Addendum D2.1 –

Regulatory State of the Art

Differences and similarities in
Smart Energy-Data Systems in
PARENT Countries and
Next Steps

October 2016

INTERNAL REPORT,

Revision: (not revised)

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Submitted to: IES

URBAN EUROