closely aligned within the European project and in particular with the Netherlands. Data on charging points and H2 stations will be available in DATEX II on the NAP.

4.7 Hungary

Contact person	
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In Hungary, data on electric charging and other fuels are currently provided via NAP based on DATEX II version 2.3. In publication the provision of electromobility information is incomplete.

An upgrade to make more complex electromobility data available in DATEX II v3.3 is ongoing (from other financial resources). The project aims to changeversion has started in August 2021. The first release was handed over at the end of January 2022. Release 3rd tests has been accomplished. Stability improvement and bug fixing are ongoing. The last planned release (Release 4th) will be installed and tested until the 14 of July. *Hydrogen*

Since the first hydrogen filling station (not yet public) was opened this year and a government organization (HUMDA Zrt.) has started to work on executing a national hydrogen infrastructure development program. The tasks regarding the hydrogen infrastructure are planned to be finished by the extended project closing date (June 2022).

Manual data loading is possible if the operator provides data to the NAP operator. After 2022. 06.30. will be available data entry form for hydrogen fuel station operators. These task are out of the scope of the Hungarian project (not financed under the current GA)

Other fuels

In Hungary, CNG, LNG (1 station) and LPG are available. Furthermore, bio-CNG is available for public transport (buses), but the station is not publicly accessible. Datacollection is happening at a national level, except for LNG and bio CNG. The data is collected by different organisations, both private and public, and made available on websites (e.g. <u>holtankoljak.hu</u>; <u>mobiliti.hu/cng</u>/). Next to static data, also the fuel price is shared on these websites. The data quality is sufficient.

Regulation

Regulatory framework, work-flows, customer service will be finalized soon. The procurement of the data transfer from CPOs to the NAP has been already done some CPOs has been selected for the implementation and testing on voluntary basis.

The number registered CPOs including both small and larger market players is approximately 20.

The legal and regulatory framework for CPOs and EMSPs is already in place for registration as well as for data provision, however this was not introduced considering the aims and schemes of the IDACS project. The registration takes place and data is currently provided to a different organization not to the IDRO and the NAP.

In the next period a revision will take place on the regulation to meet the European and IDACS requirements and this way put both the IDRO and the NAP in their expected role and position.

Main data standard is DATEX II. v.2.3, but TN-ITS is also used. In 2021 DATEX II. v.3. will be also available

In accordance with the objectives set before, the website of the IDRO (namely the Hungarian ID Registration Office) has been published and functioning in two languages at the following address: <u>https://idro.hu/</u>. First registrations requests were recently received. There will be some further developments in functions and services after the first registrations took place and we got the feedbacks from the CPOs and EMSPs.

There is a development in progress that would allow CPOs to easily transfer their data to NAP from their back-ends including the DATEX II format conversion. Testing with the first market players who could join voluntarily will took place in 2021.

The Hungarian ID Registration Office was launched in the third quarter of 2020. After the publication of its website, in the last quarter some improvements were made, and some new features were introduced to make the page more informative and transparent and to provide a better understanding about on IDACS project for visitors. We asked a CPO (also being an EMSP) for feedbacks to help with the improvements. Some of the changes have already been realized and some of them are still in progress.

The legal framework for the IDRO has also been investigated and a legal team started to work on the necessary tasks to build a coherent documentation for registrants. The team also works on identification of specific needs for regulation.

A system for data format conversion has also been developed which helps CPOs to easily transfer the necessary data (including static and dynamic data of the electric charge points) to NAP from their backends in the DATEX II format. Further IT development was carried out in 2021 for the NAP side to ensure a seamless receipt of data from the NAP. Consultations and planning in preparation for the change have begun in the NAP so that it can receive the data from the IDRO. After the registration process set and the necessary IT development will be carried out the dissemination and communication can be started to deliver the information to a wide range of users.

In the first quarter of 2021, CPOs and/or EMPs who were interested in the project, were informed about the launch of the IDRO they were also invited to register on a voluntary basis. Due to the pandemic situation, a face to face meeting with all the relevant market players is scheduled for the next quarter. Questions and concerns of the market players will also be collected for both IDRO registration and data exchange. The model of information services to be provided for the B2B partners (e.g. EMSPs) is also part of upcoming tasks. Here we would be highly grateful for any best practices and adjustable regulatory frameworks.

Technical/IT background for data collection from CPO/EMSP side was developed and needs to be connected into NAP's IT system to start testing.

Setting the national regulatory framework for IDRO and NAP is still in progress that is planned to be completed in 2022. A detailed regulation on the compulsory basis of registration and participation in date exchange would be necessary as well as rules of data quality and frequency will need to be set.

The usage of the collected date needs to be regulated as well including data security and commercial aspects as well.

The NAP operator has been signed a development contract to be able to properly manage IDACS data in the system.

4.8 Czech Republic

Contact person

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Set-up NAP

According to the Czech governmental strategy on ITS (National action plan on ITS) National Transport Information Centre (NTIC) operating by the Directorate of Roads and Motorways of the Czech Republic has been already appointed as National Access Point (NAP) for the Czech Republic.

In November 2019, a meeting was held between the Ministry of Transport and the Ministry of Industry and Trade. Both ministries agreed on the process of issuing ID codes and data collection on charging and refueling stations, which will be carried out in the future through the National Access Point of the Czech Republic, which is part of the Road and Motorway Directorate.

According to the valid legislation, the operators provide static data to the Ministry of Industry and Trade. The data are presented via the website of the Ministry of Industry and Trade in PDF format.

The aim of the agreement between the Ministry of Transport and the Ministry of Industry and Trade is to build an agenda system addressing the collection of static and dynamic data from the operators of charging and refueling stations. The operator of the new system has been designated the Directorate of Roads and Motorways, which will publish the collected data through the NAP.

In 2019 a feasibility study was prepared, the output of which was the technical specification of a new agenda system for data collection and issuance of identification codes. The results of this study were discussed in a workshop with the main stakeholders (main operators, the Ministry of Transport, the Ministry of Industry and Trade, Škoda Auto,...)

This was followed by the preparation of documentation for a public tender for a new module for data collection and the IDRO agenda.

In 2020, the government adopted a resolution concerning new approval process of public procurement of IT projects. Due to such approval process, our project was significantly delayed. In October 2021, the documentation for respective public tender was approved by the Czech government, and such tender was than announced in November 2021.

We anticipate that the contract with the selected contractor for the data collection module and the IDRO agenda will be signed in February 2022.

The technical specification of the project clearly indicates the public information that is published through the NAP. Other information is marked as non-public and remains in the agenda system for the needs of data validation by the Ministry of Transport and the Ministry of Industry and Trade. The obligation to register and provide data is currently legislatively stipulated for the operators of recharging/refueling points (conventional and alternative fuels). The provision of dynamic data on electric charging stations is addressed by the decree prepared by the Ministry of Transport.

The provision of data through the NAP is subject to general license conditions, which allow access to data to all potential customers in a non-discriminatory manner.

Set-up IDRO

In 2019, the study 'Establishment of the IDRO in the Czech Republic' was prepared. Consultations with the main operators took place. The result was a recommendation that the Ministry of Industry and Trade implements the IDRO agenda. However, due to the problem of funding, it was decided that the Roads and Motorways Directorate would be entrusted with this agenda.

This agenda thus became part of the above-mentioned IT project (public contract) for the elaboration of a module for data collection from energy recharging points and the IDRO agenda.

The IDRO agenda will operate through the NAP from the second quarter of 2022.

Procurement

'The establishment of the IDRO in the Czech Republic' study was funded from the IDACS budget in 2019.

In 2020, the IDACS grant financed a feasibility study, which became the basis for the technical specification of the public contract for the supply of the agenda system - a module for data collection from energy charging points and the IDRO agenda.

The public tender for the contract 'Elaboration of the module for data collection from energy charging points and the IDRO agenda' was launched in 2021. This public contract will be financed from national budget.

Legislation

Act on Fuels provides for a general legal framework on operation of the recharging stations including obligation for CPOs to provide the Ministry of Industry and Trade with the basic static data for all their recharging stations. The scope of those static data is in line with the data requirement as set out in the IDACS project.

As regards to dynamic data and ID issuing Decree of Ministry of Transport is expected to be approved in 2022.

DATEXII

In the Czech Republic, there is a clear requirement, based on a feasibility study in 2019, that automated data exchange between NAP and information providers (CPOs) take place in the Datex II protocol. The information published by the NAP towards registered subscribers will also take place in this protocol.

4.9 France

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Set-up NAP

Several NAPs set up in France pursuant to the ITS directive implementation, depending on the type of data. *Transport.data.gouv* provides the public with data regarding public transportation and alternative fuels infrastructures. Legislation mandates EVSE, HRS, CNG and LNG refuelling stations owners to provide static data through this website, which is under continuous development under Directorate General for Infrastructures, Transport and Sea supervision to offer operators the simplest possible way to fill in their data and add data sets to the website. The NAP currently stores several datasets provided by charge point operators (at least 24 000 charging points) but only 11 000 charging comply with the format required by the regulation. An agreement was reached between the administration, Gireve and the operators to fit static data to the regulatory format and consolidate our database during summer 2022 to properly register approximately 80 0000 recharging points.

Additionally, dynamic data regarding EVSE has to be provided to the NAP when it is available to the owner. The NAP is not capable of providing those dynamic data yet however and EVSE owners are therefore exempted of this obligation. A NAP architecture was recently retained between our implementing body Gireve, which is in charge of data collection and provision to the NAP, and the administration. Dynamic data will start being updated to the NAP by early fourth quarter 2022.

Discussions have started with *France Hydrogène*, the hydrogen business association, which gathers HRS related data, to make static data available on the NAP in the correct format.

As of the end of 2021 CLNG data have been available on the NAP.

Set-up IDRO

An IDRO was established in France before the program started. The *Association Française pour l'Itinérance de la Recharge Electrique des Véhicules* (AFIREV) is in charge of providing IDs to operational units and is involved in data exchange protocols normalisation. It was appointed as implementing body as regards activity 1 for the IDACS program.

Procurement Legislation

Parallel to the completion of activity 2, it was acknowledged the existing alternative fuels regulation related to data was not binding enough. A provision was included in the 2019 Mobility law and a decree was prepared to allow the administration to fine operators not complying with the

mandatory data provision. The enforcement decree will be published in December 2021 and the emobility ecosystem will be informed early 2022, which should increase the static data collection rate.

DATEXII

Datex *II* is not utilised by the French e-mobility sector as in other countries, eMIP being the most frequently used in France. Gireve is working to translate the eMIP format in Datex II by the end of the program.

4.10 Greece

Contact person

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Set-up NAP

In Greece, the Greek Ministry of Infrastructure and Transport in collaboration with National Technical University of Athens (NTUA) has completed the development of a new platform for ID issuing called «M.Y.F.A.H.». related to the interconnection of electric charging points with the National Access Point (NAP) by taking into account the architecture of EV charging system, which is composed by Charge Points, Charge Point Operators and Distribution System Operators (DSO). The overall approach is followed by a user-friendly interface, which will be updated until the final version. The overall action is also focused on the set of safety and security features between electric charger and NAP complemented with interoperability requirements. To facilitate the interconnection of the M.Y.F.A.H. with the governmental databases and services as well as to enhance the safety and security features of the platform, the M.Y.F.A.H. is hosted by the Greek government's main portal (gov.gr).

The management and transmission of data related to the electricity market operators, the recharging points, the access rights of the interested parties, and any other issue related to the application of article 14 of law 4710/2020 (AD 142) will be performed through to the Register of Infrastructure and Electricity Market Operators (M.Y.F.A.H.). The M.Y.F.A.H. will act as the IDRO of Greece in order to harmonise the requirements and guidelines of IDACS with the European directives and regulations. In addition, the fields and groups of fields referred to in the Unique Identification Codes (IDs) are defined to ensure interoperability, taking into account the existing national, legal and operational framework. In accordance with the Directive 2010/40 / EU on intelligent transport systems and Regulation (EU) 2015/962 of the Commission of 18 December 2014, the M.Y.F.A.H. will be linked to the NAP dedicated to exchange data with IDRO according to DATEXII standard. This platform will send the data at the Pan-European Access Point according to the DATEXII data standard. At the same time, the M.Y.F.A.H. will publish static and dynamic data through the website and mobile applications, with the aim of providing comprehensive and valid information to consumers about the location / infrastructure of recharging electric vehicles.

Set-up IDRO

In the course of the project, variable digital services and standardised communication protocols dedicated to EV charging networks were tested and evaluated in order to achieve intelligent exchange of information and optimum interoperability. For this reason, minimum requirements were identified (e.g. secure communication, device synchronization with a centrally maintained time, device logging security events in a locally stored log, etc.).The ontology of the IDRO and technical

specifications are set and already be described as related national regulations as described below. The M.Y.F.A.H. will be able to export the following statistics from the imported data, to facilitate monitoring and to achieve of the goals for the transition to low-emission mobility. Indicative data provided in totals in the country as well as grouped by country and/or by Region and/or by Regional Unit, are the following:

- a) Total number of CPOs
- b) Total number of electric points, stations and charger groups
- c) Total installed capacity of electric vehicle charging points
- d) Distribution of charger types
- e) Number and average duration of charges per charging point
- f) Cost in euros per kWh of charge
- g) Duration of non-availability of charging points for technical reasons
- h) Number of unacceptable data and duration of communication interruption per charging point

For the smooth and efficient operation of the IDRO, the issuance of statistics will be automated and e-mails for the information of the CPOs will be send by the Ministry of Environment and Energy and the Energy Regulatory Authority. It is also planned to connect the M.Y.F.A.H with the new state-ofthe-art and secure digital portal of AADE (myaade.gov.gr), which is the Greek information system for taxpayers and businesses including all the public financial services. This action will enable the verification and enhance the validity of CPOs information when they will register in the IDRO platform. In addition, it is foreseen to deliver a mobile application which will enable the consumers to access all the collected information through a user-friendly and direct way. Lastly, the ID issuing activities are expected to be finalised by the end of January 2022, while the complete NAP and IDRO systems will be delivered in the course of the IDACS project extension.

Procurement

The Ministry of Infrastructure and Transport has assigned the design of the NAP's and IDRO's ontology and its implementation to the National Technical University of Athens because of the necessity for fast actions and solvency as well as the experienced academic background that is required given the IDACS requirements.

Legislation

The realization of the IDACS guidelines in Greece is performed through the preparation of two Ministerial Decisions which were published within December 2021. The system is in line with the framework defined in IDACS project as well as the Electro mobility Law 4710/2020 which was published in the Official Gazette no. 142 A of 23/7/2020 and the Common Ministerial Decision No. 355033/2021 which was published in the Official Gazette 5776 / B / 10-12-2021 defining the 'Management and transmission of data related to the operation of the electric market, the points of recharging of electric vehicles and the access rights to the Register of Infrastructure and Electricity Market Bodies (M.Y.F.A.H.) of the interested parties.'. This law indicates the obligation of the CPOs and EMPs (the electric mobility providers) to register to the national database of IDRO Also, there will be a provision for fees (annual and 8 for the first registration) and currently

Εκδίδεται από	M.Y.4	.A.]	Η. (Μέρος Α)	Φ.Ε.Υ.Φ.Η.Ο. (Μέρος Β)								
Περιγραφή	Χώρα Υ ^{ςος}		Αναγνωριστικό Φ.Ε.Υ.Φ.Η.Ο.	Κενό	Τύπος	Αναγνωριστικό σημείου φόρτισης	Κενό	Ψηφίο ελέγχου				
Παράδειγμα	GR	"_"	EVN	"_"	E	2542AX8769	"_"	3				
Προδιαγραφή	Γροδιαγραφή [ροδιαγραφή [ISO 3166-1 alpha -2] {2} [Δ]		Προαιρετικό [-] {1}	1 χαρακτήρας (αλφαριθμητικός) Ε για σημείο φόρτισης, S για σταθμούς φόρτισης και Ρ για ομάδα φορτιστών [A-Z] {1}	Έως 30 χαρακτήρες (αλφαριθμητικοί) [Α-Ζ;0-9] {8}	Προαιρετικό [-] {1}	Προαιρετικό , υπολογιζόμενο σημείο ελέγχου [0-9] {1}					
Ενδεικ	Ενδεικτικό Παράδειγμα: " GRA23E45B78C" όπου «GR» η χώρα, «A23» το αναγνωριστικό του συγκεκριμένου Φ.Ε.Υ.Φ.Η.Ο., «E» αντιπροσωπεύει τον τύπο του σημείου φόρτισης και «2542AX8769» αντιπροσωπεύει το ID του ρευματολήπτη											

Figure 7: Snapshot of Ministerial Decision describing ID ontology

DATEXII

A data collection tool will be developed which will collect the information provided by the CPOs and will convert them into DATEXII format. It is under consideration to adapt compilers that are made available through IDACS PSA from the Member States.

4.11 Portugal

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Set-up NAP

In Portugal it was decided to develop the multimodal NAP inside the newly operational road NAP. The multimodal NAP acts like an extension of the road NAP, although it has an independent management and a different architecture, being a register. The Multimodal NAP accommodate the other fuels data and is operational since January 2022. There are two big national datasets that manages other fuels data in Portugal. The electric mobility data, covering all the publicly accessible charging points is managed by MOBI.E. On the other hand, DGEG manages a national database with all the public refuelling stations, including all types of available fuels. This situation facilitates the data provision in the NAP. The hydrogen data, when available, will also be centralized in DGEG database. Other fuels national datasets will be available in the NAP via metadata files, until 30.06.2022.

Set-up IDRO

Mobi.E has been managing a national electric mobility database for several years now, including the charging points id's. Therefore, this public entity already acted like an IDRO, although using a

completely different id syntax. Mobi.E completed the IDRO setup in the first quarter of 2022 and deployed a web page with CPO's and EMSP's lists and an online registration form for new CPO's, available at : https://www.mobie.pt/en/redemobie/idacs..

CPO's and MSP's id's have already been converted to the agreed format.

Procurement

Procurement was mainly used for the set-up of the IDRO and for the development of Datex II converters for Mobi.E and DGEG. Mobi.E and DGEG tendered a converter from its OCPI and xml data.

The development of IDRO was largely based on the requirements defined at Deliverable 1.2 and 1.3. Mobi.E contracted a company to design the technical set up and the web portal. These entities also tendered their endpoint set-up, regarding their linkage to the multimodal NAP.

These entities also tendered their endpoint set-up, regarding their linkage to the multimodal NAP.

Legislation

The legal framework regarding other fuels and electric mobility data remains substantially the same, as it was at the beginning of the project.

In Portugal, according to the law all the charging stations installed on public access spaces must be integrated within the MOBI.E system. This integration means that all the charging stations communicate their statuses and transactions to the MOBI.E system. Decree-Law 90/2014 and more recently the regulation 854/2019 defined the assignments of the electric mobility network management entity (EGME), including the development of information systems to secure charging points operation.

Regarding other fuels, according to Decree Law 243/2008, of 18th December, supporting the website www.precoscombustiveis.dgeg.pt, the operators exploring filling stations in the mainland of Portugal, are obliged to fill online, in each filling station, all the static data specified in IDACS, which are after, validated by Directorate General for Energy and Geology, entity responsible for the website.

After consultation with relevant stakeholders, it was concluded that the existing legal framework was sufficient.

DATEXII

For electric charging points data, a converter tool is developed for the conversion from OCPI to DATEXII. Mobi.E network, covering all the publicly accessible charging points, uses the OCPI protocol. Therefore, Mobi.E acts like a data aggregator that made the data of charging points available through NAP.

DGEG developed a customized Datex II converter, acting also as a data aggregator for the other fuels. Their data is now published in NAP trough a metadata file.

The definition of data categories by the Consortium and their correspondence with DATEX II specifications, in deliverable 2.2.2, were very useful for the tender set-up.

4.12 Croatia

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Organisation: Ministry of the Sea, Transport and Infrastructure

From the beginning, the Republic of Croatia has included in the project all important stakeholders that are important for the development of e-mobility and the use of alternative fuels in the market of the Republic of Croatia. Some companies, such as HT-telekom d.d. and HEP d.o.o. they already had developed internal IT infrastructure monitoring systems for charging stations, however such systems did not provide real-time information or provided only some information. Also, the ID codes of filling stations assigned by these companies did not comply with the agreed IDACS guidelines. Regarding the information of other alternative fuels, the Ministry of Economy had developed an application for informing about the statistics of the LPG filling station. In the long run, hydrogen is projected / included as one of the strategic energy sources in the context of the New Energy Strategy Hydrogen filling infrastructure is currently not available in the Republic of Croatia, while for other fuels there was no user information system. Many meetings were held with the competent state bodies (Ministry of Economy, Ministry of Environmental Protection and Energy, Croatian Employers' Association) and other stakeholders to regulate legislation and determine the current situation (HEP d.o.o., HERA, HEP-ODS d.o.o., INA d.d., Petrol d.d., HT-telekom d.d.).

Set-up IDRO and NAP

As regards infrastructure for alternative fuels, in the Republic of Croatia it is regulated by the Act on the Establishment of Infrastructure for Alternative Fuels, which transposes the provisions of the Directive on the deployment of infrastructure for alternative fuels. The said law stipulates that in the event that data are available indicating the location of publicly available places for supply and refueling with alternative fuels covered by the provisions of this Law, all users shall be provided with access to such data on an open and non-discriminatory basis. Such refueling point data may, if available, include real-time availability information, as well as information on previously performed refills, and real-time refill information. Given that such a provision of the law is too general and rather sparse, the Ministry of the Sea, Transport and Infrastructure has decided to amend the provisions of the law to develop a procedure for issuing ID codes and oblige charging stations owners/ CPOs to provide static and dynamic data in accordance with IDACS guidelines. The Ministry of the Sea, Transport and Infrastructure included the amendments to the said law in 2020 in the national plan of legislative activities. Since the procedure for amending the law in the Republic of Croatia is quite slow, because it has to pass the approval of many different state bodies and institutions the law was adopted in may 2022. Based on the law, ordinance will be adopted, one that will regulate the procedure of issuing ID codes, and the system of data collection and informing users about the infrastructure for alternative fuels in real time. The ordinance has passed the consultations of the working bodies, will soon go to public consultation, after which it is expected to enter into force. After the entry into force of the ordinance, IDRO and NAP IT systems will become operational.

Procurement and legislation

In parallel with the amendments to the Act, the Ministry of the Sea, Transport and Infrastructure in 2021 initiated the process of procuring IT systems for issuing ID codes and IT systems for creating NAP and providing static and dynamic data. The technical documentation for the procurement procedure was prepared in accordance with the IDACS guidelines. The procurement process was delayed due to the crisis caused by COVID-19 and the small market of service providers for the development of such IT systems that did not show interest in responding to invitations to tender. Nevertheless, the Ministry managed to collect the most favorable bids, so in November 2021, contracts were concluded with the most favorable bidders. The IT system for issuing codes is located

in the Ministry of the Sea, Transport and Infrastructure and in accordance with the needs of users, it will issue five-digit ID codes in accordance with the rules of administrative procedure. The real-time IT user information system will collect information from charging stations owners/CPOs and distribute it to end users. Both IT systems are expected to be operational after the ordinance enters into force.

4.13 Lithuania

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Set-up NAP

Primary tools for the transmission of data through the NAP have already been developed. Currently, EV data can be accessed via the following links <u>https://ev.lakd.lt/open_source</u> and http://nap.lakd.lt/

Set-up IDRO

IDRO was approved and signed by the Minister of Transport and Communications of the Republic of Lithuania 14 of May 2020.

IDRO is set-up as Lithuanian Road Administration. The Road Administration has been issuing ID codes since 1 of July.

Procurement

Lithuanian Road Administration have launched public procurement tenders for the establishment of a ID registration IS. The system is scheduled to start operating in April of 2022. The system includes the tools needed to collect dynamic and static data as well as adapt this data to the DATEXII format.

Legislation

Order of Minister of Transport and Communications of the Republic of Lithuania 14 of May 2020.

DATEXII NAP support DATEX II.

4.14 Slovenia

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Set-up NAP

It was decided to use and upgrade the existing NAP (<u>www.nap.si</u>) for the data provision of alternative fuels infrastructure (AFI) which has been managed by National Traffic Management Centre, division within Ministry of Infrastructure. NAP is organized as data warehouse. The existing IT architecture, hardware and software were used which enabled smoothly implementation of additional layer of static and dynamic AFI data through the NAP. At the moment only data for CPs for electric vehicle (EV) is available, later on NAP will be upgraded with other AFI data. The exchange of static and dynamic data with the NAP is possible through open Application Programming Interface (API) which has been set up with IDACS funds. Data of CPs for EV is not comprehensive yet, since there are some challenges with persuading the CPOs to start with data exchange since some of them consider dynamic data, as data with value. It is anticipatedthat this issue can be fully resolved only when

national AFI Act will be implemented. Additionally 'General Terms and Conditions' for reuse of AFI data will be prepared and also Guidelines for other users of NAP service.

Set-up IDRO

IDRO was set up as a part of Ministry of Infrastructure, having in mind that this could possibly be a temporarily solution. In the process of preparing the national AFI Act will be decided which entity will act like IDRO in the future. Special computer application (APP) was set up with IDACS funds called PROMETEJ that enables ID code issuing and registration. Besides CPO ID codes and MSP ID codes also the registration of EVSE ID codes is mandatory. That can be implemented with PROMETEJ APP or with Application Programming Interface (API) which was also set up with IDACS funds.

Procurement

Procurement process was carried out for setting-up a computer application for ID codes issuing and registration (APP PROMETEJ), for setting up the Application Programming Interface (API) for data exchange with NAP and for translation to DATEX II format. After this procurement process was finished there were some remains of funds that were used for another procurement process for optimization and upgrading of NAP on new domain: www.nap.si.

Legislation

The draft of national AFI Act was prepared in partnership with the EC, DG REFORM – Structural Reform Support Programme. After analysing the draft AFI Act carefully it was decided that there were still some areas and solutions that should be included in the national AFI Act following AFID revision and AFIR proposal published on the 14th July 2021. Several additional consultations were carried out with representatives of other ministries, implementing bodies and experts. Mean time in April 2022 there were national elections for the Parliament and new government was constituted. The upgraded nation AFI Act proposal is at the moment in the process of harmonizing with the new ministerial cabinet and after that will be put in the approval procedure. It is estimated that AFI Act will be adopted in Q1/Q2 2023. Without having AFI Act in place it is very hard to achieve all the IDACS project goals especially the dynamic data provision through the NAP.

DATEXII

The subcontractor elected for setting up the APP, API and data translation to DATEXII format had previous knowledge of DATEXII since it had cooperated with National Traffic Management Centre before. The subcontractor has been available to all the stakeholders (CPOs, MSPs, ...) for technical guidance and any other issues regarding the conversation of AFI data and data exchange with NAP.

4.15 The Netherlands

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Set-up NAP

In the Netherlands it was decided to use the existing NAP for the data provision of alternative fuels.

This tasks are being executed by NDW and its architecture is a register: <u>https://nt.ndw.nu/#/home</u>. <u>Legislation</u> obliges CPOs to make their data accessible for electric charging points via this NAP (<u>link</u> and <u>link</u>). This has been communicated extensively with CPOs. For Hydrogen, the platform H2.LIVE has been registered at the NAP (<u>link</u>). They share their POI data via open APIs.

For Other Fuels there is static data of alternative fuels available (<u>link</u>). This contains data for the following fuel types: CNG, LNG and multiple high blended biofuels.

'Best practice': To help operators, a step-by-step guide has been placed on the NAP that explains how an operator can register themselves on the NAP. The data categories that CPOs are obliged to make available can also be found here. Finally, there is a 'General Terms and Conditions'(<u>link</u>). In the Dutch situation, CPOs can set their own set of conditions for data provision and usage between them and the user of the data. The General Terms and Conditions provide a guideline for what conditions a CPO can attach to his data (as long as everyone has access in a non-discriminatory way). This can remove concerns from CPOs such as the misuse of dynamic data.

Set-up IDRO

At the beginning of the project, the ID issuing activities were executed by <u>eViolin</u>, an association by CPOs and MSPs. The preference of the BENELUX countries was to set up a sustainable governmental organisation for the IDRO. Together with Belgium and Luxembourg, a Benelux common service to manage ID issuing is finalized in the second quarter of 2021 in collaboration between the Benelux Secretariat-General and the involved regions and countries. This <u>Benelux-IDRO</u> launched in July, simultaneously with the hand-over of ID issuing activities from eViolin to the Benelux Secretariat-General. Agreements with the current IDRO were made to formally take over the tasks once the system is ready. This Benelux IDRO is also appointed to perform the IDRR tasks.

Procurement

Procurement was mainly used for the set-up of the IDRO and for the development of a DATEXII converter. For the IDRO, based on the quotations, a company is chosen to design the technical set up and the web portal. To specify the requirements, the results of Deliverable 1.2 and 1.3 were closely examined.

An assignment has also been given for the development of an <u>OCPI to DATEXII converter</u>. The organization that manages the NAP, NDW, has developed this tool. An important requirement was that it had to be open source. More information about this can be found in deliverable 2.2.1.

Legislation

Early in the project (2019) it was decided that the AFID legislation in the Netherlands was insufficient to provide all data via the NAP. The Alternative Fuel regulation in the Netherlands has been amended in order to include legal obligations for owners of charging infrastructure to share their data through the NAP. This legislation has entered into force from the 1st of July 2021. A webinar was organized in 2021 to inform all national stakeholders involved within the IDACS project. During this legislative process, much was discussed with CPOs and their input was used to adjust the amendment. The amendment can be retrieved at the <u>Staatscourant 2021, 19832</u>. The obligation is that a CPO makes his data accessible via the NAP: this means that a CPO registers at the NAP, or the data is available via a data aggregator. The CPOs can therefore set conditions for data provision and usage between them and the user of the data. However, data must be available in a non-discriminatory manner and only a 'fair' fee may be asked. The Quality of data (must be correct) and update frequency (<1 min) for ECP is defined in this legislation.

For hydrogen and other fuels, it has been decided that it was not necessary to adjust the legislation. At the moment these are still small markets with a limited number of operators. Data collection is

first set up on a voluntary basis. If this does not succeed in the course of time, legislation can be amended.

DATEXII

For electric charging points data, a converter tool is developed for the conversion from OCPI to DATEXII. An open source version can be found at: <u>GitHub - NDW-Realtime/ndw-ocpi-receiver</u>. All CPOs in the Netherlands use the OCPI protocol. This tool allows data owners/sources to upload their data and receive it back in DATEXII format and thus retains ownership of the data. More information about this solution can be found in deliverable 2.2.1. In addition, there will also be a solution from the market: a data aggregator that makes the data of many Dutch CPOs available will also offer this data in DATEXII.

For hydrogen, all Dutch operators are registered at H2.LIVE which is able to deliver the data in DATEXII format.

5 Determine National Access Point (NAP)

Moving towards a Single European Transport Area requires a digital layer interlinking all of the elements of transport. Building up this digital architecture involves open and common standards and interfaces and an efficient, but secure data ecosystem¹.

This is why Member States are setting up their NAPs; to facilitate access, easy exchange and reuse of transport-related data, in order to help support the provision of EU-wide interoperable travel and traffic services for end users.

These NAPs are also required for collecting data related to alternative fuels infrastructure. Requirements of the NAP and specific data collection tasks are specified in the following legal acts:

- Directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport: <u>https://eur-lex.europa.eu/legal-</u> content/EN/TXT/?gid=1564046105563&uri=CELEX:32010L0040
- Commission Delegated Regulation (EU) 2015/962 of 18 December 2014 supplementing Directive 2010/40/EU of the European Parliament and of the Council with regard to the provision of EU-wide real-time traffic information services: <u>http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015R0962</u>
- Commission Delegated Regulation (EU) 2017/1926 of 31 May 2017 supplementing Directive 2010/40/EU of the European Parliament and of the Council with regard to the provision of EU-wide multimodal travel information services <u>https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017R1926</u>

While directive 2010/40/EU sets out to provide some common standards and to prevent fragmentation among member states, it also makes the optimal use of road, traffic and travel data its first priority. Accordingly, one of its priority actions encompasses the provision of EU-wide real-time traffic information services.

¹ <u>https://ec.europa.eu/transport/themes/its/road/action_plan/nap_en</u>

The delegated acts which were adopted under the scope of this guideline specify that NAPs have to be established (art. 3, delegated regulation (EU) 2015/962) and that data on refuelling infrastructure, including alternative refuelling infrastructure, have to be made available through the NAPs (art. 4 & 5, delegated regulation (EU) 2017/1926). However, certain provisions apply for the collection of data on charging points for electric vehicles and HRS (annex 1.2. iv) and 1.3., iii), 2.2., b), delegated regulation (EU) 2017/1926):

- By 1 December 2020: the location of publicly accessible refuelling stations for [...] hydrogen powered vehicles and charging stations for electric vehicles for the comprehensive TEN-T network
- By 1 December 2021: retail channels, fulfilment methods, payment methods for publicly accessible refuelling stations for [...] hydrogen powered vehicles and charging stations for electric vehicles for the comprehensive TEN-T network
- By 1 December 2023: the data mentioned above for the for the other parts of the Union transport network.

Furthermore, the Sustainable Transport Forum's Sub-group to foster the creation of an electromobility market of services worked out a document on Recommendations for the implementation of article 7.7 of the Directive 2014/94/EU:

4. STF SGEMS D1.2 Data Categories

The following paragraphs explain in more detail what is required and how this can be realised.

5.1 Definition of NAP

In several delegated acts from the EU the National Access Points are defined² in different ways, but with the following common parts:

- National Access Point: a mechanism for accessing, exchanging and reusing transport-related data
- To establish a digital layer interlinking all of the elements of transport. Building up this digital architecture involves open and common interfaces and an efficient, but secure data ecosystem
- This is why member states should set up their National Access Points; to facilitate access, easy exchange and reuse of transport related data, in order to help support the provision of EU-wide interoperable travel and traffic services to end users



5.2 EC Requirements

The main requirements from the EC regarding NAPs are mentioned in Directive 2010/40/EU and additional requirements in Delegated Regulation 2017/1926.

² <u>https://www.interregeurope.eu/fileadmin/user_upload/tx_tevprojects/library/file_1521040514.pdf</u>

In article 3 of the latter document the EU defines clear statement about the National access points:

- 1. Each Member State shall set up a national access point. The national access point shall constitute a single point of access for users to access at least the static travel and traffic data and historic traffic data of different transport modes, including data updates, provided by the transport authorities, transport operators, infrastructure managers or transport on demand service providers within the territory of a given Member State.
- 2. Existing national access points that have been set up to comply with other delegated acts adopted under Directive 2010/40/EU may be used as national access points, if deemed appropriate by the Member States.
- 3. National access points shall provide discovery services to users, for example services allowing for the search of the requested data using the contents of the corresponding metadata and displaying such contents;
- 4. Transport authorities, transport operators, infrastructure managers or transport on-demand service providers shall ensure that they provide the metadata in order to allow users to discover and use the datasets made accessible through the national access points.
- 5. Two or more Member States may set up a common access point.
- 6. A fee for the usage of NAP data may be asked to users, as long as it is within reasonable margins towards the cost of keeping the NAP available and up to date and the cost may not interfere with open and non-discriminating public usage.

5.2.1.1 Publicly Accessible Charging Infrastructure

The NAP is all about publicly accessible infrastructure. The term emanates from the definition of 'recharging or refuelling point accessible to the public' in Article 2 (7) of the Alternative Fuels Infrastructure Directive of 2014. It specifies that 'Union-wide non-discriminatory access to users' has to be granted, whereby 'Non-discriminatory access may include different terms of authentication, use and payment'. Many member states transposed this provision into laws and regulations in slightly different ways. During the project an attempt was made to set a harmonized definition, but this turned out to be too complex and, moreover, not essential for achieving the project results.

In the IDACS project, countries use the definition as stated in the AFID as the minimum definition for publicly accessible charging infrastructure. Countries can use their own definitions, as long as they are not conflicting with the AFID definition.

5.2.1.2 Update frequency

As stated in the Grant Agreement the Consortium will also define how frequently the dynamic updating of data needs to happen, balancing the technical constraints of frequent updates with the user needs (e.g. if a charging/refuelling station becomes non-operational users should be informed swiftly). The Consortium has defined the update frequency of data per fuel track as laid down in table 1. A more detailed version of this can be found in **Deliverable 2.2.2 – 2.2.4** of the IDACS project.

This definition was based on the following assumptions:

- Static data is forwarded/retrieved on a periodic basis;
- Dynamic data can change very frequently, especially the availability status of charge points.

These data can either be retrieved by means of a 'push-message' as often as the situation changes or can be retrieved via a direct link in the NAP data.

	Electric	Hydrogen	Other Fuels
Static data			
	within 1 day on change	on change	within 1 day on change*
Dynamic data			
availability	within 6 minutes	within 5 minutes	x
occupation status	within 6 minutes	x	x
ad hoc price	within 15 min	x	x

Table 1 – Minimum update frequency of data per fuel track as defined by IDACS Consortium

5.3 Technical requirements

On a technical level there are only a few requirements to take into account:

- The data must at least be made available (so the output) via DATEX II format (or with DATEX II interoperable format)
- There must be a system in place to ensure the quality (correctness) of the data
- The NAP must offer at least one interface that can be used by external developers to develop additional third-party services

The above requirement describes explicitly that data must be accessed through the DATEX II format. Depending on the possible setup of the NAP (a database, or a register etc, see also the below section), this means that the source where the actual data is made available, should be able to export this data in DATEX II format. The data provision in DATEXII is further described in **deliverable 2.2.1**.

As DATEX II is currently not the most used data format, and has no specific semantics for the domain of charging points yet, in the Grant Agreement the member states also agreed to offer data exports via other open formats. It makes senses for this to look into existing protocols in use (and the data format they use), like the OCPI, OCPI, OCHP, eMIP protocols for data exchange of electric charging points and the Open GIS data format. An extensive explanation of this is given in **deliverable 2.2.5**.

5.4 Possible setup of NAP

The setup and format of the NAP is free to choose for each country. The EU gives the following examples:

Architecture	Features	Examples	
		National Access Point	Public or private
Database	A single organised		
	collection of data held	Greece,	Public
		Lithuania,	Public

	on a common media / set of servers		
Data warehouse	A virtual co-located set of databases	Luxembourg: https://data.public.lu/fr/organizations/chargy/ Slovenia: https://nap.si/en	Public (Chargy) Public (National Traffic Management Centre)
Data market places	Intelligent transport data are being collected and made available on a market place that acts as a portal and broker.	Germany: Mobility Data Marketplace <u>https://www.mdm-portal.de/</u> . More details can be found here: <u>https://www.mdm-portal.de/about-</u> <u>mdm/technical-details/?lang=en</u> and at <u>http://service.mdm-portal.de/doc/MDM-</u> <u>UserManual.pdf</u> . Hungary:	Public (Federal Highway Research Institute)
Data register	A national registry pointing towards the different data sources (i.e. data owners' access points, websites, datasets, databases) provided that: 1. the information is digitised 2. the data are in the right format, up to date and ready for re-use 3. the path towards the data sources is self- explanatory	United Kingdom: data.gov.uk Austria: mobilitydata.gov.at Belgium: <u>transportdata.be</u> Czech Republic: Spain: Portugal: Poland: The Netherlands: <u>https://nt.ndw.nu/#/home</u>	Public Public/Private (E- Control) Public Public Public Public Public Public (NDW)

Table 2 – Possible set-ups of National Access Points

The NAPs and the different databases split the responsibility. There are situations, like the NL Data Ware House, where the management of the databases is done by a different organisation under responsibility of a country.

5.4.1 Overview (public/private/procurement/planning)

The different ways of setting up a NAP also require different possibilities to execute. The following possibilities are known:

1. **Public**: NAP setup, management, data input/output and quality criteria are directly controlled by a public authority. This public authority is responsible for the working of the

NAP.

- 2. **Public/private**: Government appoints a separate organisation (public, semi-public, foundation etc) to set up and maintain the NAP. Oversight lies with the government. This organisation is then free to acquire (e.g. via a tender) the data or organisation that has the data
- 3. **Private**: A private organization (e.g. sector organization) has been given responsibility for management of the NAP through a contractual agreement with the government.

In order to choose between the above options, the market setup for a country needs to be taken into account, and in what way publicly available infrastructure is being regulated. Different choices have been made in each country.

5.4.2 Possible setups NAP and connection to EU NAP

At the start of the project, the various ways of data provisioning on the NAP were considered, as well as the possible link to an EU NAP. Various possibilities and scenarios have been devised, which are outlined below. For example, it has been examined whether CPOs must supply their data per country to a NAP about charging infrastructure of that country alone. Or that they make the data available from all countries where they are active and that data is available on different NAPs (so for example, at the NAP of Belgium, the CPO makes the data available that contains both BE and FR data. And the same data can also be found on the French NAP). The figures below show various options for this:



NAP on national level CPO sends data per country to it's NAP Service provider receives data per country per CPO







The figure above also includes the role of a Data Aggregator. It has been considered that a data aggregator can play a role by collecting the data from CPOs and making it available via the NAPs. Ultimately, we see that this does happen, but in the background and to a limited extent. There are NAPs that link to underlying databases where data aggregators play a role in collecting the data.

5.4.2.1 Collaboration

Although each country has to fulfil the requirement to set up a NAP, multiple countries can also work together when developing a specific solution for a NAP, or collaborate in management of a NAP. This may save development time and costs.

Looking back, this did not happen during the IDACS project. Much knowledge has been shared, and collaborations have been set up, but not with regard to setting up a NAP. This is a national obligation and it proves complex to do this together with another country, in terms of legislation as well as financially.

5.4.2.2 Procurement

Countries often already have NAPs in place for other information described in the ITS Directive. One option would therefore be to extend this model to include the Alternative Fuels Charging Infrastructure (Electric Charging Points, Hydrogen, Biofuels).

Another option would be to contract or purchase another solution for a NAP: a tendering or similar process would then be the usual approach to contract or purchase a NAP solution. The possible types of NAP have already been described above, as well as the possible governance options. It is a prerequisite to have these well-defined before entering into a tender. Additional points of attention to be taken into account, are:

- 1. Data delivery to the NAP
- 2. Data ownership
- 3. Data quality

- 4. Data usage by third parties
- 5. Cost of data collection, -management, -publication

These are detailed below as best practices that may serve as semi-quantitative requirements. It is expected that further work needs to be done in these areas.

5.4.3 Best practices

In addition to choosing a specific governance around a NAP as mentioned above, some additional issues need to be considered carefully

Not all items below do have a best practice available, best practices may be added by countries when available.

- 1. Data delivery to the NAP
 - 1.1. Operators of publicly accessible infrastructure for alternative fuels are meant to have a predescribed set of data elements (static, dynamic) available through the NAP. This is currently often taking place on a voluntary basis. This requires good arrangements with the EV sector and may often cause issues with data that has commercial value.
 - 1.2. It would be preferable to have adequate regulation in place that enforces every operator to provide data to a NAP according to the required specifications. Current national regulation (implementation of AFID, ITS Directive) should be checked regarding whether it provides sufficient basis for enforcing data collection. Some examples of national regulation that provides a basis for data collection are:

– Poland, data register / public database. Poland has implemented legislation that enforces operators to share data via a public database (operated by a government organization). This database is accessible via the NAP. The legislation can be found in the annex.

 The Netherlands, data register. The Netherlands have implemented legislation that enforces operators of electric charging infrastructure to have data available via the NAP. 'Regeling van de Staatssecretaris van Infrastructuur en Waterstaat, tot wijziging van de Regeling technische eisen en gebruikersinformatie over de infrastructuur van alternatieve brandstoffen in verband met het verstrekken van informatie over publiek toegankelijke oplaadpunten voor elektrische voertuigen' It can be retreived at <u>Staatscourant 2021, 19832</u> <u>J Overheid.nl > Officiële bekendmakingen (officielebekendmakingen.nl)</u>

- 1.3. In a market-driven context, where multiple commercial operators operate a business case in providing charging infrastructure, local governments (or subsidiaries) are often the contractors. Contracting Public Alternative Fuel infrastructure can take place in many different ways (e.g. via tenders, permits, auctions etc). It is recommended to adequately describe in this contract the requirements for data collection to a NAP. A central government can provide templates for this.
- 2. Data ownership
 - 2.1. Ownership of data often lies with the respective operator who operates the charging station. However, as soon as data has been assembled, enriched and/or repackaged, ownership not always lies with the operator anymore (consider examples such as Navigation service providers). Transparency needs to be given about what happens with the data and who holds ownership.
 - 2.2. Data is collected via the NAP for the purpose of giving Service Providers the opportunity to create products and services for (EV) drivers. Formally it is stated: 'The national access point shall constitute a single point of access for users to at least the static travel and traffic data

and historic traffic data of different transport modes, including data updates as set out in the Annex, provided by the transport authorities, transport operators, infrastructure managers or transport on demand service providers within the territory of a given Member State.'

This data is therefore not intended to be used for other purposes (such as R&D, roaming transactions, competitive analysis, etc.), as this may influence the market, 'abuse' the purpose of the NAP or abuse the (technical) capabilities of the NAP. Usage of NAP data should be adequately described in a contractual framework with (representations of) NAP-management, NAP-data owners/suppliers and NAP-users.

- In the Netherlands, a set of General Terms and Conditions have been drawn up: these can be used and serve as inspiration to set conditions for the use of data. It can be retrieved at the homepage of the NAP: https://nt.ndw.nu/#/home

- 3. Data quality
 - 3.1. The quality of data is often considered to be one of the biggest success factors, but also the biggest obstacles for developing a market of EV-related services. "Wrong information is worse than no information" is an often-used quote in this context. Data quality requirements have to be defined very strictly and monitored on regular basis.
 - 3.2. Ideally, responsibility for data quality lies with the data source: the operator. In more mature markets, this is the default situation
 - 3.3. However, in this innovative market the data quality is often suboptimal and market players lack the capability to properly improve their data to the required standards for a successful service product. It is possible to make use of an external quality improvement/enrichment service, but this is a serious investment that needs somehow to be financed. Also, data ownership and other issues may arise.

In any case, NAP management should make explicit the quality requirements that are in place, based on the requirements as defined in the project and applicable national regulation.

- 4. Data usage by third parties
 - 4.1. A fee may be asked from NAP users, as long as this is a reasonable fee and the nondiscriminatory aspect is taken into account. In addition to (or as part of) the regulatory obligation, one may consider means to reward Operators for delivering information (e.g. not paying a fee as user), and/or penalize when e.g. information is not complete or not of the required quality level. This largely depends on the regulatory framework that has been implemented
 - 4.2. It is the intention to have Service Providers (third parties) develop products and services for EV drivers, based on the assembled data. Issues may arise however, when these third parties do not display these data completely, correctly or not timely. In a contractual agreement, the NAP user agrees to display the NAP info in its communication channels with the same quality level as the NAP provides.

An example: Operators are being asked to update the availability information to the NAP every 2 minutes, but a Navigation Service Provider only updates this info every hour on its website. The EV driver who finds a Charging Point not available will consider this wrong information and may blame the respective Operator for not being able to charge.

5. Cost of data collection, -management, -publication

- 5.1. There may be cost involved for operators to comply to the data collection requirements. In a country with firm regulation one could argue that this is a 'fact of life' when operating in this country. In another context, an option could be to provide access to the NAP for reduced costs in order to benefit from
- 5.2. The cost of NAP management and -publication (development, maintenance, monitoring) can be significant, and different solutions exist in how to deal with these costs which heavily depend on the market model in a country and the setup of NAP management:
 - The central government funds NAP management

- The cost of NAP management is relayed to NAP users (third parties) that want to make use of the NAP through e.g. a subscription mechanism

- The cost of NAP management are funded by the entity that hosts/manages the NAP, through additional business propositions

- 5.3. A sustainable model for financing the NAP beyond the project is part of the deliverables: currently developed solutions should also address this scope
- 5.4. Quality management, or quality improvement is sometimes part of the NAP management process. The strong suggestion would be to treat this as a separate proposition that has its own value.

5.5 Electric Charging Points

The EU set a clear requirement which data is requested mandatorily and which is optional. This is also agreed in the project between the Member States in the Grant Agreement. This chapter describes these requirements.

5.5.1 Data elements

The EU split the data in static and dynamic. The dynamic data is only required when available. However, in several discussions 'when available' means that if an organisation is using dynamic data for own external use, the data is available also for the NAP. In practice, this means that all data used in any way to inform the EV driver (e.g. via own app from the operator) the data is available and must also be shared with the NAP.

The following data elements MUST* be shared with the electric charge point NAP (*=according to the PSA Call and IDACS Grant Agreement):

- Static data:
 - o Location
 - GNSS coordinates
 - Address (street name, zip code, city,...)
 - List of available charge-solutions (Power, Modes)
 - List of available connectors (plugs, sockets, induction plate...)
 - o Opening hours, identification and payment methods,
 - Contact info for owner/operator
 - Full e-mobility code of the charging point
- Dynamic data:
 - \circ $\;$ Availability (if the station is operational/ non-operational) and
 - Occupation status (free, occupied)
 - Price for ad-hoc charging

All other data is optional.

5.5.2 Technical conditions, incl. communication protocols

For the NAP Electric charge points there are not few specific conditions or requirements.

Export/download: In general, the DATEX II format must be available for export from the data source that the NAP provides, in addition other formats are possible. This is similar to what has already been described in section 4.3.

Import/upload: To connect from the CPO to the NAP it is recommended to use open protocols and as much as possible protocols that already enable communication between CPO and EMSP. Usually, these are the protocols that also enable roaming. Therefore, the required data set as defined in IDACS is available via these protocols. Additional APIs to connect with the NAP may need to be programmed.

Such protocols in use in Europe are for example OCPI, OCHP, OICP and eMIP. A detailed description and comparison of these protocols can be found in IDACS Deliverable 2.2.5. *Proposal to the Commission for complementary data protocols to enable e-Mobility service provision and proposal for relevant standards.*

Open Charge Point Interface (OCPI)

OCPI was developed by Dutch and Belgian CPOs and MSPs (collaborating under the name eViolin) together with ElaadNL. Until the start of the EVRoaming Foundation in June 2020, the Dutch Knowledge Platform for Charging Infrastructure (Nationaal Kennisplatform Laadinfrastructuur - NKL) held the intellectual property of OCPI and led the development of the protocol. As of July 2021, the board of the EVRoaming Foundation, which currently holds the intellectual property rights, consists of representatives of NKL, EV Box, Chargepoint, LastMileSolutions, Freshmile and Google. The data and functionalities of OCPI in the current version 2.2. can be found here: <u>https://ocpi-protocol.org/app/uploads/2019/06/OCPI-2.2-RC2.pdf</u>

Open Clearing House Protocol (OCHP)

OCHP was developed by Smartlab Innovationsgesellschaft mbH, a limited liability company owned by 232 local power utilities in Germany, to enable roaming via their platform 'ladenetz.de' The data and functionalities of OCHP in the current version 1.4 can be found here: <u>https://github.com/e-clearing-net/OCHP/blob/master/OCHP.md</u>

Open InterCharge Protocol (OICP)

OICP was developed by Hubject GmbH, a limited liability company whose shareholders comprise the vehicle manufacturer BMW Group, the tier 1 supplier Bosch, the vehicle manufacturer Daimler, the energy company EnBW, the energy as a service provider Enel X, E.ON, Siemens and Volkswagen. The data and functionalities of OICP in the current version 2.2. can be found here: <u>https://www.hubject.com/downloads/oicp/</u>

eMobility Inter-Operation Protocol (eMIP)

eMIP is developed by the French roaming provider GIREVE, whose shareholders are the stateowned bank Caisse des Dépôts, electricity producer CNR, venture capital provider Demeter, electric utility company Électricité de France (EDF), electricity distributor Enedis and Renault. The data and functionalities of eMIP in the current version 1.0.2 / 0.7.4 can be found here:

https://www.gireve.com/wp-content/uploads/2017/02/Gireve_Tech_eMIP-V0.7.4_ProtocolDescription_1.0.2_en.pdf

5.5.3 Legislation, regulation, policy

Collecting and distributing data via a NAP is adequately described in the Grant Agreement with respect to input and output criteria (data elements, formats etc).

However, the data collection requirements as laid down in the relevant Directives (AFID, ITS) do not fully align with the data collection requirements as prescribed in the Grant Agreement.

Implementation of the respective EU directives into national legislation may have resulted therefore in incomplete coverage of the scope of IDACS the project. One cause could be the fact that the current ITS directive is less strict about dynamic data (dynamic data is optional) than the PSA IDACS project (dynamic data is mandatory).

One solution is to work on additional legislation in order to also make dynamic data mandatory, another may be an agreement with the sector organization or another regulatory body to ensure that also dynamic data is covered in the data collection process.

The NAP is already a familiar data collection solution for other types of information, as prescribed in the ITS directive. Often, countries already have a NAP that they will want to use for the purpose of data collection for electric charging points. However, the current setup of a NAP may not always be suitable.

Data collection for currently used NAPs have often come from public entities (e.g. road maintenance body). For some countries, the NAP for Alternative Charging Infrastructures is the first that requires data from private organizations. This requires a different legislative framework, and possibly a different setup of the NAP, depending on the country-specific situation. It is important to realize the interdependency between development of the NAP and fulfilling the requirements of data collection as prescribed in the Grant Agreement. Since legislative efforts are often very country-specific, it will be difficult to give detailed guidelines from this perspective.

5.5.4 Stakeholder input

Commercial operators who are asked to provide this info voluntarily, do not always agree with all data elements.

Examples of feedback that has been received thus far from market player (including possible answers/measures in *italic*):

- Static data is usually ok to send through, as this improves visibility for the charging stations OK
- Dynamic data is considered an asset that has value: EV drivers even pay money to Navigation Service Providers. Why should Operators share this data for free? *Public charging infrastructure is often (partly) financed by public funds; part of this deal should be that the data are shared with a NAP, including dynamic data. In addition, some form of profit sharing could be introduced, allowing to reward operators for their contribution to a paid service towards EV drivers.*
- Dynamic data (for DC) can lead to insights in company turnover that may be used by competitors to gain a strategic advantage, or used for financial gains such as insider trading.

A minimum update frequency could be defined (e.g. minimum every 30 minutes for DC charging, every 15 minutes for AC charging) to assure that the info offers little competitive advantage

- Assuring a certain quality level has a cost

Part of acting as an operator in public charging should be to have some minimum quality standards. Even if this makes it difficult for smaller companies or new entrants to enter the market: the EV driver has a right to correct information.

- Assuring a refreshment frequency for dynamic data (e.g. near real-time availability) has a cost

Current roaming practices already include these type of data transactions: it should therefore not be too difficult. Perhaps this can be introduced via a phased implementation planning.

- Who owns/runs the NAP: how will they use/exploit this data? This depends on the market model and financial model of the NAP and is difficult to summarize in a single answer: who builds it, maintains it etc? Transparency on the use of data should be given in any case
- What will third parties (NAP users) do with this data?
 This can be contractually agreed upon with NAP users
- How do we know that NAP users are keeping the data up-to-date?
 This can be contractually agreed upon with NAP users
- Semi-public charging stations (on private ground, but publicly available) may pose a privacy issue, as the dynamic occupancy data may reveal when the owner is not home.
 This is a risk for private home owners that offer their charging station for public use, and expected to be small in size. Overall, it will be privately owned businesses for which this will apply and this will be less of an issue.

The above feedback will no doubt be enriched with other examples, and can in general be dealt with in several ways:

- Laws & Regulation by national government, harmonized across countries
- Contractual arrangements between Operators, NAP-management, NAP-users
- Risk management and monitoring for those issues that are considered of minor impact but may increase over time when numbers increase

5.6 Hydrogen

A prerequisite for data collection at HRS, is to establish the status quo of the current data collection activities in this regard ('Ist') as described in the overall approach. Currently, data collection on hydrogen refuelling stations is already taking place in certain forms. An application by the company H2 MOBILITY Deutschland GmbH & Co. KG (hereinafter: H2 MOBILITY) called H2.LIVE that covers all the required data categories and most of Europe already is available to any end consumer with a smartphone, tablet or via web-browser. Furthermore, an HRS availability system that has received funding by the Fuel Cells and Hydrogen 2 Joint Undertaking (hereinafter: FCH-JU) is being rolled out across Europe. This concept offers a hardware (type A) as well as a software solution (type B). The hardware solution has been demonstrated to work in a trial phase. The system will offer an 'export' function and the data will be accessible by anyone free of charge. After the concept study, the availability system has entered its roll-out phase, which ended in October 2019. It is, however, uncertain for how long funding for the operation of this system will be secured in the future.

These guidelines shall establish common definitions of data categories and set some minimum criteria for the open standards and protocols to be used for data collection and transmission. It shall be possible for the member states to collect and distribute data in different manners as long as the minimum requirements, i.e. the provision of static and dynamic data through the NAPs of the Member States in the DATEX II format, are fulfilled.

In close cooperation with the stakeholders (notably HRS operators, the NAPs and the FCH-JU), the Consortium will determine the necessary steps to ensure the future operation of the system, i.e. to keep it attractive and at a low cost in order for station operators to have an interest in participating. This is all the more important as operating HRS will not return profits in the near future and discouraging the deployment of further stations has to be avoided. The most efficient and sustainable way data is transmitted between the different interested parties and made available to the public shall be elaborated by the consortium. In order to achieve the long-term sustainability of the system, a working business model for the operator of the system might have to be elaborated for the period after the funding runs out. Furthermore, changes to funding criteria, the national legal frameworks or recommendations for European legislation may be drafted as part of these guidelines.

5.6.1 Data (elements/structure/format)

In order for the whole consortium to speak the same language, the members agreed to define the exact meaning the categories for which data has to be collected mandatorily. Where possible, extant legal definitions of the *acquis communautaire* are used.

These definitions refer to hydrogen refuelling stations that are accessible to the public. Article 2 (7) of Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure states that 'recharging or refuelling point accessible to the public' means a recharging or refuelling point to supply an alternative fuel which provides Union-wide non-discriminatory access to users. Non-discriminatory access may include different terms of authentication, use and payment.

5.6.1.1 Location (GNSS coordinates/ street name)

Data on the location has to be collected in two different ways: as GNSS coordinates and street name. As streets may cover long distances, occur numerous times in the same city or in different cities, the consortium opts for indicating a house number, postal code, town and country in order to get an unambiguous address. Therefore, the following definitions apply:

'GNSS coordinates' means the geographical location of the driveway to a hydrogen refuelling point accessible to the public determined by a Global Navigation Satellite System (GNSS) consisting of a constellation of satellites and a global network of ground stations;

'Street name' means the address of a hydrogen refuelling point accessible to the public consisting of a street name and, if applicable, a house number, postal code, city, country and additional information

5.6.1.2 Opening hours

'Opening hours' means the period in which a hydrogen refuelling point is accessible to the public

5.6.1.3 Identification and payment methods

'Identification and payment methods' means the way with which users identify themselves and the methods with which they can pay for the gaseous hydrogen dispensed as fuel on board motor vehicles

5.6.1.4 Contact info for owner/operator

'Contact info for owner/operator' means a valid phone number at which the operator of a refuelling point dispensing gaseous hydrogen used as fuel on board motor vehicles can be contacted

5.6.1.5 Operational Status

'Operational status'³ means a status signalling whether dispensing gaseous hydrogen used as fuel on board motor vehicles at a refuelling point is possible

The following minimum statuses shall be displayed:

- 'Available': dispensing gaseous hydrogen at the refuelling point is possible without restrictions
- 'Not available': dispensing gaseous hydrogen at the refuelling point is not possible
- 'Outside opening hours': dispensing gaseous hydrogen at the refuelling point is not possible as the refuelling point is currently not accessible to the public
- 'No information': there is no information available as to whether dispensing gaseous hydrogen at the refuelling point is possible without restrictions

The operational status of refuelling points dispensing gaseous hydrogen shall be refreshed every 300 seconds as a minimum. A time of 300 seconds is chosen as that is average time it takes to refuel a FCEV and malfunctions occur mostly as a result of wrong handling of the dispenser and associated hardware during the refuelling process. Operators of refuelling points dispensing gaseous hydrogen may choose different symbols in order to illustrate these statuses.

5.6.1.6 Additional information

'Additional information' means any information not covered in data categories a) to e)

Apart from the data categories that are to be collected mandatorily as part of IDACS, certain other categories could be useful to the end consumer. For example, other data categories could include:

- The amount of hydrogen left in the station (once progress to a mass market is made)
- Current prices for hydrogen in Euros per kg
- Share of green hydrogen (e.g. according to the CertifHy scheme)
- Images of the station
- Origin of funding
- Refuelling manuals (video training)
- Payment and billing information
- General information on hydrogen

The consortium opts not to make the display of such criteria mandatory as part of IDACS, especially as new data categories entail higher costs and maintenance efforts. However, the consortium may find value added in defining these categories at the end of deliverable 2.2.2. even as many of these will be relevant in a future mass market only.

³ This category should not be mistaken with "availability" in the sense of real-time information on an occupational status, i.e. whether someone is refuelling their car there.

5.6.2 Technical conditions, incl. communication protocols

The first thing any member state wishing to collect data from the station operators in their country with their NAP needs to decide is whether the data should be collected from the single HRS or whether either one of the two European solutions described in more detail below. Central data collection will always be more efficient, however, one will be dependent on the system and its functioning.

Both use JSON as a format

As there are two types of data categories, it is advisable to establish two different types of data streams. Static data will not need to be refreshed as often and in intervals as short as dynamic data. The location, opening hours, identification and payment methods as well as the owner contact info are not expected to change on a regular basis. The static data can be uploaded to the HRS operator's servers or the server of the FCH-JU's HRS availability system or to H2.LIVE and be collected from there to the NAP.

The technically more challenging part of the data collection concerns the dynamic data collection, i.e. real-time signals on the operational status of the HRS. The hardware needed to collect such signals is made up of decentralised modules (Raspberry Pi Compute Modules, such as the *RevPi Core 3* by *Kunbus*) that are integrated in the HRS in both HRS Connect (H2.LIVE) and the FCH 2 JU's E-HRS-AS. These small industrial computers work as control devices that measure a voltage and identify binary dispenser availability signals (either available or unavailable). HRS Connect is integrated deeper into the station and collects a lot more data than mere availability. These signals are then transmitted via a LAN or Wi-Fi connection to a backend server, e.g. the HRS operator's own servers or the FCH-JU's availability platform. If there is no internet connection in place because the HRS is located in a remote area, separate routers can be installed. The availability signals can be overridden manually by a technician at site in order to set the availability state to the desired status. HRS operators should also have the possibility to this remotely via their servers. This is important as internet connections may fail and HRS operators need to be able to signal to FCEV drivers that they can refuel their vehicles if they know that that is possible.

There are two basic ways of providing the data to the NAPs. Either data is transferred from the single HRS or the HRS operators' backend servers to the NAP, or all data is centrally collected by one server, such as the FCH-JU's availability system or to H2.LIVE.

The advantage of collecting the data at the HRS operators directly is that one can assume that these have a long-term interest in keeping their data up-to-date for their customers. Furthermore, if an HRS operator already operates an own plant monitoring system and makes the data accessible to the public, it is not conceivable why they should finance an additional system, i.e. costs could be kept lower for HRS operators if the data is directly collected from their servers.

The central collection of all data would have the apparent advantage of fewer interfaces as not every single HRS or server system would need a single interface. However, currently it remains unclear whether or how much less effort this entails. It may well be the case that most HRS systems do not substantially differ from one another as they are programmed by the HRS manufacturer (as is the case for ITM Power's and Nel's stations) in a standardized way. In such a case, the major challenge would be to program interfaces so they can communicate with the single NAPs and meet their requirements, an effort that would also occur if data collection were to happen centrally. Furthermore, the disadvantage of such an approach would be that a central server would make the entire system reliant on that infrastructure. This is especially problematic if the funding and future

operation of such a server is not secured. In the case of H2.LIVE there is a market actor in place who operates the system regardless of this PSA and its funding and has an interest to keep it up to date for his clients. The HRS availability system of the FCH 2 JU is considered 'procurement' implying that the FCH 2 JU are the owner of the system. According to the FCH 2 JU, this guarantees there will be no 'end of the project' and that it will be financed for a period of a minimum of five years. This is not to say that the FCH 2 JU will be directly financing the system, in particular as the existence and funding of the FCH 2 JU itself are dependent on the continuation of as a joint undertaking according to article 187 of the Treaty on the Functioning of the European Union⁴. The project consortium in charge of the FCH 2 JU's HRS availability system is in the process of finding economic possibilities to make it autosustainable for the future. This could also mean that other actors, such as the HRS operators or FCEV drivers will be asked to finance the system. This would lay additional costs on the HRS operators that might discourage the already costly deployment of HRS. More details with regards to the financing possibilities of such a system can be found in the section *3.6.3. Legislation, Regulation, Policy*.

If a member state chooses to use H2.LIVE or the FCH 2 JU's HRS availability system to collect static and dynamic data on HRS by their respective NAP, it has to make sure that the NAP can use the data format JavaScript Object Notation (JSON) and convert it to DATEX II or any other machine-readable format so NAP users can make use of it in their products.

A mix of both the direct data collection at either H2.LIVE, the FCH 2 JU's HRS availability system and individual HRS operators is also possible, where those HRS that are already connected to the FCH-JU's servers have their data transferred to the NAP managed from there and the other HRS, or those whose data is collected by an HRS operator's server like H2.LIVE are transferred from there. Such an approach would mitigate the risk of being reliant on one server infrastructure with a potentially uncertain existence, while still making use of some of the efficiency gains it represents.

H2.LIVE

Before the FCH-JU's E-HRS-AS was conceived, the German HRS operator H2MOBILITY launched its H2.LIVE application in 2017. The app is available at no cost to the public and arguably the most widely used tool for checking HRS availability by FCEV drivers in Europe. The user app, which shows a map with all the stations and their statuses is a by-product of HRS Connect, a system conceived to monitor the performance of the individual stations by H2MOBILITY. HRS Connect was established to learn about the stations and their operation when most stations were basically prototypes. HRS Connect and the data it provided was meant to help improve the station design. Therefore, a lot more data on all major parts of the station is collected than mere availability. The original source of data of HRS Connect and by extension H2.LIVE comes from the plant manufacturers. The latter collect detailed data on their stations as essential part of their maintenance services and to further develop their products. All major plant manufacturers, which are few, already have standardized availability APIs or are developing them. The availability APIs of the different plant manufacturers are integrated into the H2.LIVE app. Therefore, the way H2MOBILITY collects data from the stations differs from the type A hardware solution f the FCH-JU's E-HRS-AS (described below). In particular, when using the plant manufacturer API no additional costs for maintenance and support of its provision need to be considered as they should be part of the general service agreement.

⁴ An Inception Impact Assessment on the European Partnership for Hydrogen under Horizon Europe has been launched on 30 July 2019: <u>https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2019-4972390_en</u>

The map is also available on a browser at <u>https://h2.live/en/h2 mobility</u>. It can be integrated into other websites via a web-widget. On top of the application for end users, there is an operator app (H2.OPERATOR) with which operators can manually set the statuses of their HRS.

H2.LIVE already provides all the data required as part of IDACS. The operational status is updated every minute. Apart from the status 'available', there are indications if the station is 'outside of opening hours', 'currently out of order', 'maintenance scheduled' and 'no live information'. Furthermore, the following additional data categories are being made available through the app: future stations (i.e. status of planned stations and those under construction), images of the station, origin of funding, refuelling manual (video training), price for hydrogen (currently the fixed German prices are displayed; in the future, coverage will be extended to all European stations), payment and billing information, general information on hydrogen, hydrogen and electric mobility news, frequently asked questions and contact information of the operator.

Apart from HRS in Germany, the app also provides information on HRS in other countries like: Austria, Belgium, the Czech Republic, Denmark, France, Iceland, Italy, the Netherlands, Norway, Sweden, Switzerland and the United Kingdom. Data from these stations is collected in parts on the basis of bilateral contracts and agreements between the station operators from these countries and H2MOBILITY. Some operators from outside Germany, in particular Belgium and the Netherlands, also use the operator app of H2.LIVE to set their statuses manually. Another source of the data from other European stations is the FCH 2 JU's E-HRS-AS.

European HRS availability system (E-HRS-AS)

The FCH 2 JU has established Europe-wide system to report the real-time availability of HRS. In the second half of 2017, project phase 1 started with the development of the hardware and software solution as well as the proof of concept at existing stations. Phase 2 of the project ended in November 2019. The aim of this phase was the roll-out of the system at existing stations in Europe as well as finding a business model to ensure its continued existence. Currently, there are no plans for a third phase and there is uncertainty as regards the future financing of the system.

The proposed system includes a hardware-based solution (type A) and the option for HRS operators or manufacturers to send a signal of their refuelling stations from their servers to update the FCH-JU's web-based platform (type B). The import application programming interface (API) for type B HRS has been published in an open format on https://api.h2-map.eu/doc and allows integration of real-time signals from the operators' or manufacturers' existing monitoring systems. All information (dynamic and static site information) of the HRS availability system is publicly available and visualized on a map to be found at https://h2-map.eu. For third parties who would like to integrate the information in their own applications, an open format export function including all real-time and static information has been realized that can be publicly accessed for free. However, a token needs to be requested at ENDA. In order to protect the data sets from misuse, access restrictions have been put in place. Access can be facilitated via the authentication with an individual token in the moment of connection. The token can be requested at the project partner ENDA.

More information on the API are available here: https://h2-map.eu/api/v1/doc/

Technical specifications (OpenAPI 3 format) are available under this link: https://h2-map.eu/api/v1/doc/e-hrs-as-api-doc.yaml

The system consists of three parts:

a signal input unit (separate solutions for connecting the HRS via software interface or hardware transmitter)

a central software platform to collect and update real-time HRS availability (allowing for site-specific update of static information or planned maintenance activities) and processing information

a standardized, open-source based API to export signal and HRS site information to third party users (integrating the information in own web portals, apps and / or car navigation systems).

Real time signals are generated and collected using two types of signal input for HRS operators and suppliers to connect to the European system:

Type A HRS: Provide a hardware solution (Raspberry PI/Kunbus modules) to be installed on site (in a control cabinet) to collect and transfer data on availability. Signals are transferred via a local internet connection to the central HRS availability platform (WiFi or LAN). If no internet connection is available on site (e.g. stand-alone HRS sites) or if the internet connection is not able to be used by the HRS availability system (e.g. due to safety concerns from the HRS supplier) a separate router can be installed to connect the HRS transmitter unit to the software platform.

Type B HRS: Integrate signals provided by the HRS operator's plant monitoring via a standardized application programming interface (API). The standardized API ensures compatibility with the European HRS availability system and defines the type of signal and frequency of transmission. The large majority of stations shown in the map operate via standardized APIs.

An operators' access area provides an overview of all static information to be included in the API to be exported to the European HRS map and third parties (to be used in apps, navigation systems and or web portals).

At the end of the second project phase, existing HRS were connected to the system Denmark, France, Germany, the UK, Spain and Switzerland. The planned connection of some 150 stations in the space of 10 months was not achieved. In this period however, the FCH 2 JU financed the hardware, but not the personnel costs, which make up the larger part of the bill. Consequently, even though a lot of hardware was made available to station operators, it has not been integrated in many stations. Part of this phase of the implementation phase was to find a suitable business case. Potential business models for continuing to operate and expand the system rely on different potential revenue sources including HRS operators, vehicle OEMs, FCEV users, and various third parties (advertisers, mobile phone app developers, satellite navigation system providers, etc.). There has not been a decision on which business case to support the system and the financing of the system remains uncertain. The FCH 2 JU considers this system their property and plans on continuing its operation for 5 years. However, this depends on future funding and is therefore uncertain as well.

5.6.2.1 Estimated costs for HRS operators

Generally, the costs for the deploying one or the other solution is subject to large uncertainty as the costs are highly dependent on the different solutions. Other key variables that affect the costs are the labour costs in the different member states. Solutions differ in the way the hardware is installed. Certain suppliers of HRS equipment already have the equipment included as a standard and the HRS operator does not need to heed additional costs for the installation after the HRS has been built.

If the hardware needs to be retrofitted in existing stations the cost for that hardware does not exceed €250,00. However, the more substantial part of the costs is made up of the expenditures for the retrofitting the station and the associated labour. The proof-of-concept trial of the FCH-JU's HRS availability system estimates the cost of retrofitting existing stations to be around €1,380 per station. The costs of developing an application program interface (API) to send signals from the HRS sites to the HRS availability platform is estimated to be 300 € / HRS. However, it is granted that the cost will vary significantly depending on the HRS operator and the configuration at their HRS.

The costs for continually operating the FCH-JU's HRS availability system (data storage, software maintenance, cybersecurity and website maintenance) are dependent on the phase of the system's roll-out, i.e. number of HRS that participate in the system. In the initial phase (<200 HRS), the costs are estimated at €1,500 per HRS per year. Once a higher number of stations is connected, the costs per stations per year will decrease to €400.

5.6.2.2 Funding through the PSA

One of the purposes is to give guidance on how to use the budget of the PSA for this work package and its ends. It is currently uncertain how many stations will be equipped with hardware as funded by the FCH-JU even though this number is expected to be in the low two-digit range. Therefore, it may be possible to use the budget of the PSA where there is no funding provided by the FCH-JU. Annex II, PART B, II.19 of the grant agreement specifies that the 'Costs of purchase of equipment and other assets, provided that they are treated as capital expenditure' are eligible. This could cover the expenditures for the hardware.

Other expenditures comprise those that are needed to programme interfaces, so HRS operator's servers can communicate with the NAPs software solutions. Annex II, PART B, II.19 of the grant agreement specifies that the 'Costs entailed by service contracts' are eligible. Therefore, the expenditures for programming API's could be covered by the PSA budget.

On top of that, the basic requirements of eligibility have to be fulfilled:

- Necessary for the PSA implementation (be it goods, works or services)
- Identifiable and verifiable, i.e. recorded in the accounting
- Compliance with the requirements of applicable tax and social legislation
- Reasonable, justified, and comply with the principle of sound financial management

5.6.3 Legislation, regulation, policy

In most member states there is no automatic obligation laid on alternative fuels suppliers to supply the data on their stations. There are countries where fuel suppliers have been obligated to make the prices of the products, they sell available at certain intervals. However, these obligations often stem from antitrust cases and cannot be extended to the suppliers of alternative fuels in many cases.

Member states can of course establish an obligation to have the data delivered to the NAPs. Different ways of imposing such an obligation are conceivable:

Funding criterion

Hydrogen refuelling infrastructure will be in need of public funding for the foreseeable future as the number of FCEVs will remain small until at least 2025. Certain OEMs have proclaimed to launch small series of fuel cell electric passenger cars in the early 2020s but it is highly unlikely that a mass market will be reached until 2025. The roll-out of fuel cell electric heavy-duty vehicles will at best have only

just commenced in 2025 and it is uncertain if a system as described here can be made use of at all as different refuelling infrastructure will become necessary.

When funding is granted it can be laid down in the calls that a connection to the NAP, or the FCH 2 JU's HRS availability system respectively, has to be established. The FCH 2 JU has already laid an obligation on all HRS operators that received European funding to connect their HRS to the availability system. Similarly, member states can lay down such obligations as funding criteria for all the subjects of their funding.

Regulation

Member states can propose legislation making the data collection and transmission to the NAP by the operators of HRS mandatory. Legal acts that may be suitable could be those used for transposing the ITS directive or those laying down technical specifications for gaseous hydrogen refuelling infrastructure (transposing article 5 point 2 and point 2 of Annex II to Directive 2014/94/EU).

5.6.4 Stakeholder input

Stakeholders share a general interest but as the infrastructure they operate is currently and in the short term not viable, it is difficult to bear the costs. Furthermore, HRS operators that already have their own system or an app, i.e. the final product, in place may not be willing to pay for yet another system at the European level.

It was in the remit of the project consortium of the FCH 2 JU's HRS availability system to find a sustainable source for funding their system beyond the current funding by the FCH 2 JU's budget. The project consortium identified several possible sources of funding. Some of these are described for the purposes of IDACS in more detail below.

HRS suppliers

As described some suppliers of HRS equipment have their own integrated solutions for monitoring the availability of the stations they sell. It is therefore conceivable that HRS suppliers could maintain such platforms and include in the price of the station.

It may however be difficult to hand down the running cost for such a system to the buyers of HRS equipment.

Public Funding

Public funding would ensure that the data is available to anyone and could therefore support the buy-in of consumers the most. Also, it would be in the public authorities remit to tackle market failure at an early stage where prices are high but revenues low.

However, public funding is not sustainable in the long term and budgetary uncertainty coupled with reliance on the system may lead to its premature demise. On top of that, HRS operators may forego the possibility of funding.

HRS operators

If the data is provided by the HRS operators it may also be accessible to anyone for free or be offered as a service for some cost. As it would be in the HRS operators' interest, it is probable that the data quality would be high.

Making HRS operators fund such a system will further reduce the profitability and attractiveness of deploying HRS, which might decrease the deployment.

Vehicle manufacturers

Vehicle manufacturers might be interested to offer this service to their customers in order to encourage them to buy FCEVs. The costs would not be borne by HRS operators, further discouraging HRS deployment.

This would, however, probably entail that the data is not accessible to everyone, especially beyond their customers. In addition, as they are not the operators of the station there may be issues regarding the data quality.

Third parties

It is conceivable that third parties offer such a service for a fee or by selling advertisement. The costs would not be borne by HRS operators, further discouraging HRS deployment.

Problematic might be that the data may not be accessible to everyone for free and as they are not the operators of the station there may be issues with regards to the data quality. Furthermore, coordination with vehicle manufacturers might be required.

FCEV owners

The costs would not be borne by HRS operators, further discouraging HRS deployment.

It may be difficult to incur the costs and the administrative burden of doing so would be large and growing with more FCEV owners. Further costs may actually reduce the buy-in into fuel cell electric cars. Moreover, the data will probably not be accessible to everyone if such a model were chosen.

5.7 Other fuels

Activity 2.1.3-2.1.6 Data collection for Other fuels is an optional part of PSA IDACS. Therefore, not all member states participate in activity 2.1.3-2.1.6. The term 'other fuels' is used for a combination of better fossil fuels and biofuels. The Grant Agreement mentions CNG, LNG, LPG and highly blended biofuels.

	CNG	LNG	LPG	Highly blended biofuels
Spain	X	X	Х	Mostly E85 and B100
Belgium	X	X	Х	-
Luxembourg	-	X	Х	-
Poland	X	X	Х	B100, bio CNG
Portugal	Х	X	Х	FAME, bioethanol
Croatia	Х	Х	Х	-
Austria	Х	-	Х	-
Germany	Х	Х	Х	bio CNG, E85
Lithuania	-	-	Х	E85
Greece	X	X	Х	Biodiesel
Netherlands	X	X	Х	HVO, B100, E85, bio LNG/CNG
Czech Republic	X	X	Х	Mostly E85 and B100
Slovenia	X	X	Х	-
France	X	X	Х	-
Hungary	Х	Х	Х	Bio CNG

Figure 6: Fuel availability per country

Figure 6 shows the fuel availability per country. CNG and LNG are available in almost all participating countries. LPG is available in all countries. In the Alternative Fuel Infrastructure Directive (AFID) it is mentioned as a 'better fossil fuel, but the AFID contains no directions for infrastructure. It will probably be deleted from the next version. The availability of highly blended biofuels differs hugely per country. E85 and B100 are the most common biofuels. Participating member states therefore agreed to focus on CNG and LNG, and to leave the decision to include LPG and highly blended biofuels up to each participating country.

5.7.1 Data categories

In the Grant Agreement, for Other fuels only the exchange of static data is mentioned. There is no focus on dynamic data (e.g. operational status or fuel availability), because of technical difficulties with sharing these data and because fuel availability is not a problem for other fuels.

To achieve the project goal, it is important that there is harmonisation between the data categories that are exchanged for electricity, hydrogen and other fuels. Therefore, the list of static data categories for electricity was used as a base for the data categories for other fuels. All participating countries agreed on sharing the data categories in figure 7. Countries are allowed to add extra data categories, but at this moment none of the participants has plans to add dynamic data.

Static Data	description
Fuel type	Type of fuel, when applicable percentage of bio component
Fuel Station Latitude	Latitude on the exact location of the station. Should be in WGS84 decimal standard.
Fuel Station Longitude	Longitude on the exact location of the station. Should be in WGS84 decimal standard.

Fuel station address	Street Name where the station I is located. If available, as not all locations have Street Names.
Postal Code + Addition (if used)	Postal Code where the fuel station is located. This should be the main Postal Code + addition (if used) and can include alpha/digit characters.
City/Location	The City/Town/Location where the fuel station is located.
Country	Country where the fuel station is located. This should be the ISO 3166- 1 Alpha-2 Country Codes.
Opening Time	The time periods when a fuel station is open to the public. This could indicate the availability of a public charging station, but also indicate the times or days that a private station becomes a public station. This is a complex type of data as it will include several different components to define the times when the fuel station can be used.
Timezone	Time zone where the fuel station resides. This is used to make sure that the availability is shown correctly and also to make reservation possible in the future.
Payment and identification methods	available identification and payment methods described as a list

Table 3: Agreed static data categories for Other Fuels

5.7.2 Technical conditions, incl. communication protocols

The Grant Agreement states that data should be written in DATEX II or any compatible / machine readable data format. It seems not to make sense to add any other very specific data quality requirements here (e.g. percentages of completeness or correctness), for it is difficult to check if the requirements are achieved.

All participating member states have agreed that the data should meet the following quality requirements:

- The data are compatible to DATEX II (consistency)
- The data are complete
- The data are correct

Consistency

Defines if data are delivered in the data set as is defined in the IDACS format and is compatible with DATEXII format. Authorities will make sure that all content is delivered according to the IDACS format. For other fuels further research is needed on which data format is generally used. The preferred solution is to build a converter that translates the data into DATEXII. If the format that is used by operators is compatible with DATEXII, a more straightforward and low cost solution would be to share the data in the original format. The end user of the data can translate the data if desired.

Completeness

The amount of mandatory and optional data that is available in the data at the NAP. Authorities will make sure that all mandatory fields shall have a valid value available and that optional values are added where possible. For instance, it won't be admissible to include a fuel station without 'Opening Time' or 'Latitude' data, in NAP. 'Complete', means that all static data fields must be filled in for every station.

Correctness

Defines whether the data values are the correct value. In order for data to be correct, the data value must be the right value and must be represented in a consistent and unambiguous form.

Further specifications of quality requirements and how to monitor the data quality, still have to be developed. In this process, we will search for harmonization with the data quality format for electric charging points, as far as that is applicable to other fuels.

5.7.3 Legislation, regulation, policy

Legislation on the obligation of data exchange for other fuels is not in place in all participating countries. In some countries, this legislation will be developed in the next years, in other countries legislation only covers data exchange for charging points and/or hydrogen stations.

Where no legislation is in place, PSA IDACS can function as a driving force to establish data exchange for other fuels. In this case, the cooperation of stakeholders is necessary and stakeholders should be involved in an early stage.

5.7.4 Stakeholder input

- It is not of great value to add dynamic data elements for CNG, because problems with fuel availability do never occur and station are quite common.
- The exchange of dynamic data elements is technically difficult and should therefore not to be taken into account in this project.

5.7.5 Example of good practice

This section contains a summary of the presentation of Spain, given during one of the meetings on other fuels.

5.7.5.1 Spain

Ever since 2007, Spain collects data of alternative fuels at <u>https://geoportalgasolineras.es</u>. This data is freely accessible and over the years (new) alternative fuels have been added. All filling stations owners and operators are required by law to submit static data and prices to the Ministry. The main goal of this legislation was transparency of market prices for consumers and thus increase the competition between companies. The data is shared in a map with meta data and it is possible to export the data for statistics. The data is submitted manually by the filling station owners and operators by means of web forms and excel files. For the future, it is planned to include this webpage with alternative fuel data into the Spanish National Access Point. For more details check figure 8 below.

IDACS

ID AND DATA COLLECTION FOR SUSTAINABLE FUELS IN EUROPE ACTIVITY 2.1.3: OTHER ALTERNATIVE FUELS – SPAIN IDACS CALL | 02 June 2020 Isidoro Romero – IDACS National Coordinator-State Engineer

Conference by the Converting Earlier DACS

inistry for the Ecological Transition (Spain)

Contents

- Alternative Fuels data collection in Spain
- Data collected and shared
- Quality of data Main issues
- Future



Alternative fuels data collection in Spain

- Since 2007: <u>https://geoportalgasolineras.es</u>
- All filling stations owners and operators are required by law to submit static data and prices to the Ministry
 - Main goal was transparence of market prices for consumers → Increase of competition between companies
- Data is submitted to the Ministry data base using webforms, excel templates and Android app. More than 11,000 stations share datathat is freely accesible in the Ministry webpage, Also marine fuel stations (120).
- Data is shared in a map with metadata and exported with REST web services Official database for consumers, proffessionals(i.e transport companies) and data source for statistics (i.e. Oil bulletin prices)
- Ministry manages and design the webpage. IT develop and maintananceis subcontracted . . Co-financed by the Connecting Europe

Alternative fuels data collection in Spain

- Initally data collection included petrol 95, petrol 98 (E5), diesel (B7) and diesel premium (B7) Alternative fuels have been added over the years:

 - LGP: more than 700 stations
 CNG: 60 70 stations
 LNG: 20 30 stations
 Bioethanol (E85): 50 stations
 - Biodiesel (B100): 20-30 stations
 - Hydrogen (New modification Data submission Act entry in force August 2020) 3 stations for demonstration purpouses
 - 1 com
 - Electricity (Activity 2.1.1 PSA IDACS)
 - Willstart with fast charging points located in TEN-T network
 Regulation pending (Law for Climate Change) in the Parlamient Currently non compulsory





Common data quality issues

- Missing stations: Regulations unknown or missunderstood - Dialogue with retailers associations and big players is needed
- Incorrect/outdated data:
 - Wrong location \rightarrow Coordinates require "human" verification
 - Missing fuels, incorrect Brand, duplication of stations, outdated info... Users collaborationis needed: webforms, mailbox, ...
- Technical issues for users: How to proceed, errors...
 - Manuals and FAQs needed
 - Helpdesk needed: mail box and phone

and the second second Cofinanced by the Connecting Europe DACS





Data collection

- Procedure: Data is submitted "manually" using web forms in a webpage or an Android App (individualstations) and excel files (operators with many stations). Use of webservices or json files is planned for a future.
- Static data:
 Location: Stre
 Ownership: Re
- ic carai location: Street name and number, coordinates Ownership: Retailer Company name, VAT number, email, pone, legal representative Site Data: Brand, Products on sale, opening hours, washing machine (y/n), water/air disp (y/n), discountipanis, name/cara dand type of discount, ser (y/n), coffe (y/n), store
- (ym), buscompans (panel, cara analyse of noncomp. Technical datas, nomber of thank, mundler of horse, stolal capacity(volume), total årea (square meters), register number of facility Operator data: Name, contract start and finish dats, type of relationshipbetween wholesaleoperator and retailer

- Operator data: Name, contractstart and finish date, type of relationshipbetween wholesale operator and retailer *Nymanic* data:

 Price of aliproducts on sale → min. one hour prior to price change in the station / max. 3 days

 Annual sold volumes of aliproducts (m3/kg) → once a year (january/ featurary)
 Availabilityb? If a station closes(i.e. construction works) has to communicate the period of closure. The station dissapears from the mays.



Data sharing

- All the collected data is shared in the webpage except for confidential information
- Annual sold volumes of all products Details of contract between retailer and wholesale operator
- Ways of sharing (Open Data freely
- accesible) : - Map
- Metadadata associated with map Downloable excel files
- REST web services → Exports real tim data (location and prices)



The future

- Ministry webpage will be included in Spain NAP (https://nap.dgt.es) showing other alternative fuels data (2020/2021)
 - Data will be translated into DATEX using the new data model for energy infraestructure (2021)
- EV charging points and HRS will be added to the Ministry data collection
- Data will be exported into DATEX using the new data model for energy infraestructure (2021)



Alternative fuels data collection in Spain

Annex I: Practical guide HRS Data Collection

CONTACT THE HRS OPERATOR(S) IN YOUR COUNTRY: Ask them whether they are already collecting data for the given categories.

IF YES: Ascertain whether the HRS operators in your country have established an own plant monitoring system, use the system of an HRS manufacturer, or if they are connected to the FCH 2 JU's HRS availability system or the H2.LIVE system.

IF NOT: Find out whether they are in favour of participating in the FCH 2 JU's HRS availability system, H2.LIVE or if they prefer to set up an own plant monitoring system (usually if they operate a larger number of stations).

IF A), THEY ARE INTERESTED IN PARTICIPATING IN THE FCH 2 JU'S HRS AVAILABILITY SYSTEM: Liaise them with <u>nadine.hoelzinger@spilett.com</u> in order to take part in the FCH 2 JU's HRS availability system (until end of October 2019, the hardware will be funded by the FCH 2 JU).

IF B), THEY ARE INTERESTED IN CONNECTING TO H2.LIVE: : Liaise them with <u>n.schroeder@portrix.net</u> in order to take part in the H2 MOBILITY's H2.LIVE

IF C), THEY ARE INTERESTED IN SETTING UP THEIR OWN PLANT MONITORING SYSTEM: Make sure there is an API programmed that makes a connection to the NAP or to the FCH 2 JU's availability system possible. Programming such an API could be financed by the grant received under this PSA.

IF D) THEY ARE NOT INTERESTED IN SETTING UP THEIR OWN PLANT MONITORING SYSTEM: Evaluate other suitable alternative options for data collection (e.g. using webforms) that meet the requirement for the PSA (data available in NAP in DATEX format).

ONCE DATA COLLECTION IS UNDERWAY, CONNECT THE DATA WITH THE NAP: choose whether you want to collect the data directly from the HRS operator's servers, or whether you want to collect the data from H2.LIVE or the FCH 2 JU's HRS availability system

HRS OPERATOR – NAP: check with your NAP and the HRS operator whether the data can be used and what interfaces are needed. Possibly, fund the interface programming with the grant.

FCH 2 JU'S HRS AVAILABILITY SYTEM – NAP: check with your NAP whether JSON is supported and whether the data can be converted into DATEX II. Possibly, fund the interface programming with the grant.

Annex 2: Roadmap for national implementation plan











ID Registration Organisation





Annex 3: Example legislation Poland in English

Act on electromobility and alternative fuels^{1) 2)}

of 11 January 2018 (Journal of Laws of 2018, item 317)

Chapter 1. General Regulations

Art. 1. [Scope] The Act sets out:

rules for the development and operation of infrastructure for the use of alternative fuels in transport, hereinafter referred to as "alternative fuels infrastructure", including technical requirements to be met by this infrastructure;
 duties of public entities in the field of alternative fuels infrastructure development;

3) information obligations regarding alternative fuels;

4) operating conditions of clean transport zones;

5) National framework for the development policy of alternative fuels infrastructure and the manner of their implementation.

Art. 2. [Explanation of statutory terms] The terms used in the law mean:

1) zero-emission bus - a bus within the meaning of art. 2 point 41 of the Act of 20 June 1997 - Road Traffic Law (Journal of Laws of 2017, items 1260 and 1926, as of 2018, items 79, 106, 138 and 317) which uses electricity generated from hydrogen in the fuel cells installed in it to drive or only an engine the work cycle of which does not lead to the emission of greenhouse gases or other substances covered by the greenhouse gas emission management system, referred to in the Act of 17 July 2009 on the gas emission management system of greenhouse gases and other substances (OJ of 2017, items 286, 1566 and 1999), and a trolleybus within the meaning of 2 point 83 of the Act of 20 June 1997 - Road Traffic Law;

2) bunkering with liquefied natural gas (LNG) - filling tanks of vessels with liquefied natural gas (LNG) to propel the units;

3) public transport infrastructure - hydrogen charging or refuelling points with the accompanying infrastructure necessary for operation, intended for charging or refuelling, in particular zero-emission buses used in public transport;

4) ³⁾ vessel - a ship within the meaning of art. 5 par. 1 point 1 of the Act of 21 December 2000 on inland navigation (Journal of Laws of 2017 item 2128 and 2018 item 1137) and a ship in the meaning of art. 2 § 1 of the Act of 18 September 2001 - the Maritime Code (Journal of Laws of 2016, item 66 and of 2018, items 650 and 1137);

5) ⁴⁾ charging - electricity consumption by:

a) an electric vehicle, hybrid vehicle, zero-emission bus,

b) a motor vehicle, moped, bicycle or bicycle cart not being an electric vehicle within the meaning of the Act of 20 June 1997 - Road Traffic Law

- for the purpose of driving the vehicle;

6) ⁵⁾ public charging station - a charging station available on the basis of equal treatment for each holder of an electric vehicle and a hybrid vehicle;

7) operator of a public charging station - an entity responsible for the construction, management, operational safety, operation, maintenance and repair of a generally accessible charging station;

8) natural gas station operator - an entity providing a natural gas refuelling service in the form of compressed natural gas (CNG) or liquefied natural gas (LNG), including those generated from biomethane;

9) operator of an electricity distribution system - a distribution system operator within the meaning of art. 3 point 25 of the Act of April 10, 1997 - Energy Law (Journal of Laws of 2017, item 220, as amended⁶⁾), dealing in the distribution of electricity;

10) operator of a gas distribution system - a distribution system operator within the meaning of art. 3 point 25 of the Act of April 10, 1997 - Energy Law, dealing in the distribution of gas fuels;

11) alternative fuels - fuels or electricity used to drive engines of motor vehicles or vessels that are a substitute for fuels generated from crude oil or obtained in the processing of it, in particular electricity, hydrogen, liquid biofuels, synthetic and paraffin fuels, compressed natural gas (CNG), including biomethane generated from liquefied natural gas (LNG), including those generated from biomethane, or liquid gas (LPG);

12) electric vehicle - a motor vehicle within the meaning of art. 2 point 33 of the Act of 20 June 1997 - Road Traffic Law which uses only electricity accumulated by connection to an external power source;

13) hybrid vehicle - a motor vehicle within the meaning of art. 2 point 33 of the Act of 20 June 1997 - Road Traffic Law, with an electric-diesel drive, in which electricity is accumulated by connection to an external power source;
14) natural gas-powered vehicle - a motor vehicle within the meaning of art. 2 point 33 of the Act of 20 June 1997 - Road Traffic Law, using compressed natural gas (CNG) or liquefied natural gas (LNG), including those generated from biomethane;

15) hydrogen-powered vehicle - a motor vehicle within the meaning of art. 2 point 33 of the Act of 20 June 1997 - Road Traffic Law, using electricity generated from hydrogen in the fuel cells installed in it for the drive;

16) liquefied natural gas (LNG) bunker point - a set of devices together with construction facilities or a watercraft used for supplying vessles with liquefied natural gas (LNG), including that generated from biomethane;
17) charging point - a device enabling the charging of a single electric vehicle, a hybrid vehicle and a zeroemission bus, and a place where a battery for the drive of the vehicle is replaced or charged;

18) normal-duty charging point - a charging point with a power less than or equal to 22 kW, excluding devices with a power less than or equal to 3.7 kW installed in places other than generally accessible charging stations, in particular in residential buildings;

19) high-power charging point - a charging point with a power greater than 22 kW;

20) compressed natural gas refuelling point (CNG) - a set of devices for supplying vehicles with compressed natural gas (CNG), including that generated from biomethane, to drive the engines of the vehicles;

21) liquefied natural gas refuelling point (LNG) - a set of devices for supplying vehicles with liquefied natural gas (LNG), including that generated from biomethane, to drive the engines of the vehicles;

22) shore-side point of supply of electric units - a set of devices used to supply electricity to vessels during a stay in a port, when auxiliary engines of the units are turned off;

23) TEN-T core network - the basic trans-European transport network referred to in Regulation (EU) No. 1315/2013 of the European Parliament and of the Council of 11 December 2013 on EU guidelines for the development of the trans-European transport network and repealing Decision No. 661/2010/EU (Official Journal UE L 348 of 20/12/2013, page 1, as amended 7);

24) liquefied natural gas (LNG) - liquefied natural gas within the meaning of art. 2 par. 1 point 7a of the Act of August 25, 2006 on the Fuel Quality Monitoring and Control System (Journal of Laws of 2016, item 1928 and 1948, as of 2017, item 624 and item 2290);

25) compressed natural gas (CNG) - compressed natural gas within the meaning of art. 2 par. 1 point 7 of the Act of August 25, 2006 on the fuel quality monitoring and control system;

26) natural gas station - a set of devices, including a compressed natural gas (CNG) refuelling point or a liquefied natural gas (LNG) refuelling point, connected to a gas distribution network or terminal intended for importing, unloading and regasifying liquefied natural gas (LNG) together with auxiliary installations and storage tanks used in the regasification process;

27) ⁸⁾ charging station:

(a) a construction device, including a normal-capacity charging point or a high-capacity charging point, associated with a construction facility, or

b) a detached building with at least one normal-capacity charging point or a high-capacity charging point installed

- equipped with software enabling the provision of charging services, including a parking stand and, if the charging station is connected to the distribution network within the meaning of the Act of April 10, 1997 - Energy Law, an installation from the charging point to the power connection;

28) natural gas refuelling - filling tanks of motor vehicles with compressed natural gas (CNG) or liquefied natural gas (LNG), including those generated from biomethane, used to drive the vehicles.

Chapter 2. Principles of the development and functioning of alternative fuels infrastructure

Art. 3. [Operator's and supplier's obligations] 1. Operator of a public charging station:

1) ensures that:

(a) at least one charging service provider operates at a public charging station,

b) a public charging station fulfils the technical requirements referred to in art. 13 and the regulations issued on the basis of art. 17;

2) ensures that the Office of Technical Inspection, hereinafter referred to as "UDT", conducts tests of the public charging station;

3) ensures safe operation of the public charging station;

4)⁹⁾ equips:

a) a public charging station with software enabling:

- connecting and charging an electric vehicle and a hybrid vehicle,

- transferring data to the Register of Alternative Fuels Infrastructure about the availability of a charging point and the price for the charging service,

b) each charging point installed in a public charging station that it manages, with a measuring system allowing the measurement of electricity consumption and the transfer of measurement data from that system to the charging station management system in near real time;

5) ¹⁰⁾ concludes an agreement for the provision of electricity distribution services, referred to in art. 5 par. 2 point 2 of the Act of April 10, 1997 - Energy Law, for the purposes of the charging station operation and provision of charging services - if the charging station is connected to the distribution network within the meaning of the Act of 10 April 1997 - Energy Law

6) transfers data on the amount of electricity used separately for the provision of charging services and for the charging station to the electricity distribution system operator, charging service provider and the electricity seller who concluded a contract for the sale of electricity with a charging service provider running business at this station;

7) concludes an agreement for the sale of electricity for the purposes of the charging station operation;

8) accounts for electricity losses resulting from the charging station operation;

9) provides information on the rules of using the station at the public charging station along with instructions on the operation of it;

10) ¹¹ provides charge service providers with access to a public charging station on an equal treatment basis;

11) agrees the number of parking stands available at public stations with the traffic management authority in the cases referred to in art. 12b par. 1 of the Act of 21 March 1985 on public roads (Journal of Laws of 2017, item 2222 and of 2018, items 12, 138, 159 and 317).

2. Provider of the charging service:

1) concludes an electricity sales agreement with the electricity seller, referred to in art. 5 par. 2 point 1 of the Act of April 10, 1997 - Energy Law;

2) provides a charging service including charging and providing the possibility of using charging station infrastructure for charging purposes;

3) provides, on its website, information on the price of the charging service and the terms of its provision.

Art. 4. [Agreement with a public charging station operator] The supplier of the charging service uses the public charging station on the basis of an agreement concluded with a public charging station operator.

Art. 5. [Operator's liability for damages] The operator of a public charging station is liable for damages incurred due to a failure to comply with the technical requirements specified in art. 13 and in the regulations issued on the basis of art. 17, or as a result of a failure to perform the duties referred to in art. 3 par. 1 points 3 and 9, under the terms specified in art. 435 of the Act of 23 April 1964 - Civil Code (Journal of Laws of 2017, items 459, 933 and 1132).

Art. 6. [Performing tasks of a charging service provider] The public charging station operator can perform the tasks of a charging service provider.

Art. 7. [Unconditional provision of the charging service] The charging service provider may not make the provision of the charging service dependent on the prior conclusion by the user of an electric vehicle or hybrid vehicle of an agreement in writing, in paper or electronic form.

Art. 8. [Testing the correctness of energy use] The operator of a public charging station ensures that the electricity supplied to the public charging station is used only for the purpose of:

1) charging;

2) charging or replacing a battery used to drive an electric vehicle, a hybrid vehicle, a zero-emission bus or a motor vehicle within the meaning of art. 2 point 32 of the Act of 20 June 1997 - Road Traffic Law, not being an electric vehicle;

3) ensuring the operation of this station.

Art. 9. [Information on the change of electricity supplier] 1. The charging service provider shall indicate to a public charging station operator the electricity seller with whom he concluded the electricity sales agreement, at the latest on the day the charging services are started, and inform the public charging station operator of any change to the seller.

2. The operator of a public charging station forwards to the operator of the electricity distribution system information on the change by the supplier of charging services to the electricity supplier, within 7 days from the date of receipt of this information.

3. The provision of art. 4j of the Act of April 10, 1997 - Energy Law shall apply accordingly.

Art. 10. [Methods of energy settlements] **1.** If a metering and settlement system is installed in an electric vehicle or a hybrid vehicle, which enables communication with the ICT system of a public charging station and information on the conditions under which the user of this vehicle purchases electricity on the basis of an electricity sales agreement concluded by him, referred to in art. 5 par. 2 point 1 of the Act of 10 April 1997 - Energy Law, the charging service provider provides the user of the vehicle with the option of paying for the electricity charged for charging the vehicle under the conditions specified in this sales agreement.

2. If a metering and settlement system is installed in an electric vehicle or a hybrid vehicle, which enables communication with the metering and settlement system used to measure the electric energy of the vehicle collected by the user in a single-family residential building or a dwelling located in a multi-family residential building, to which he has the title legal, the electricity seller takes into account the electricity consumed during charging in the invoice for the user's electricity.

Art. 11. [Public purpose within the meaning of the Real Estate Management Act] Construction and maintenance of public transport infrastructure for road transport and projects necessary to connect the charging points that are part of this infrastructure to the network, in particular for the modernization, expansion or construction of the network, constitute a public purpose within the meaning of the Act of 21 August 1997 on real estate management (Journal of Laws of 2018, items 121 and 50).

Art. 12. [Connection capacity] 1. Public utility buildings and multi-family residential buildings located in the municipalities referred to in art. 60 par. 1, and related internal and external parking spaces, are designed and built, providing connection capacity allowing to equip the stations with charging points with a power of not less than 3.7 kW.

2. ¹²⁾ The minister responsible for energy issues shall determine, by way of a regulation, the manner of determining the connection capacity referred to in par. 1, guided by the need to gradually increase the number of charging points and network construction of the points allowing the use of electric vehicles and hybrid vehicles.

Art. 13. [Technical and operational requirements] ¹³⁾ Charging stations, charging points being part of the public transport road charging infrastructure and shore-side power supply points for electric units meet the technical and

operational requirements specified in particular in Polish Standards, ensuring their safe use, including fire safety, safe operation of power grids and access to charging stations for the disabled.

Art. 14. [Operation in accordance with the purpose and documentation] 1. Operation of a charging station, a charging point being an element of the public transport road charging infrastructure and the shore-side point of supplying electric units is carried out in accordance with their intended use and when their technical condition ensure the safe use of them.

2. Charging stations, charging points constituting an element of public transport road charging infrastructure and shore-side power supply points for electric units have documents specifying their construction, technical and operational properties.

Art. 15. [Opinion on the compliance of technical documentation of a designed station with technical requirements] 1. Before starting the construction of a charging station, it is possible to request the President of the Office of Technical Inspection, hereinafter the "UDT President", for an opinion on the compliance of the technical documentation of the planned station with the technical requirements specified in art. 13 and in the regulations issued on the basis of art. 17.

2. The UDT President issues the opinion referred to in par. 1 within 30 days from the date of submitting the application.

3. The issuance of the opinion referred to in par. 1 is subject to a fee, which is the income of UDT.

Art. 16. [Technical examination of stations and charging points] 1. Charging stations and charging points being part of the public transport road charging infrastructure are subject to technical tests carried out by UDT in terms of their safe operation, repair and modernization.

2. The test referred to in par. 1 shall be carried out:

1) before putting the charging station or the infrastructure for loading public transport by road;

2) each time in the case of a repair or modernization of such a station or infrastructure, including the increase in the number of charging points, or changing the place of installation, a charging point at the station or infrastructure.

3. The test referred to in par. 1 shall be carried out accordingly at the request of a public charging station operator or entity operating the charging station other than the public charging station or public transport infrastructure.

4. The UDT President issues a decision to suspend the operation of a charging point installed at a charging station or a charging station, or a charging point constituting an element of a public transport road charging infrastructure, if determined a failure of the charging point installed at a charging station or a charging station, or a charging point being part of the public transport road charging infrastructure tomeet the technical requirements specified in art. 13 or in the regulations issued on the basis of art. 17.on the basis of the test results referred to in par. 1.

5. Carrying out the tests referred to in par. 1 is subject to a fee, which is the income of UDT.

Art. 17. [Statutory authorization] 1. The minister responsible for energy will determine by regulation:

detailed technical requirements, other than in the field of the replacement of batteries used to drive vehicles:
 a) regarding the operational safety, repair and modernization of charging stations,

b) regarding the safety of operation, repair and modernization of charging points that are part of the public transport infrastructure of road transport,

c) what must be fulfilled by the public charging stations and charging points being part of the public transport infrastructure in the scope related to outlet sockets or vehicle connections,

2) the types of tests concerning charging stations and charging points that are part of the public transport infrastructure of road transport, and the method and dates of such tests carried out by UDT,

3) documents attached to the request for testing,

4) the amount of the fee referred to in art. 15 par. 3 and art. 16 par. 5

- taking into account the need to ensure uniformity of technical solutions, user safety, access for people with disabilities, the scope of the examination carried out by UDT and the type of the subject of the tests.

2. The minister responsible for energy matters may determine by regulation:

1) detailed technical requirements regarding the safety of operation, repair and modernization of charging points for the replacement of batteries used for electric vehicles or hybrid vehicles,

2) the manner and dates of conducting tests of the charging points referred to in point 1 by UDT,

3) documents attached to the request for testing,

4) the amount of the fee referred to in par. 5

- taking into account the need to ensure uniformity of technical solutions, safety during the exchange and storage of batteries for vehicle propulsion, the scope of the test carried out by UDT and the type of the subject of the test.

Art. 18. [Testing shore-side power supply points of electric units] 1. Shore-side supply points for electric units, in terms of their safe operation, repair and modernization, are subject to technical tests carried out by Transport Technical Supervision, hereinafter referred to as "TDT".

2. The test referred to in par. 1 shall be carried out before putting a shore-side point of supply for electric units into operation and each time in the case of any repair or modernization of such a point.

3. The test referred to in par. 1 shall be carried out at the request of the entity operating the shore-side point of supply for electric units.

4. The Director of Transport Technical Supervision, hereinafter referred to as the "TDT Director", issues a decision to suspend the operation of a shore-side power supply point for electric units in case it determines, based on the results of the tests referred to in par 1, non-fulfilment of the technical requirements specified in art. 13 or in the regulations issued on the basis of art. 19.

5. Carrying out the tests referred to in par. 1 is subject to a fee, which is the income of TDT.

Art. 18a. [TDT Director's opinion on the compliance of technical documentation] ¹⁴⁾ 1. Before starting the operations of a shore-side power point for electric units, you may apply to the TDT Director for an opinion on the compliance of the technical documentation of the shore-side point designed to supply electric units with the technical requirements set out in Art. 13 and in the regulations issued on the basis of art. 19.

2. The TDT President issues the opinion referred to in par. 1 within 30 days from the date of submitting the application.

3. The issuance of the opinion referred to in par. 1 is subject to a fee, which is the income of TDT.

Art. 19. [Statutory authorization] The minister competent for energy, in agreement with the minister competent for maritime economy and the minister competent for inland waterway transport, will determine by regulation:

1) detailed technical requirements to be met by the shore-side power supply points for electric units in the field of operational safety, repair and modernization of the points,

2) types of the tests of the shore-side points of supply for electric units carried out by TDT and the manner and dates of the implementation of them,

3) the amount of the fee referred to in art. 18 par. 5

- guided by the need to ensure the safety of vessels' power supply, the uniformity of technical solutions and the security of the network's operation, access for the disabled and taking into account the scope of the research carried out by TDT and the type of the test subject.

Art. 20. [**Program for the construction of a natural gas station**] 1. ¹⁵⁾ The operator of the gas distribution system referred to in art. 9d par. 1d of the Act of April 10, 1997 - Energy Law, with the exclusion of enterprises referred to in art. 9d par. 7 points 3 and 4 of this Act, develops a program for the construction of a natural gas station and projects for the modernization, expansion or construction of networks necessary to connect the stations.

2. The program referred to in par. 1 constitutes a separate part of the development plan in the scope of satisfying the current and future demand for gaseous fuels, referred to in art. 16 par. 4 of the Act of April 10, 1997 - Energy Law.

3. In the program referred to in par. 1, the gas distribution system operator shall take into account each municipality located in the area of its operation which meets all the following criteria:

1) the number of inhabitants of the municipality is at least 100,000 and

2) at least 60,000 motor vehicles have been registered in the municipality, and

3) there are at least 400 motor vehicles per 1000 inhabitants of the municipality.

4. The program referred to in par, 1 specifies:

1) the number of planned natural gas stations;

2) technical parameters and locations of natural gas stations planned to be connected to the network;

3) information on the available technical capacity of gas networks to which natural gas stations are to be connected;

4) information on the connection capacity available at the exit point.

Art. 21. [Tasks of the gas distribution system operator] 1. The gas distribution system operator:

1) builds a natural gas station in accordance with the program referred to in art. 20, including compressed natural gas (CNG) refuelling points;

2) performs repairs and modernization of the natural gas station.

2. The costs of the construction, repair and modernization of the natural gas station referred to in par. 1 borne by the gas distribution system operator 1, excluding the costs referred to in art. 23 point 4, are included in its justified costs within the meaning of art. 3 point 21 of the Act of 10 April 1997 - Energy Law.

Art. 22. [Selection of a natural gas station operator by a tender] 1. The gas distribution system operator selects the operator of the natural gas station by way of a tender and concludes an agreement with him to provide refuelling services and operate a natural gas station. The provisions of the Act of 21 October 2016 on the concession agreement for construction works or services (Journal of Laws item 1920) apply accordingly.

2. If it is not possible to identify the operator of a natural gas operator in accordance with par. 1, the function of the natural gas station operator is performed by an energy company engaged in economic activities in the field of trade in gaseous fuels, which the non-cash contribution referred to in Art. 5b¹ of the Act of 10 April 1997 - Energy Law.

Art. 23. [Responsibilities of a natural gas station operator] The natural gas station operator:

1) is responsible for the technical condition and safe operation of the natural gas station;

2) ensures technical the tests of natural gas stations referred to in art. 27;

3) runs a natural gas station in accordance with the agreement referred to in art. 22 par. 1;

4) covers the costs of repairs and overhauls resulting from the operation of the natural gas station conducted in a way inconsistent with the terms of the agreement referred to in art. 22 par. 1;

5) provides a compressed natural gas (CNG) refuelling service.

Art. 24. [Access to Liquefied Natural Gas Bunkers (LNG)] The managing entity of the port belonging to the TEN-T core network ensures that a liquefied natural gas (LNG) bunker point is available at that port.

Art. 25. [Compliance of natural gas stations with technical requirements] Natural gas stations and bunkering points for liquefied natural gas (LNG) are built, operated, repaired and modernized in a manner consistent with the technical requirements specified in the regulations issued on the basis of art. 29 and the conditions of refuelling vehicles and bunkering vessels, ensuring:

- 1) user safety;
- 2) proper functioning of the gas network;
- 3) fire safety;
- 4) access for people with disabilities;
- 5) proper technical condition of the infrastructure used.

Art. 26. [Opinion on the compliance of technical documentation of a designed station with technical requirements] 1. Before starting the construction of a natural gas station, the gas distribution system operator may submit a request to the UDT for an opinion on the compliance of the technical documentation of the planned station with the technical requirements set out in Art. 25 and in the regulations issued on the basis of art. 29 par. 1.

2. The UDT President issues the opinion referred to in par. 1 within 30 days from the date of receipt of the application.

3. The issuance of the opinion referred to in par. 1 is subject to a fee, which is the income of UDT.

Art. 27. [Being subject to technical inspections carried out by UDT] 1. Gas stations, in terms of their safe operation, repair and modernization, are subject to technical inspections carried out by UDT.

2. The test referred to in par. 1 shall be carried out before putting the natural gas station into service and each time in case of any repair or modernization of such a station.

3. The test referred to in par. 1 shall be carried out at the request of the operator of the natural gas station.

4. The UDT President issues a decision to suspend the operation of the natural gas station if a failure of the natural gas station is found on the basis of the results of the tests referred to in paragraph 1 to meet the requirements specified in art. 25 or in the regulations issued on the basis of art. 29 par. 1.

5. Carrying out the tests referred to in par. 1 is subject to a fee, which is the income of UDT.

Art. 28. [Being subject to technical inspections carried out by TDT] 1. Liquefied natural gas bunkering point (LNG), in terms of its safe operation, repair and modernization, is subject to technical tests carried out by TDT.

2. The test referred to in par. 1 shall be carried out before putting the liquefied natural gas point (LNG) into service and each time in case of any repair or modernization of such a point.

3. The test referred to in par. 1 shall be carried out at the request of the entity operating the liquefied natural gas (LNG) bunkering point.

4. The TDT Director issues a decision to suspend the operation of the liquefied natural (LNG) bunkering point if a failure of the point is found on the basis of the results of the tests referred to in paragraph 1 to meet the technical requirements specified in art. 25 or in the regulations issued on the basis of art. 29 par. 1.

5. Carrying out the tests referred to in par. 1 is subject to a fee, which is the income of TDT.

Art. 28a. [Application to the TDT Director for an opinion on the compliance of technical documentation] ¹⁶⁾ 1. Before commencing the construction of a liquefied natural gas (LNG) bunker, you may apply to the TDT Director for an opinion on the compliance of the technical documentation of the designed natural gas bunker with the technical requirements set out in Art. 25 and in the regulations issued on the basis of art. 29 par. 2.

2. The TDT President issues the opinion referred to in par. 1 within 30 days from the date of submitting the application.

3. The issuance of the opinion referred to in par. 1 is subject to a fee, which is the income of TDT.

Art. 29. [Statutory authorization] 1. The minister responsible for energy will determine by regulation:

1) detailed technical requirements for safe operation, repair and modernization of the natural gas station,

2) types of technical tests of natural gas stations carried out by UDT as well as the method and dates of their implementation,

3) the amounts of the fees referred to in art. 26 par. 3 and art. 27 par. 5

- guided by the need to ensure the safety of operation and use of the stations, the uniformity of technical solutions, and taking into account the scope of the tests carried out by UDT and the type of subject of this study.

2. The minister competent for energy, in agreement with the minister competent for maritime economy and the minister competent for inland waterway transport, will determine by regulation:

1) detailed technical requirements for safe operation, repair and modernization of liquefied natural gas (LNG) bunkering points,

2) types of technical tests of liquefied natural gas (LNG) bunkering points carried out by TDT as well as the method and dates of their implementation,

3) the amount of the fee referred to in art. 28 par. 5

- guided by the need to ensure the safety of operation and use of the points, the uniformity of technical solutions, and taking into account the scope of the tests carried out by TDT and the type of subject of this study.

Art. 30. [Basis for determining the amounts of fees] The basis for determining the amounts of fees referred to in art. 15 par. 3, art. 16 par. 5, art. 18 par. 5, art. 26 par. 3, art. 27 par. 5 and art. 28 par. 5 is the average monthly

remuneration in the national economy in the previous year announced by the President of the Central Statistical Office in the Official Gazette of the Republic of Poland "Monitor Polski", in accordance with art. 5 par. 7 of the Act of 4 March 1994 on the Company Social Benefits Fund (Journal of Laws of 2017, item 2191 and 2371), in force on the day of submission of the application for technical tests or preparation of an opinion.

Art. 31. [Proceedings regarding the decision to suspend exploitation] 1. Proceedings regarding the issue of a decision to suspend exploitation, referred to in art. 16 par. 4, art. 18 par. 4, art. 27 par. 4 and art. 28 par. 4 are subject to the provisions of the Act of 14 June 1960 - the Code of Administrative Procedure (Journal of Laws of 2017 item 1257 and of 2018 item 149).

2. In the case of appeals against the decisions referred to in art. 16 par. 4, art. 18 par. 4, art. 27 par. 4 and art. 28 par. 4, the higher-level body within the meaning of the Act of 14 June 1960 - The Code of Administrative Procedure is the minister competent for energy.

Chapter 3. Duties of public entities in the field of alternative fuels infrastructure development

Art. 32. [Plan of location of public charging stations and natural gas station] 1. The General Director of National Roads and Motorways prepares a plan for the location of public charging stations and natural gas stations along the TEN-T base network roads remaining in its management for a period of not less than 5 years.

2. The plan referred to in par. 1 specifies the number and location of public charging stations and natural gas stations, including CNG filling points and LNG refuelling points necessary to cover the demand for alternative fuels in vehicles travelling on the TEN-T core network roads.

3. The General Director of National Roads and Motorways consults the draft plan referred to in par. 1 with the relevant operators of electricity and gas distribution systems and with entities managing service locations, referred to in the regulations issued on the basis of art. 7 par. 2 point 2 of the Act of July 7, 1994 - Construction Law (Journal of Laws of 2017, item 1332 and 1529 and of 2018, items 12 and 317).

4. Operators of electricity and gas distribution systems as well as entities managing service locations of travellers, referred to in the regulations issued on the basis of art. 7 par. 2 point 2 of the Act of July 7, 1994 - Construction Law, submit their opinions on the draft plan referred to in par. 1, within 2 months from the date of receipt of the draft. The opinions contain an assessment of technical and economic conditions for the connection of charging points and natural gas stations in locations indicated in the plan referred to in par. 1.

5. The General Director of National Roads and Motorways publishes the plan referred to in par. 1, along with the results of consultations and opinions of the operators of electricity and gas distribution systems on the website of the office servicing it.

6. The General Director of National Roads and Highways may include the location of hydrogen refuelling points in the plan referred to in par. 1, i.e. sets of devices for hydrogen supplying hydrogen-powered vehicles in order to drive engines of the vehicles, if the location of such points is justified by the needs of developing alternative fuels market. The provisions of par. 2-5 shall apply accordingly.

Art. 33. [Plan for the location of liquefied natural gas (LNG) bunkering points] 1. The managing entity of the port belonging to the TEN-T core network prepares a plan for the location of liquefied natural gas (LNG) bunkering points or the possibility of bunkering using bunkers and supply points for shore-side electric units, including the assessment referred to in art. 43 par. 2 point 8.

2. The plan referred to in par. 1, specifies the number and location of liquefied natural gas (LNG) bunkering points as well as power supply points for shore-side electric units.

3. The managing entity of the port belonging to the TEN-T core network shall consult the draft plan referred to in par. 1 with the relevant operators of electricity and gas distribution systems.

4. The operators of electricity and gas distribution systems submit their opinions on the draft plan referred to in par. 1, within 2 months from the date of receipt of the draft. The opinion contains an assessment of technical and economic conditions for the connection of liquefied natural gas (LNG) bunkering points and power supply points for shore-side electric units.

5. The managing entity of the port belonging to the TEN-T core network shall publish the plan referred to in par. 1, along with the results of consultations and opinions of the operators of electricity and gas distribution systems, on its website.

Art. 34. [Share of electric vehicles in the fleet of primary vehicles and central state administration bodies] 1.

¹⁷⁾ The supreme and central organs of state administration ensure that the share of electric vehicles in the fleet of the vehicles used in the office or budget management institution or other entity providing services in the field of passenger transport is at least 50% of the number of vehicles used.

2. The provision of par. 1 does not apply to:

1) the minister competent for foreign affairs in the field of vehicles used in foreign branches of the Republic of Poland within the meaning of the Act of 27 July 2001 on foreign service (Journal of Laws of 2017, items 161 and 476 and of 2018, item 138);

2) the General Director of the Prison Service, Chief Police Commander, Chief Inspector of Road Transport, Head of the Internal Security Agency, Head of the Foreign Intelligence Agency, Head of the Military Counterintelligence Service, Head of the Central Anticorruption Bureau, Chief Commander

of the Border Guard and Chief Commandant of the State Fire Service;

3) the Head of the National Tax Administration regarding vehicles used for special purposes within the meaning of art. 2 point 37 of the Act of 20 June 1997 - Road Traffic Law;

4) General Director of National Roads and Motorways in the field of vehicles other than those exclusively used for passenger transport;

5) State Protection Services.

Art. 35. [Share of electric vehicles in the fleet of local self-government units] 1. ¹⁸⁾ A local government unit, with the exception of municipalities and poviats whose population does not exceed 50,000, ensures that the share of electric vehicles in the fleet of the vehicles they use in the office servicing is at least 30% of the number of vehicles used.

2. Local government unit, with the exception of municipalities and poviats whose population does not exceed 50,000:

1) performs a public task, with the exception of public public transport, using at least 30% of electric vehicles or natural gas-fuelled vehicles, or

2) commissions a public task, with the exception of public collective transport, to an entity whose at least 30% of the fleet of vehicles used in carrying out this task are electric vehicles or vehicles powered by natural gas.

Art. 36. [Provision of public transport services using zero-emission buses] 1. A local government unit, with the exception of municipalities and poviats whose population does not exceed 50,000, provides a service or commissions a public transport service within the meaning of the Act of 16 December 2010 on public collective transport (Journal of Laws of 2017, item 2136 and 2371 and 2018 item 317) to an entity whose share of zero-emission buses in the fleet of the vehicles used in the area of this local government unit is at least 30%.

2. A local government unit, excluding municipalities and poviats whose population does not exceed 50,000, provides a service or commissions a public transport service within the meaning of the Act of 16 December 2010 on public collective transport to an entity whose use of vessels using only engines whose cycle of work does not lead to the emission of greenhouse gases or other substances covered by the greenhouse gas emission management system, referred to in the Act of 17 July 2009 on greenhouse gas emissions management system and other substances, in the fleet used in this local government unit is at least 30%.

Art. 37. [Analysis of the costs and benefits of using zero-emission buses] 1. The local government unit referred to in art. 36, draws up, every 36 months, an analysis of the costs and benefits of using, in the provision of urban transport services, zero-emission buses and other means of transport in which only engines whose work cycle does not emit greenhouse gases or other substances covered by the cycle are used for propulsion, as covered by the greenhouse gas emission management system, referred to in the Act of 17 July 2009 on the greenhouse gas emissions management substances.

2. The analysis referred to in par. 1, includes in particular:

1) a financial and economic analysis;

2) estimation of environmental effects related to the emission of harmful substances to the natural environment and human health;

3) a socio-economic analysis including the valuation of costs associated with the emission of harmful substances.

3. The local government unit referred to in art. 36 provides for the opportunity for public participation in the development of the analysis referred to in par. 1, on the principles set out in section III in chapters 1 and 3 of the Act of 3 October 2008 on access to information about the environment and its protection, public participation in environmental protection and environmental impact assessments (Journal of Laws of 2017 items 1405, 1566 and 1999).

4. The analysis referred to in par. 1, immediately after its development, is forwarded to the minister competent for energy matters, the minister competent for economy and the minister competent for environmental matters.

5. If the results of the analysis referred to in par. 2 point 3, indicate the lack of benefits from the use of zero-emission buses, the local government unit referred to in art. 36, may fail to meet the obligation to achieve the level of zero-emission bus share.

Art. 38. [Information on the number and percentage share of electric vehicles or vehicles powered by natural gas] The entities referred to in art. 34-36, until 31 January each year, provide the minister responsible for energy with information on the number and percentage of electric vehicles or natural gas vehicles in the used fleet, as of 31 December of the year preceding the transfer of this information.

Art. 39. [Clean transport zone] 1. ¹⁹⁾ In order to prevent negative impact on human health and the environment in connection with the emission of pollutants from transport in a municipality with more than 100,000 inhabitants, for the inner city area or its part, constituting a cluster of intensive development in the inner city area, defined in the local spatial development plan, and in the case of lack of a study of the conditions and directions of spatial development of the municipality, a clean transport zone can be established in the area including roads managed by the municipality, to which it is restricted to enter with vehicles other than:

- 1) electric;
- 2) powered by hydrogen;
- **3)** powered by natural gas.

2. The owner of a vehicle powered by natural gas may benefit from the exclusion referred to in par. 1 point 3, if it ensures the marking of this vehicle on its windscreen in accordance with the regulations issued on the basis of art. 76 par. 1 point 1 letter a the Act of 20 June 1997 - Road Traffic Law. The label is issued to owners of vehicles by

the municipality head, mayor or city president competent for the place of residence or seat of the vehicle owner. 3. The following are released from the restriction referred to in par. 1:

1) ²⁰⁾ vehicles used by:

a) the Police, Road Transport Inspection, Internal Security Agency, Intelligence Agency, Military Counterintelligence Service, Military Intelligence Service, Central Anticorruption Bureau, Border Guard, State Protection Service, Prison Service, National Fiscal Administration, fire protection units, Maritime Search and Rescue Service and emergency services,

b) used in the fleet servicing the Chancellery of the Prime Minister,

c) road authorities and those executing tasks for road managers,

d) the Armed Forces of the Republic of Poland, as well as the armed forces of foreign states, if an international agreement to which the Republic of Poland is a party provides so,

e) with a maximum permissible mass up to 3.5 t, whose owners or users are residents of the clean transport zone;

- 2) specialist sanitary transport used by medical rescue teams and sanitary transport teams;
- 3) zero-emission buses;
- 4) school buses.

4. A municipality council, in the resolution establishing a clean transport zone, may establish exemptions from the entry restriction to this zone other than those specified in par. 3.

4a. ²¹⁾ The municipality council, in the resolution establishing a clean transport zone, may allow movement within this zone, within a period not longer than 3 years from the date of adoption of the resolution, of vehicles other than those specified in par. 1 and 3-4, subject to the payment of a fee.

4b. ²²⁾ The fee for entering the clean transport zone is the income of the municipality, it can be used only for the purposes of:

- 1) marking the clean transport zone;
- 2) purchase of zero-emission buses;

3) covering the costs of performing the analysis referred to in art. 37 par. 1.

4c. ²³⁾ Fee for entering the clean transport area:

1) can not be higher than 2.50 PLN per hour and can be charged only for moving around the zone for vehicles other than those specified in par. 1 and 3-4 from 900 am to 500 pm;

2) can take the form of a subscription or a flat fee.

4d. ²⁴⁾ The fee for entry into the clean transport area is collected by the municipality head, mayor or city president.

5. The boundaries of the area of clean transport zone are marked with road signs.

Art. 40. [Resolution on the establishment of a clean transport zone] 1. The clean transport zone is established, by way of resolution, by the municipality council.

2. The resolution referred to in par. 1 specifies:

- 1) boundaries of the area of clean transport zone;
- 2) the manner of organizing the restriction of entry to the clean transport zone;

3) additional ways to publicize the content of the resolution on the establishment of a clean transport zone.

3. The resolution referred to in par. 1 is an act of local law.

Chapter 4. Information obligations in the field of alternative fuels

Art. 41. [Inserting information on the type of fuel used into the drive of the vehicle] 1. Information on the type of alternative fuel used to power a motor vehicle is placed:

- 1) in the instruction manual of the vehicle by the vehicle manufacturer;
- 2) on fuel filler plugs or vehicle sockets or in the vicinity of the plugs or sockets by the vehicle manufacturer;

3) in the area of a commercial outlet selling motor vehicles - by the owner of this facility.

2. A public charging station operator and a natural gas station operator labels a public charging station or natural gas station in a manner clearly indicating the possibility of charging or refuelling the vehicle with natural gas.

3. If motor vehicles can be charged or refuelled with alternative fuels at a liquid fuel station within the meaning of regulations issued on the basis of art. 7 par. 2 point 2 of the Act of 7 July 1994 - Construction Law, the owner of this station places a comparison of unit prices of fuels offered at this station.

4. The information referred to in paragraph 1-3 are placed in visible and accessible places.

5. Control of the fulfilment of the information obligations referred to in par. 1-4 is carried out by the Trade Inspection.

6. The minister responsible for energy will determine by regulation, the method of:

1) marking places of refuelling or charging a motor vehicle,

2) formulating and making the available information about the possibility of charging or refuelling a motor vehicle with alternative fuel,

3) comparing the prices of alternative fuels with the prices of motor gasoline and diesel oil

- taking into account the need for providing car vehicle users with complete information on alternative fuels and ensuring the transparency of the data on the compared fuel prices.

Art. 42. [Register of Alternative Fuels Infrastructure] 1. The Register of Alternative Fuels Infrastructure, hereinafter referred to as the "register", is a public register kept to provide users of electric vehicles and natural gas

vehicles with information facilitating the use of the vehicles.

2. The register is maintained by the UDT President using an ICT system.

3. The register contains information about:

1) coordinates of the natural gas station in accordance with the state spatial reference system in a flat rectangular coordinate system;

2) coordinates of public charging stations, in accordance with the state spatial reference system in a flat rectangular coordinate system;

3) current prices of alternative fuels in places indicated in points 1 and 2;

4) availability of charging points installed in public charging stations.

4. In the teleinformation system referred to in par. 2, the following shall be made available:

1) electronic services allowing for:

a) registering and updating data concerning the refuelling point for compressed natural gas (CNG), liquefied natural gas refuelling point (LNG) or charging point installed at a public charging station, using the electronic form,

b) sending up-to-date information on the availability of a charging point installed at a public charging station and current prices of alternative fuels, using the provided network service;

2) an interactive map containing the information referred to in par. 3.

5. An operator of a public charging station and an operator of a natural gas station are obliged to make a notification to the register, using the electronic form referred to in par. 4 point 1 letter a, of data on:

1) the name of the public charging station operator or the natural gas station operator, the address of his headquarters and his contact details,

2) specification of the type of infrastructure supported by the operator,

3) coordinates of the natural gas station or the public charging station referred to in par. 3 points 1 and 2

- at the latest on the day of the commencement of the provision of charging services or natural gas refuelling services and each time such data is changed.

6. The public charging station operator is obliged to provide, by means of the network service referred to in par. 4 point 1 letter b, information about:

1) availability of a charging point installed at a public charging station - immediately after a change in the availability status of this point, within the time limit resulting from the mode of operation of the network service;

2) current prices of charging services - within an hour of changing the prices.

7. A natural gas station operator provides information on the current natural gas prices using the network service referred to in par. 4 point 1 letter b, within an hour of changing the price.

8. The data presented on the map referred to in par. 4 point 2 is updated in the scope of information referred to in:

1) par. 3 point 3 - within an hour of changing the price;

2) par. 3 point 4 - immediately after the change of the availability status, within the time resulting from the mode of operation of the network service referred to in par. 4 point 1 letter b.

9. Detailed specification of the network service referred to in par. 4 point 1 letter b, defined in the language of WSDL network services description, is available in the Public Information Bulletin on UDT website.

10. The ICT system referred to in par. 2, makes it possible to share the information collected in it, referred to in par. 3, with any entity interested in the processing of it in order to make it available on the map.

11. The minister responsible for energy issues shall specify, by way of a regulation, the model of the notification referred to in par. 5, guided by the necessity of unifying the form and manner of providing information contained in the application.

Chapter 5. National policy framework for the development of alternative fuels infrastructure

Art. 43. [Goals and activities defined in the National Framework] 1. The minister responsible for energy issues develops the National Policy Framework for the Development of Alternative Fuels Infrastructure, hereinafter referred to as the "National Framework".

2. The national framework includes in particular:

assessment of the existing state and future development of the alternative fuels market in the transport sector;
 the national target for the number of charging points installed at public charging stations in the municipalities referred to in art. 60 par. 1, broken down into normal-capacity charging points and high-capacity charging points;
 the national target for the number of refuelling points for compressed natural gas (CNG), refuelling points for liquefied natural gas (LNG) and bunkering points for liquefied natural gas (LNG);

4) actions necessary to ensure achievement of the national objectives referred to in points 2 and 3;

5) actions aimed at supporting the development of alternative fuels infrastructure in public mass transport services;

6) list of the municipalities and transport networks in which, taking into account market needs, refuelling points for compressed natural gas (CNG) are to be deployed;

7) assessment of the need for installing bunker points for liquefied natural gas (LNG) in seaports outside the TEN-T core network;

8) assessment of the need for installing shore-side power points for electric units in seaports;

9) assessment of the need to install devices for supplying electricity to planes during a stopover at airports.

3. The minister competent for energy may specify objectives and activities related to the development of alternative fuels infrastructure in inland ports in the National framework.

4. The Council of Ministers adopts the National Framework, by way of a resolution, at the request of the minister competent for energy matters.

5. The National Framework shall be published in the Official Gazette of the Republic of Poland "Monitor Polski".

6. The minister competent for energy matters, immediately after the adoption of the framework by the Council of Ministers of State, passes it on to the European Commission.

7. The National Framework shall be updated taking into account the assessment of the functioning and the results of the monitoring, evaluation and report referred to in Article 44 par. 1. Update of the National Framework shall be subject to the provisions of paragraph 2-6 accordingly.

Art. 44. [Responsibilities of the minister competent for energy] 1. Minister competent for energy:

1) monitors the level of the achievement of the objectives set in the National Framework, in particular on the basis of data contained in the register and results of statistical surveys conducted in accordance with the program of statistical surveys of official statistics within the meaning of the Act of 29 June 1995 on official statistics (Journal of Laws of 2016, item 1068 and of 2017 item 60);

2) performs, on an annual basis, an assessment of the level of achievement of the objectives set in the National Framework and publishes it on the website of the office servicing it;

3) on the basis of the assessment referred to in point 2, draws up, every 3 years, a report on the implementation of the National Framework, that he submits to the Council of Ministers for approval by 15 October of the third year covered by the report;

4) shall submit to the European Commission the report referred to in point 3 approved by the Council of Ministers by November 18 of the third year covered by the report.

2. The report referred to in par. 1 point 3, includes in particular:

1) discussion of the level of the achievement of the objectives referred to in art. 43 par. 2 points 2 and 3, and information on actions taken to implement them;

2) information on the applied direct support instruments, in particular about tax instruments and non-financial incentives for purchasing vehicles fuelled with alternative fuels or building infrastructure for the fuels;

3) information on the policy used in the field of public procurement for supporting the use of alternative fuels in transport;

4) an assessment of the need to install refuelling points for aviation fuels from renewable sources at airports belonging to the TEN-T core network;

5) information on procedures and regulations related to facilitating trade in alternative fuels in transport;

6) information on the annual amount of public funds allocated to:

a) development of alternative fuels infrastructure,

b) support for production plants in the field of technologies related to alternative fuels,

c) support for scientific research, technological development and pilot projects related to alternative fuels - broken down by individual alternative fuels and types of transport;

7) information on the predicted number of vehicles fuelled with alternative fuels registered in the country in 2020, 2025 and 2030.

Chapter 6. Financial penalties

Art. 45. [Conditions and amount of the penalty payment] 1. The following economic operators are liable to pay a penalty if they:

1) do not comply with the obligation to provide suppliers with the access charging service referred to in art. 3 par. 1 point 10;

2) ²⁵⁾ make the provision of a charging service at a public charging station conditional upon the prior conclusion by the holder of an electric vehicle or hybrid vehicle of an agreement in written or electronic form;

3) do not provide electricity at a public charging station in the manner specified in art. 8;

4) do not provide for the tests referred to in art. 16 par. 1 or art. 27 par. 1, or operate public charging stations, charging points constituting an element of the public transport road charging infrastructure or natural gas stations contrary to the decision to stop exploitation referred to in art. 16 par. 4 and art. 27 par. 4;

5) do not comply with the technical requirements set out in the regulations issued on the basis of art. 17 or art. 29 par. 1;

6) do not comply with the technical requirements set out in the regulations issued on the basis of art. 19 and art. 29 par. 2;

7) do not develop the program referred to in art. 20 par. 1;

8) ²⁶⁾ do not build a natural gas station pursuant to art. 21 par. 1 point 1;

9) do not fulfil the obligation referred to in art. 24;

10) do not comply with the information obligations referred to in art. 41 par. 1-4;

11) do not perform the obligation referred to in art. 42 par. 5;

12) ²⁷⁾ do not build a public charging station in accordance with art. 64 par. 1.

2. The amount of the penalty in the cases specified in paragraph 1 in:

1) point 1 is from PLN 5,000 to PLN 150,000;

2) point 2 is from PLN 1000 to PLN 50,000;

- 3) point 3 is from PLN 5000 to PLN 50,000;
- 4) points 4-6 is from PLN 1000 to PLN 100,000;
- **5**) ²⁸⁾ in points 7 and 12 is from PLN 5,000 to PLN 500,000;
- 6) point 8 is from PLN 10,000 to PLN 2,000,000;
- 7) point 9 is PLN 50,000 to PLN 1,000,000;
- 8) point 10 is from PLN 500 to PLN 2000;
- 9) point 11 is from PLN 500 to PLN 10,000.

3. The amount of the financial penalty referred to in par. 1 may not exceed 15% of the revenue of the punished entrepreneur, achieved in the previous tax year.

Art. 46. [Entities entitled to impose a penalty] 1. The penalty payment referred to in art. 45 par. 1:

1) ²⁹⁾ points 1-3, 7, 8 and 12 - is imposed by the President of the Energy Regulatory Office, hereinafter referred to as "the President of the Energy Regulatory Office;

- 2) points 4, 5 and 11 is imposed by the President of UDT;
- 3) point 6 is imposed by the TDT Director;
- 4) point 9 is imposed by the territorially competent director of the maritime office;
- 5) point 10 is imposed by the regional inspector of the Trade Inspection.

2. ³⁰⁾ The President of the Energy Regulatory Office imposes the penalties referred to in art. 45 par. 1 points 1-3, 7, 8 and 12, by way of a decision against which an appeal may be brought to the Regional Court in Warsaw - a court for competition and consumer protection. Pecuniary penalty is paid within 14 days from the date on which the decision to impose the penalty became final.

3. The Regional Inspector of the Trade Inspection orders the penalty referred to in art. 45 par. 1 point 10, by way of a decision against which an appeal may be brought to the President of the Office for Competition and Consumer Protection.

4. The Director of the maritime office imposes the penalty referred to in art. 45 par. 1 point 9 by way of a decision against which an appeal may be brought to the minister competent for maritime economy.

5. The UDT President imposes the penalty referred to in art. 45 par. 1 points 4, 5 and 11, by way of a decision against which an appeal may be brought to the minister competent for energy matters.

6. The TDT Director of the maritime office imposes the penalty referred to in art. 45 par. 1 point 6 by way of a decision against which an appeal may be brought to the minister competent for transport.

Art. 47. [Income from financial receivables due to penalties] Cash receivables due to penalties referred to in art. 46:

1) par. 2-4 - constitute the income of the state budget;

2) par. 5 - constitute the revenue of UDT;

3) par. 6 - constitute the income of TDT.

Chapter 7. Amendments to the existing regulations

Art. 48. In the Act of May 20, 1971 - Code of Petty Offences (Journal of Laws of 2015, item 1094, as amended³¹⁾), following art. 96b, art. 96c shall be added, reading as follows:

"Art. 96c. Whoever does not comply with the restrictions on access to the clean transport zone is liable to a fine of up to PLN 500. ".

Art. 49. The Act of 21 March 1985 on public roads (Journal of Laws of 2017 item 2222 and 2018 items 12, 138 and 159) shall be amended as follows:

1) following art. 12a, art. 12b shall be added:

"Art. 12b.

1. The competent authority for traffic management, designating places for parking vehicles, sets parking spaces at public charging stations for electric vehicles, referred to in art. 2 point 12 of the Act of January 11, 2018 on Electromobility and Alternative Fuels (Journal of Laws item 317):

1) on public roads,

2) in residential areas referred to in art. 2 point 16 of the Act of 20 June 1997 - Road Traffic Law,

3) in the traffic zones referred to in art. 2 point 16a of the Act of 20 June 1997 - Road Traffic Law - marking them with appropriate road signs allowing to distinguish them from parking spaces for other motor vehicles.

2. The parking spaces referred to in par. 1 shall be determined at least in the number corresponding to the number of charging points at a given location.

3. Electric vehicles may use the parking spaces referred to in par. 1 only for the time of charging.

4. The authority referred to in par. 1 may set parking spaces designated for parking electric vehicles and powered by natural gas also in places where there are no public charging stations to promote vehicles powered with alternative fuels.

2) in art. 13 par. 3 point 1 letter d the semicolon is replaced by a comma and the following point is added: e reading as follows:

"e) electric vehicles referred to in art. 2 point 12 of the Act of January 11, 2018 on Electromobility and Alternative Fuels;";

3) in art. 13b par. 6 after point 1, the following point 1a is added:

"1a) sets, in the paid parking zone, places designated for parking electric vehicles for loading time at charging points installed at the public charging stations referred to in art. 2 point 6 of the Act of January 11, 2018 on Electromobility and Alternative Fuels;";

4) in art. 39 par. 1a is replaced by the following:

1a. The provision of par. 1 point 1 shall not apply to the placement, maintenance, reconstruction and repair of telecommunications infrastructure within the meaning of the Act of 16 July 2004 - Telecommunications Law (Journal of Laws of 2017, items 1907 and 2201 and of 2018, items 106 and 138) and devices for supplying or removing liquids, steam, gas, electricity, including charging points forming part of the public transport infrastructure, as well as devices related to their operation, as well as other activities related to the operation of this infrastructure and the devices, if technical conditions and safety requirements allow.

5) the title of Chapter 6 is replaced by the following:

"Amendments to the existing regulations, episodic, transitional and final provisions"

6) following art. 50, 50a shall be added:

"Art. 50a. In the period until December 31, 2028, fees for travel on national roads, referred to in art. 13 par. 1 point 3, zero-emission buses of the public transport operator performing transport of a public utility character within the meaning of art. 4 par. 1 point 12 of the Act of 16 December 2010 on public collective transport (Journal of Laws of 2017, items 2136 and 2371 and of 2018 item 317). ".

Art. 50. In the Act of March 21, 1991 on Marine Areas of the Republic of Poland and Maritime Administration (Journal of Laws of 2017, item 2205) in art. 42 par. 2 point 33, the full stop is replaced with a semicolon and the following point 34 is added:

"34) control of entities managing seaports in the scope ensuring their accessibility in the port of the liquefied natural gas (LNG) bunkering point specified in the provisions of the Act of January 11, 2018 on Electromobility and Alternative Fuels (Journal of Laws item 317). ".

Art. 51. In the Act of 26 July 1991 on personal income tax (Journal of Laws of 2018 item 200, of 2017 item 2494 and of 2018 items 106 and 138) in art. 23 in par. 1 point 4 shall read as follows:

"4) deductions for the consumption of a passenger car, made in accordance with the principles set out in Article 22a-22o, in the part determined from the value of the car exceeding the equivalent:

a) EUR 30,000 - in the case of a car being an electric vehicle within the meaning of art. 2 point 12 of the Act of January 11, 2018 on Electromobility and Alternative Fuels (Journal of Laws item 317),

b) EUR 20,000 - for other passenger cars". - converted into PLN at the average Euro exchange rate announced by the National Bank of Poland on the day of handing over the car for use;

Art. 52. In the Act of 15 February 1992 on Corporate Income Tax (Journal of Laws of 2017, items 2343, 2175, 2201 and 2369) art. 16 par. 1 point 4 shall read as follows:

"4) deductions for the consumption of a passenger car, made in accordance with the principles set out in Article 16a-16m, in the part determined from the value of the car exceeding the equivalent:

a) EUR 30,000 - in the case of a car being an electric vehicle within the meaning of art. 2 point 12 of the Act of January 11, 2018 on Electromobility and Alternative Fuels (Journal of Laws item 317),

b) EUR 20,000 - for other passenger cars". - converted into PLN at the average Euro exchange rate announced by the National Bank of Poland on the day of handing over the car for use;

Art. 53. The Act of 7 July 1994 - Construction Law (Journal of Laws of 2017, items 1332 and 1529 and of 2018, item 12) is amended as follows:

1) in art. 29 par. 1 following point 8, the following point 8a is inserted:

"8a) charging stations within the meaning of art. 2 point 27 of the Act of January 11, 2018 on Electromobility and Alternative Fuels (Journal of Laws item 317) and charging points within the meaning of art. 2 point 17 of this Act, excluding the infrastructure for charging public transport by road within the meaning of art. 2 point 3 of this Act;";

2) in art. 29a par. 1 is replaced by the following:

1. Construction of the connections referred to in art. 29 par. 1 point 20, and charging stations, within the meaning of art. 2 point 27 of the Act of January 11, 2018 on Electromobility and Alternative Fuels requires a situation plan to be prepared on a copy of the current base map or a unit map adopted for the state geodetic and cartographic resource.

3) in art. 30 in par. 1 point 1a is replaced by the following:

"**1a**) the construction referred to in art. 29 par. 1 point 20, and the construction of a charging station within the meaning of art. 2 point 27 of the Act of January 11, 2018 on Electromobility and Alternative Fuels, subject to art. 29a;";

" in art. 43 par. 1 and 1a are replaced by the following:

1. Construction objects requiring a building permit, the facilities referred to in art. 29 par. 1 point 1a, 2b and 19a-20b, and charging stations within the meaning of art. 2 point 27 of the Act of January 11, 2018 on Electromobility and Alternative Fuels, are subject to geodetic determination in the field, and after the construction - geodetic as-built inventory, including their location on the ground.

1a. The geodetic obligation to designate referred to in par. 1, shall not apply to:

1) the connection referred to in art. 29 par. 1 point 20, if the connection of it to the network is on the same plot as the connection or on a plot adjacent to it;

2) the charging station within the meaning of art. 2 point 27 of the Act of January 11, 2018 on Electromobility and Alternative Fuels.

Art. 54. The Act of 10 April 1997 - Energy Law (Journal of Laws of 2017, item 220, as amended³²⁾) shall be amended as follows:

1) in art. 3:

a) in point 5, the common part shall be replaced by the following:

"- excluding the sale of the fuels or energy and compression of gas at the natural gas station and supply of electricity to a public charging station for charging stations installed therein, as defined in the Act of January 11, 2018 on Electromobility and Alternative Fuels (Official Journal item 317);"

b) point 6a shall be replaced by the following:

"6a) sales - direct sales of fuels or energy by the entity that produces them or resale of the fuels or energy by the entity dealing in the trade of them; this sale does not include the electricity and gas derivative and refuelling vehicles with compressed natural gas (CNG) and liquefied natural gas (LNG) at natural gas stations and charging with electricity at charging points;"

c) following point 10j, the following points 10k-10n shall be added:

"10k) energy storage - a system for storing energy, connected to the network, having the capability to supply electricity to the grid;

10) natural gas station - a natural gas station within the meaning of art. 2 point 26 of the Act of January 11, 2018 on Electromobility and Alternative Fuels;

10m) public charging station - a generally accessible charging station within the meaning of art. 2 point 6 of the Act of January 11, 2018 on Electromobility and Alternative Fuels;

10n) public transport infrastructure - infrastructure for charging road public transport within the meaning of art. 2 point 3 of the Act of January 11, 2018 on Electromobility and Alternative Fuels; "

d) following point 11h, point 11i shall be added:

"**11i**) demand management installation - an end user installation whose devices enable changing the power consumption profile at the request of the distribution system operator, transmission system operator or a connected system operator, which may include, in particular, energy storage, generation installation not cooperating directly with the network or a charging point within the meaning of Article 2 point 17 of the Act of January 11, 2018 on Electromobility and Alternative Fuels; "

e) point 13a shall be replaced by the following:

"13a) final recipient - the recipient purchasing fuel or energy for own use does not include electricity purchased for its use for the purposes of generation, transmission or distribution of electricity and gaseous fuels purchased for the purpose of their consumption for the transmission, distribution, storage of gaseous fuels, liquefied natural gas or regasification of liquefied natural gas;"

f) in point 58, the full stop is replaced by a semicolon and the following point 59 is added:

"59) energy storage - provision of energy storage services in an energy warehouse. ";

2) in art. 4 par. 1 is replaced by the following:

1. An energy company involved in the transmission or distribution of fuels or energy, storage of energy or gaseous fuels, including liquefied natural gas, liquefied natural gas or regasification of liquefied natural gas is obliged to maintain the capability of equipment, installations and networks to supply the fuels or energy in a manner continuous and reliable, while maintaining the applicable quality requirements.

3) following Art. 4e¹, 4e² shall be added as follows:

"Art. 4e². An energy company dealing in energy storage is obliged to provide, on an equal treatment basis, the provision of energy storage services. The provision of energy storage services takes place pursuant to an agreement for the provision of the services. ";

4) in art. 5 following par. 1, par. 1a shall be added:

1a. Supply of electricity to a charging point at a public charging station takes place pursuant to:

agreements for the provision of energy distribution services, concluded by a public charging station operator within the meaning of art. 2 point 7 of the Act of January 11, 2018 on Electromobility and Alternative Fuels;
 an agreement for the sale of the energy to be concluded with the charging service provider.

a) following par. 1, par. 1a shall be added:

1a. The provision of par. 1 in the scope of connection to the network, in the first place also applies to the infrastructure of public transport by road.

b) in par. 8 point 3 letter b, the full stop is replaced by a semicolon and the following point and 4 and 5 is added:

"4) for connecting public transport road infrastructure and a public charging station:

a) to the grid with a rated voltage of more than 1 kV and not higher than 110 kV, the fee is determined on the basis of one sixteen of the actual expenses incurred for the connection,

b) to the grid with rated voltage not higher than 1 kV, the fee is determined pursuant to the rates of charges in the tariff, calculated on the basis of one sixteenth of annual average investment expenditure for the construction of network sections used for connecting the entities, specified in the development plan, referred to in art. 16; the rates can be calculated in relation to the size of the connection capacity, the unit of the length of the network section used to connect or the type of this section;

5) no fees are charged for connection to the grid of a demand management installation that meets the requirements specified in the instructions referred to in art. 9g, the transmission system operator and the distribution system operator to whose grid the installation is connected. ";

6) in art. 9c par. 3 point 9 is replaced by the following:

"9) providing network users and operators of other power systems with which the system is connected, with information on the conditions for the provision of electricity distribution services, including benefits related to the provision of demand management and network management, necessary to gain access to the distribution network and using the network;";

7) in art. 9g par. 4 following point 2, the following point 2a is added:

"2a) technical requirements for demand management installations, including those for energy storage;"; 8) following art. 15f, 15g shall be added as follows:

"Art. 15g. The minister responsible for energy is the competent national authority responsible for facilitating and coordinating the permitting and decision process for energy infrastructure projects of common European Union interest, in accordance with art. 8 par. 1 of the Regulation of the European Parliament and of the Council (EU) No. 347/2013 of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No. 1364/2006/EC, and amending Regulation (EC) No. 713/2009, (EC) No. 714/2009 and (EC) No. 715/2009 (Official Journal UE L 115 of 25/04/2013, page 39, as amended³³⁾) operating in the mode of cooperation referred to in Art. 8 par. 3 letter c of this regulation. ";

9) in art. 16 par. 1 point 4, the full stop is replaced with a semicolon and the following point 5 shall be added:"5) policy for the development of infrastructure and alternative fuels market in transport. ";

10) in art. 45:

a) in par. 1 following item 2, the following point 2a shall be added:

"2a) to cover the costs of legitimate business activities of energy companies in the construction and connection of public charging stations used to charge public transport vehicles and related energy storage installations, together with a reasonable return on capital employed in the activities, not less than the rate of return at the level of 6%;"

b) following par. 1f, the following paragraph is added: 1g, as follows:

1g. Costs related to the construction of a natural gas station, referred to in art. 21 of the Act of January 11, 2018 on Electromobility and Alternative Fuels, in the number referred to in art. 60 par. 2 of this Act, the public charging station referred to in art. 64 par. 1 of this Act, or the charging point used to charge public transport vehicles shall be taken into account in the costs of the operations of the energy company dealing in the distribution of gaseous fuels or electricity.

c) following par. 6, the following paragraphs shall be added, 6a and 6b:

6a. Electricity tariffs take into account the collection characteristics of the infrastructure for charging road public transport and the need for developing collective public transport using electric vehicles.

⁵⁾ in art. 7:

6b. Tariffs for electricity and gaseous fuels include revenues from activities not related to the activities referred to in art. 44 par. 1 point 1, related to revenues of public charging stations, or compressed natural gas (CNG) refuelling points, referred to respectively in art. 64 par. 1 or art. 60 par. 2 of the Act of January 11, 2018 on Electromobility and Alternative Fuels.

11) in art. 46 par. 3 is replaced by the following:

3. The minister competent for energy, after consulting the President of ERO, will determine, by regulation, detailed rules for the development and calculation of tariffs for electricity and detailed rules for settlements in electricity trading, taking into account: the energy policy of the state, ensuring coverage of reasonable costs of energy companies, including development costs, protection of customers' interests against unjustified level of prices and fees, improvement of the efficiency of electricity supply and use, equal treatment of recipients, elimination of cross-subsidies, transparency of prices and rates, and the need for developing electric public transport by road.

Art. 55. The Act of 20 June 1997 - Road Traffic Law (Journal of Laws of 2017 items 1260 and 1926 and of 2018 items 79, 106 and 138) shall be amended as follows:

1) following art. 65j, the following Section 6 shall be added:

,,

Section 6

The use of roads for research works on autonomous vehicles

Art. 65k. Whenever this section mentions an autonomous vehicle, it should be understood as a vehicle, equipped with systems that control the movement of the vehicle and allow its movement without the interference of the driver who can take control of the vehicle at any time.

Art. 65I.

1. Conducting research related to the testing of autonomous vehicles in road traffic on public roads, in particular for the use of autonomous vehicles in collective transport and the implementation of other public tasks, is possible provided that the safety requirements are met and a permit is obtained for carrying out the works.

2. The permit referred to in par. 1, is issued, by way of decision, by a traffic management body on the road on which research works are to be carried out, upon a written request of the organizer of the research works.

3. The application referred to in par. 2, includes in particular:

1) first name, surname or business name (name) and address of residence or seat of the organizer of the research works;

- 2) information on the place and date of the commencement and completion of the research works;
- 3) planned course of the route along which the autonomous vehicle will move;
- 4) list of persons responsible for securing the route of an autonomous vehicle;
- 5) signature of the research organization organizer or its representative.

4. The application referred to in par. 2 shall have the following attachments:

 a document confirming the conclusion of a compulsory insurance agreement for civil liability of the organizer of research works for damages arising in connection with the conduct of research related to the operation of autonomous vehicles, which comes into force in the event of obtaining a permit for conducting research works;
 proof of payment of premium for the insurance;

3) a copy of the decision on professional registration of vehicles issued on the basis of art. 80t par. 2.

5. The authority referred to in par. 2, consults with the inhabitants of the municipality, in the area of which the research will be carried out, the request for conducting research works, placing this application on its website and setting a deadline for submitting comments. The deadline can not be shorter than 7 days. In the course of consultations, the owner of the real estate located along the planned route, on which the autonomous vehicle will move, may object.

6. The authority referred to in par. 2 shall issue the permit referred to in par. 1, after:

obtaining consent of the proper road administrator on which the research works are planned, and
 seeking an opinion appropriate for the place of conducting research work of the provincial police chief concerning the impact of the research on traffic flow along the planned route along which the autonomous

vehicle will move.

Art. 65m.

1. The authority issuing the permit referred to in art. 65l par. 1, refuses to issue it if:

1) organizer of research works:

a) did not provide the information specified in art. 65I par. 3 in the application referred to in art. 65I par. 2,

b) did not attach the documents indicated in art. 65l par. 4 in the application referred to in art. 65l par. 2,

c) did not obtain the consent and opinions referred to in art. 65l par. 6;

2) despite meeting the requirements specified in art. 65l par. 3 and 4 there is a danger that carrying out research will be a threat to human life or health or property of great value;

3) the owner of the property located along the planned route along which the autonomous vehicle will move has objected.

2. The authority issuing the permit can:

1) withdraw the permit if:

a) the organizer of research work provided false information in the application referred to in art. 65l par. 2,
 b) research works are carried out contrary to the information provided in the application referred to in art. 65l par. 2

c) continued research is a threat to human life or health or property of great value;

2) suspend the permit if further conduct of research can threaten human life or health or property of great value - until the threat ceases.

Art. 65n.

1. The organizer of research works is obliged to:

1) enable the Police to perform activities necessary to ensure road traffic safety and protect human life and health and property while conducting the research;

2) ensure that during conducting the research in an autonomous vehicle, in a place intended for the driver, there is a person who has a driving license, who can take control of the vehicle at any time, in particular in the event of a threat to traffic safety road;

3) communicate information about the planned research works and the course of the route on which the autonomous vehicle will move to the public;

4) provide the Director of the Transport Technical Supervision with a report on the research carried out related to the testing of autonomous vehicles and their equipment, in accordance with the formula set out in the regulations issued on the basis of par. 2, within 3 months from the day of completing the tests.

2. The minister responsible for transport will determine, by way of a regulation, a model report submitted by organizers of research related to testing autonomous vehicles and the equipment in them, guided by the need to provide access to uniform information on the reliability of the vehicles, how to navigate on roads, how to control the vehicles and road safety. ";

2) in art. 71 following par. 2, par. 2a shall be added:

2a. Electric vehicles and hydrogen-powered vehicles have license plates indicating the type of fuel used to drive them.

3) in art. 129b par. 2 point 2 letter c the full stop is replaced by a comma and the following point is added: d reading as follows:

"d) limitation of traffic in the clean transport zone, as defined in the resolution of the municipality council, issued on the basis of art. 40 par. 1 of the Act of January 11, 2018 on Electromobility and Alternative Fuels (Journal of Laws item 317). ";

4) the title of Section VI shall be replaced by the following:

"Amendments to the existing regulations, episodic, transitional and final provisions"

5) following art. 148, 148a and 148b shall be added:

"Art. 148a.

1. Until 1 January 2026, it is allowed to move using the electric vehicles referred to in art. 2 point 12 of the Act of January 11, 2018 on Electromobility and Alternative Fuels along lanes for buses designated by the road

administrator.

2. The road manager can make the movement of electric vehicles on the designated lanes for buses dependent on the number of people moving using the vehicles.

Art. 148b.

1. From 1 July 2018 to 31 December 2019, electric vehicles and hydrogen vehicles are marked with a sticker indicating the type of fuel used for their propulsion placed on the windshield of the vehicle according to the formula specified in the regulations issued on the basis of art. 76 par. 1 point 1.

2. The sticker referred to in paragraph 1, shall be issued by the commune head, mayor or city president competent for the place of residence or the seat of the vehicle owner.

Article 56

Art. 56. The Act of 21 December 2000 on technical supervision (Journal of Laws of 2017, item 1040, 1555 and 2201) is amended as follows:

1) in art. 37 in point 19, the full stop is replaced by a semicolon and the following point 20 is added:

"20) issuing opinions referred to in art. 15 para. 1 and art. 26 par. 1 of the Act of January 11, 2018 on Electromobility and Alternative Fuels (Journal of Laws item 317), and carrying out tests referred to in art. 16 and art. 27 of this Act. ";

2) in art. 44 in para. 1 in point 8 the dot is replaced with a semicolon and the following point 9 is added:

"9) carrying out tests referred to in art. 18 para. 1 and art. 28 para. 1 of the Act of January 11, 2018 on electromobility and alternative fuels. ".

Art. 57. In the Act of 13 November 2003 on the incomes of local government units (Journal of Laws of 2017, item 1453, 2203 and 2260) in art. 42:

1) in paragraph 2 after point 5c, the following point 5d is added:

"5d) related to the construction of public transport infrastructure for road transport and charging stations for electric vehicles, referred to in the Act of 11 January 2018 on electromobility and alternative fuels (Journal of Laws No. 317), used to perform own tasks local government units; ";

2) the following paragraph is added: 14 is added:

14. The minister competent for economy in consultation with the minister competent for energy will determine, by way of a regulation, the detailed conditions and procedure for granting subsidies from the state budget for the tasks referred to in paragraph 2 point 5d, taking into account the need for effective use and settlement by local government units of budgetary funds received in the form of subsidies and the security by these units of the share of their own funds in planned investments.

Art. 58. The Act of 6 December 2008 on excise duty (Journal of Laws of 2017, item 43, 60, 937 and 2216 and 2018 item 137) is amended as follows:

1) following art. 109, 109a shall be added:

"Art. 109a.

1. A passenger car constituting an electric vehicle within the meaning of Article 2 point 12 of the Act of January 11, 2018 on electromobility and alternative fuels (Journal of Laws item 317) and a hydrogen-powered vehicle within the meaning of art. 2 point 15 of this Act.

2. In the case referred to in paragraph. 1, the competent head of the tax office issues upon the request of the entity concerned a certificate confirming exemption from excise tax, provided that the entity presents documentation confirming that the vehicle to which the exemption applies is an electric vehicle or a hydrogen-powered vehicle.

2. in Chapter VII, the title of Chapter 2 is replaced by the following: " Episodic and transitional provisions " **3**) following art. 163, 163a shall be added:

"Art. 163a.

1. In the period until January 1, 2021, exemption from excise duty is a personal car constituting a hybrid vehicle within the meaning of art. 2 point 13 of the Act of January 11, 2018 on electromobility and alternative fuels.

2. In the case referred to in paragraph. 1, the competent head of the tax office issues, at the request of the entity concerned, a certificate confirming exemption from excise tax, provided that the entity presents documentation confirming that the vehicle concerned by the exemption is a hybrid vehicle.

Art. 59. The Act of December 16, 2010 on public collective transport (Journal of Laws of 2017, item 2136 and 2371) is amended as follows:

1) in art. 4 in paragraph 1:

a) the following point 9a is inserted after point 9:

"9a) zero-emission bus - zero-emission bus within the meaning of art. 2 point 1 of the Act of January 11, 2018 on electromobility and alternative fuels (Journal of Laws item 317); "
b) point 19 is replaced by the following:

,,**19**) other rail transport - transport of persons by means of transport moving on rails or railway tracks, including by tram or metro, or transport of persons by means of transport moving on one rail or on air or magnetic cushions, other than rail transport and rope transport -terenowy; " **c**) point 22 is replaced by the following:

,, 22) rope-off-road transport - transporting people by means of transport moving on rails or one rail using a driving rope; ";

2) in art. 12:

a) in para. 1 in point 7, the full stop is replaced by a semicolon and the following point 8 is added:

"8) communication lines on which the use of electric vehicles or natural gas vehicles is envisaged, and the planned date of commencement of their use. ",

b) following par. 1, par. 1a shall be added:

1a. If the transport plan provides for the use of zero-emission buses or buses powered by natural gas, it also specifies:

1) the geographical location of the natural gas station;

2) the geographical location of the public transport road charging infrastructure within the meaning of art. 2 point 3 of the Act of January 11, 2018 on electromobility and alternative fuels, hereinafter referred to as "charging infrastructure";

3) place of connection to:

a) power distribution network - planned charging infrastructure or

b) gas distribution network - a planned gas station, or

c) the energy warehouse referred to in art. 3 point 10k of the Act of April 10, 1997 - Energy Law (Journal of Laws of 2017, item 220, as amended³⁴).

c) following par. 2, the following paragraphs shall be added, 2a - 2c:

2a. When preparing a transport plan for a commune, the results of the analysis referred to in art. 37 paragraph 1 of the Act of January 11, 2018 on electromobility and alternative fuels, prepared by this municipality.

2b. If the results of the analysis referred to in art. 37 paragraph 1 of the Act of January 11, 2018 on electromobility and alternative fuels prepared by the commune indicate the legitimacy of using zero-emission buses in public transport, a transport plan project for the use of these buses is subject to consultations with the electricity distribution system operator and system operator gas distribution, within the meaning of the provisions of the Act of April 10, 1997 - Energy Law.

2c. During the consultations referred to in para. 2b:

1) the operator of the electricity distribution system presents an assessment of the technical and economic conditions for connecting the charging infrastructure to the network in the places indicated in the transport plan project as its location and the possibility of supplying electricity to the network from the energy storage forming part of this infrastructure:

2) the gas distribution system operator shall provide an assessment of the technical and economic conditions for connection to the natural gas station network in the places indicated in the draft transport plan as the location of installations for supplying public transport vehicles.

Chapter 8. Episodic provisions

Art. 60. [Number of charging and refuelling points] 1. The minimum number of charging points installed by December 31, 2020 in public charging stations located in municipalities is:

1) 1000 - in municipalities with a population larger than 1.000.000, in which at least 600.000 motor vehicles have been registered and per 1000 inhabitants, there are at least 700 motor vehicles;

2) 210 - in municipalities with a population larger than 300,000, in which at least 200,000 motor vehicles have been registered and for every 1000 inhabitants there are at least 500 motor vehicles;

3) 100 - in municipalities with a population larger than 150,000, in which at least 95,000 motor vehicles have been registered and for every 1000 inhabitants there are at least 400 motor vehicles;

4) 60 - in municipalities with a population larger than 100,000, in which at least 60,000 motor vehicles have been registered and for every 1000 inhabitants there are at least 400 motor vehicles.

2. The minimum number of refuelling points for compressed natural gas (CNG) located in municipalities until December 31, 2020 shall be at least:

1) 6 - in municipalities with a population of more than 1.000.000, in which at least 60.000 motor vehicles have been registered and per 1,000 locomotives there are at least 700 motor vehicles;

2) 2 - in municipalities with a population higher than 100,000, in which at least 60,000 motor vehicles have been registered and for every 1000 inhabitants there are at least 400 motor vehicles.

3. In the number of charging points installed in generally accessible charging stations referred to in paragraph 1, and in the number of refuelling points for compressed natural gas (CNG), referred to in paragraph 2, the charging points and compressed natural gas refuelling points (CNG) located along the TEN-T core network shall be taken into account accordingly.

Art. 61. [Report on charging points within a municipality] 1. The municipality head, mayor or city president, on the basis of information gathered in the Register of Alternative Fuels Infrastructure and information obtained from the competent architectural and construction administration authority, draws up, by January 15, 2020, a report on charging points in the area of the municipality installed in generally accessible stations charging.

2. The report contains information about:

1) the number and location of generally accessible charging stations, taking into account the capacity of charging points installed in these stations;

2) the number and location of publicly available charging stations planned to be built by December 31, 2020, taking into account the capacity of charging points planned to be installed at these stations;

3) the number of loading points missing to reach the minimum number of charging points indicated in art. 60 ust. 1, as at December 31, 2020, taking into account the charging points referred to in point 2.

Art. 62. [Plan for the construction of generally accessible charging stations] 1. Where from the report referred to in art. 61, it follows that the minimum number of loading points indicated in art. 60 ust. 1, commune head, mayor or city president for the commune:

1) which has a population of at least 100,000 and

- 2) in which at least 60,000 motor vehicles have been registered, and
- 3) in which at least 400 motor vehicles per 1000 inhabitants

- draw up a plan for the construction of generally accessible charging stations, hereinafter referred to as "the plan". 2. The plan sets out:

1) the number and location of planned public charging stations with the number of charging points planned to be installed in them, taking into account the power of each of these points;

2) the proposed schedule for the construction of generally accessible charging stations.

3. A commune head, mayor or city president prepares a draft plan by 15 March 2020 and consults it with the residents of the commune, posting it on the website of the office that supports it, and setting a deadline for comments. The deadline can not be shorter than 21 days.

4. The draft plan of the commune head, mayor or city president communicates to power transmission systems operators, in the area of operations, the deployment of generally accessible charging stations is planned for reconciliation. The deadline for agreeing the draft plan may not be shorter than 30 days.

5. The operators shall agree on the draft plan, taking into account the existing and anticipated connection capacity in the development plan to meet the current and future energy demand referred to in Art. 16 sec. 4 of the Act of April 10, 1997 - Energy Law.

6. The operator of the electricity distribution system informs about the agreement of the draft plan of the commune head, mayor or president of the city and provides him with the elaborated connection program referred to in para. 11.

7. The commune head, mayor or city president submits the draft plan to the commune council, immediately after it has been agreed by the last operator of the power distribution system.

8. The commune council adopts the plan, by way of a resolution, within 14 days from the date of its receipt.

9. The plan is not a local law act.

10. The commune head, mayor or city president passes the adopted plan to the operators of electricity distribution systems, informs about its approval of the President of the Energy Regulatory Office and publishes the plan on the website of the office servicing him.

11. Based on the draft plan provided to the electricity distribution system operator, this operator develops a program for connecting the generally available charging stations provided for in the draft plan to the electricity distribution system. The commune head, mayor or city president sets a deadline for the development of this program, not shorter than 30 days from the date of submitting the draft plan to the operator.

12. The connection program referred to in paragraph 11, specifies the technical and economic conditions for connection of generally available charging stations indicated in the draft plan together with the expected connection dates.

Art. 63. [Task commissioned in the field of government administration] The task of preparing a plan is a task commissioned in the field of government administration.

Art. 64. [Construction costs of generally available charging stations] 1. The operator of the power distribution system, competent for the location of the public charging station specified in the plan, builds such a station.

2. The construction costs of generally accessible charging stations, referred to in paragraph 1, incurred by the electricity distribution system operator 1 are included in justified costs within the meaning of art. 3 point 21 of the Act of 10 April 1997 - Energy Law.

Art. 65. [Designation to perform the functions of the operator and the charging service provider] 1. ³⁵⁾ Commune head, mayor or city president submits an application to the President of the Energy Regulatory Office for the appointment of an energy company that will act as the operator of a generally accessible charging station, which will be built as planned, performing tasks in the field of management, operational safety, operation, maintenance and repairs of such station and supplier charging services at such a station.

2. ³⁶⁾ The President of ERO determines, by way of a decision, to perform the function of an operator of a generally available charging station and a charging service provider, a power company conducting business in the field of electricity trading, which sells electricity to the largest number of end consumers connected to the electricity distribution grid in the commune, in which it is to act as the operator of a public charging station.

3. An electricity distribution system operator that has built a publicly available charging station within one year from the date of taking over the function of the operator of this station by an energy company designated in accordance with paragraph 2, conducts proceedings to select the operator of a generally accessible charging station operating in the scope indicated in paragraph 1. The provisions of the Act of 21 October 2016 on the concession contract for construction works or services shall apply accordingly.

Art. 66. [Transmission easement] ³⁷⁾ State Treasury, commune and municipal legal person establish free transmission easement for the benefit of the electricity distribution system operator for the network supplying electricity to the generally available charging station built by this operator in accordance with Art. 64 para. 1.

Art. 67. [Public purpose within the meaning of the Act on Real Estate Management] Construction of generally available charging stations indicated in the plan and implementation of projects necessary to connect them to the network, in particular modernization, expansion or construction of the network, constitute a public purpose within the meaning of the Act of August 21, 1997 about real estate management.

Art. 68. [Share of electric vehicles in the fleet of used vehicles] ³⁸⁾ 1. The supreme or central organ of state administration, referred to in art. 34, ensures that the share of electric vehicles in the fleet of used vehicles is at least:

1) 10% - from January 1, 2020;

2) 20% - from January 1, 2023.

2. The local government unit referred to in art. 35 para. 1, ensures that the share of electric vehicles in the fleet of used vehicles, from 1 January 2020, is at least 10%.

3. ³⁹⁾ The local government unit referred to in art. 35 para. 2, from January 1, 2020, performs or assigns a public task to an entity whose share of electric vehicles or natural gas vehicles in the fleet of vehicles used in carrying out this task is at least 10%.

4. The local government unit referred to in art. 36 par. 1, ensures the participation of zero-emission buses in the operated fleet of vehicles at least:

1) 5% - from January 1, 2021;

2) 10% - from January 1, 2023;

3) 20% - from January 1, 2025.

Chapter 9. Adaptation, transitional and final provisions

Art. 69. [Establishment of the Register of Alternative Fuels Infrastructure] The Register of Alternative Fuels Infrastructure is being developed.

Art. 70. [Notice of the National Development Policy Framework] 1. The national framework for alternative fuels

infrastructure development policy adopted by the Council of Ministers on 29 March 2017 constitutes the National Policy Framework for the development of alternative fuels infrastructure, referred to in art. 43.

2. The national policy framework for the development of alternative fuels infrastructure referred to in paragraph 1, shall be published in the Official Gazette of the Republic of Poland "Monitor Polski", within 60 days from the date of entry into force of the Act.

Art. 71. [Report for the European Commission] The minister competent for energy for the first time will submit to the European Commission the report referred to in art. 44 par. 1 point 3, by November 18, 2019.

Art. 72. [The date of preparing the cost-benefit analysis] The local government unit for the first time draws up the analysis referred to in art. 37 paragraph 1, by 31 December 2018.

Art. 73. [Time limit for providing information on the number and percentage of vehicles in the fleet] Information referred to in art. 38, entities obliged to provide it, for the first time they provide the minister competent for energy within 3 months from the date of entry into force of the Act. The information includes data as at 31 December of the year preceding the year of forwarding this information.

Art. 74. [Adaptation regulations] ⁴⁰⁾ 1. Entities operating on the day of entry into force of the Act charging stations, charging points included in the road transport infrastructure for public transport of vehicles, power stations for shore-side electric power units, natural gas stations and liquefied natural gas (LNG) bunkering sites, for further operation they are obliged within 12 months from the date of entry into force of the secondary legislation issued on the basis of Art. 17, art. 19 and art. 29, adjust them to the requirements set out in this Act and these implementing provisions, and submit, as appropriate to UDT or TDT, a request for conducting a test permitting their further operation.

2. To entities that have started the operation or construction of charging stations, charging points included in the infrastructure for charging road transport of vehicles, power stations for shore-side electric power stations, natural gas stations and liquefied natural gas (LNG) bunkers after the date of entry into force of this Directive act, and before the entry into force of the secondary legislation, issued on the basis of Art. 17, art. 19 and art. 29, in order to commence or continue their operation, they shall be obliged within 12 months from the date of entry into force of the secondary legislation issued on the basis of Art. 29, comply with the requirements set out in this Act and these implementing provisions, and submit, as appropriate to UDT or TDT, a request for a study allowing the commencement or their further operation. The provision of art. 16 shall not apply.

Art. 75. [Exclusion of use] The provision of art. 12 para. 1 does not apply to construction plans for which, prior to 1 January 2019, an application for a building permit or a separate decision on the approval of a construction design has been submitted.

Art. 76. [Termination of contracts] Agreements concluded by the supreme and central state administration body with an entity providing economic services in the field of transport and concluded by territorial self-government units for the performance of a public task, excluding public transport, expire on 31 December 2019, if not ensure the use of electric vehicles at the level specified in art. 68 para. 1 or 3.

Art. 77. [Copy of the decision on temporary registration of the vehicle] Until the entry into force of Art. 65I par. 4 point 3 of the Act changed in art. 55 to the application for permission to carry out research works, a copy of the decision on the temporary registration of the vehicle issued on the basis of art. 74 par. 2 point 3 of the Act changed in art. 55.

Art. 78. [Deadline for the development of the natural gas station program] 1. If the date of preparation by the gas distribution system operator of an update of the development plan in terms of satisfying the current and future demand for gaseous fuels referred to in art. 16 sec. 4 of the Act of April 10, 1997 - Energy Law, falls after 6 months from the date of entry into force of this Act, this operator develops the program referred to in art. 20 para. 1, within 6 months from the date of entry into force of this Act for the period of validity of the current development plan as at the date of entry into force of this Act, and agree with the operator of the gas transmission system, and then with the President of the Energy Regulatory Office.

2. In the program referred to in art. 20 para. 1, the operator of the gas distribution system determines the number of planned filling points for compressed natural gas (CNG), not less than specified in art. 60 ust. 2.

3. The General Director of National Roads and Motorways prepares for the first time a plan for the location of generally accessible charging stations and natural gas stations along the remaining TEN-T core network roads, referred to in art. 32 para. 1, and forwards it to consult with the operators of electricity and gas distribution systems and with the entities managing service locations, within 6 months from the date of entry into force of this Act.

4. The managing entity of the port belonging to the TEN-T core network prepares for the first time a plan for the location of liquefied natural gas (LNG) bunkering points or the possibility of bunkering using bunkers and points for supplying electricity from land based on art. 33 para. 1, and forwards it to consult with the relevant operators of electricity and gas distribution systems, within 6 months from the date of entry into force of this Act.

Art. 79. [The deadline for submitting information to the register] The entities obliged to submit information to the register for the first time provide the information referred to in art. 42 par. 3, until January 15, 2019, excluding the entities referred to in art. 74, operating publicly accessible charging stations or natural gas stations, which provide this information for the first time within one month from the day of conducting the test allowing further operation of these stations.

Art. 80. [Update of the public transport sustainable development plan] Plan for the sustainable development of public mass transport, referred to in Art. 9 of the Act changed in art. 59, the entity obliged to develop it shall update in order to take into account the requirements referred to in art. 12 para. 1 point 8 and par. 1a and 2a-2c of the Act changed in art. 59, in the wording given by this Act, within one year from the date of entry into force of this

Act.

Art. 81. [Time for marking parking spaces for electric vehicles] The competent authority for traffic management fulfils the obligation referred to in art. 12b and art. 13b par. 6 point 1a of the Act changed in art. 49, in the wording given by this Act, from the first day of the month following the expiration of 3 months from the date of entry into force of the provisions defining the conditions for the marking of parking spaces for electric vehicles.

Art. 82. [Implementing provisions] Existing implementing rules issued on the basis of art. 46 ust. 3 of the Act changed in art. 54 remain in force until the date of entry into force of the secondary legislation issued on the basis of art. 46 ust. 3 of the Act changed in art. 54, in the wording given by this Act, but not longer than 36 months.

Article 83

Art. 83. [Limit of state budget expenditure] 1. The maximum limit of state budget expenditure allocated for the performance of tasks of the supreme and central state administration bodies resulting from this Act is:

1) 2018 - PLN 4,010,000;

2) 2019 - PLN 4,402,000;

3) 2020 - PLN 13,716,000;

4) 2021 - PLN 2,060,000;

5) 2022 - PLN 2,320,000;

6) 2023 - PLN 7,193,000;

7) 2024 - PLN 2,060,000;

8) 2025 - PLN 19,689,000;

9) 2026 - PLN 2,060,000; **10)** 2027 - PLN 2,060,000.

In the case of exceeding or threatening to exceed the adopted for a given financial year limit of expenditure specified in paragraph 1, a corrective mechanism is applied, consisting in limiting the fulfillment of the obligation to ensure the share of electric vehicles in the fleet of vehicles used, as defined in art. 34 and art. 35 para. 1.

3. The competent authority to monitor the use of the expenditure limit referred to in paragraph 1, the minister responsible for energy matters.

4. The supreme and central organs of state administration are responsible for the implementation of the correction mechanism referred to in para. 2.

Art. 84. [Exceptions to the application of provisions] Provisions:

1) art. 66 of the Act,

2) art. 50a of the Act changed in art. 49

- in the wording given by this Act, applies from the date of the announcement of a positive decision of the European Commission on the compatibility of state aid provided for in these regulations with the common market or confirmation by the European Commission that these provisions do not constitute public aid.

Art. 85. [Exceptions to the application of the provisions] 1. Provisions of art. 23 par. 1 point 4 of the Act changed in art. 51, in the wording given by this Act, and art. 16 sec. 1 point 4 of the Act changed in art. 52, in the wording given by this Act, the following applies:

1) from the date of announcement of a positive decision of the European Commission on the compatibility of public aid provided for in these regulations with the common market or confirmation by the European Commission that these provisions do not constitute public aid;

2) in respect of electric vehicles within the meaning of this Act, put into use after the date determined in accordance with point 1.

2. Provisions of art. 109a and art. 163a of the Act changed in art. 58, in the wording given by this Act, the following applies

1) from the date of announcement of a positive decision of the European Commission on the compatibility of public aid provided for in these regulations with the common market or confirmation by the European Commission that these provisions do not constitute public aid;

2) for electric vehicles, hybrid vehicles and hydrogen powered vehicles, within the meaning of this Act, in relation to which excise tax liability arose after the date specified in point 1.

Art. 85a. [Application of the provision] ⁴¹ Provision of art. 3 par. 1 point 10 shall apply from 1 January 2023.

Art. 86. [Coming into force] The Act comes into force after 14 days from the day of announcement, with the exception of:

1) ⁴²⁾ art. 3 par. 1 point 8 which shall come into force on 1 September 2018;

2) art. 24 which shall come into force on January 1, 2026;

3) art. 34 and art. 35 which shall come into force on January 1, 2025;

4) art. 36 which shall come into force on January 1, 2028;

5) art. 39 par. 2 which shall come into force six months after the date of entry into force of the Act;

6) art. 41 par. 1 which shall come into force after 3 months from the date of entry into force of the Act;

7) art. 42 and art. 69 which shall come into force on January 1, 2019;

8) art. 49 point 6 which shall come into force on November 3, 2018;

9) art. 55:

a) point 1 in the scope of the added art. 65I par. 4 point 3 which shall come into force on 1 July 2019,

b) point 2 which shall come into force on January 1, 2020.

²⁾ The following acts are amended by this Act: Act of May 20, 1971 - Code of Infractions, Act of 21 March 1985 on Public Roads, Act of 21 March 1991 on Sea Areas of the Republic of Poland and Maritime Administration, Act of July 26, 1991 on personal income tax, act of February 15, 1992 on corporate income tax, act of July 7, 1994 - Construction law, act of April 10, 1997 - Energy law, the Act of 20 June 1997 - Road Traffic Law, the Act of 21 December 2000 on technical supervision, the Act of 13 November 2003 on the incomes of local self-government entities, the Act of 6 December 2008 about excise tax and the Act of December 16, 2010 on public collective transport.

³⁾ Art. 2 par. 4 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

⁴⁾ Art. 2 par. 5 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

⁵⁾ Art. 2 par. 6 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

⁶⁾ Amendments to the consolidated text of the said Act were announced in the Journal of Laws of 2017 items 791, 1089, 1387 and 1566 and of 2018, items 9, 138 and 317.

⁷⁾ Amendments to the said Regulation were announced in the Official Journal UE L 136, 09/05/2014, p. 10, Official Journal UE L 126 of 14.05.2016, page 3 and Official Journal UE L 128, 19/05/2017, page 1).

⁸⁾ Art. 2 par. 27 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

⁹⁾ Art. 3 par. 4, amended by the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on October 10, 2018.

¹⁰ Art. 3 par. 1,Point 5 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

¹¹⁾ Pursuant to art. 85a of the Act, the provision shall apply from January 1, 2023.

¹²⁾ Art. 12 par. 2 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

¹³⁾ Art. 13 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

¹⁴⁾ Art. 18a added pursuant to the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

¹⁵⁾ Art. 20 par. 1 in the wording of the Act of 09/11/2018 (Journal of Laws of 2018, item 2348), which came into force on January 1, 2019.

¹⁶⁾ Art. 28a added pursuant to the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

¹⁷⁾ Art. 34 par. 1 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

¹⁸⁾ Art. 35 par. 1 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

¹⁹⁾ Art. 39 par. 1 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

²⁰⁾ Art. 39 par. 3 point 1, amended by the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on October 10, 2018.

²¹⁾ Art. 39 par. 4a added pursuant to the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

²²⁾ Art. 39 par. 4b added pursuant to the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

²³⁾ Art. 39 par. 4c added pursuant to the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

²⁴⁾ Art. 39 par. 4d added pursuant to the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

²⁵⁾ Art. 45 par. 1,Point 2 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

²⁶⁾ Art. 45 par. 1,Point 8 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

²⁷⁾ Art. 45 par. 1 point 12, added by the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on October 10, 2018.

²⁸⁾ Art. 45 par. 2,Point 5 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

¹⁾ This Act, within the scope of its regulation, implements Directive 2014/94/EU of the European Parliament and of the Council of October 22, 2014 on the development of alternative fuels infrastructure (Official Journal UE L 307, 28/10/2014, page 1).

²⁹⁾ Article 46 par. 1 point 1 in the wording of the Act of 6.06.2018 (Journal of Laws of 2018 item 1356) which comes into force on July 28, 2018; amended by the Act of 9/11/2018 (Journal of Laws of 2018 item 2348), which comes into force on January 1, 2019.

³⁰⁾ Art. 46 par. 2 amended by the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on October 10, 2018.

³¹⁾ Amendments to the consolidated text of the said Act were announced in the Journal of Laws of 2015 items 1485, 1634 and 1707, of 2017, items 966, 1941 and 2361 and of 2018, item 79.

³²⁾ Amendments to the consolidated text of the said Act were announced in the Journal of Laws of 2017 items 791, 1089, 1387 and 1566 and of 2018, items 9 and 138.

³³⁾ Amendments to the said Regulation were announced in the Official Journal UE L 349 of 21.12.2013, page 28 and Official Journal UE L 19, 27/01/2016, page 1).

³⁴⁾ Amendments to the consolidated text of the said Act were announced in the Journal of Laws of 2017 items 791, 1089, 1387 and 1566 and of 2018, items 9, 138 and 317.

³⁵⁾ Art. 65 par. 1 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

³⁶⁾ Art. 65 par. 2 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

37) According to art. 84 of this Act, the provisions of art. 66 shall apply from the date of the announcement of a positive decision of the European Commission on the compatibility of State aid provided for in these provisions with the common market or the statement of the European Commission that these provisions do not constitute public aid.

38) Article 68 in the wording of the Act of 6/06/2018 (Journal of Laws of 2018 item 1356), which shall enter into force on 28/07/2018.

³⁹⁾ Art. 68 par. 3 in the wording of the Act of 09/11/2018 (Journal of Laws of 2018, item 2348), which came into force on January 1, 2019.

40) Article 74, the designation of paragraphs 1 and par. 2 added by the act of 6.06.2018 (Journal of Laws of 2018 item 1356), which comes into force on July 28, 2018.

⁴¹⁾ Art. 85a added pursuant to the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.

42) Art. 86 par. 1 in the wording of the Act of 06/06/2018 (Journal of Laws of 2018, item 1356), which came into force on July 28, 2018.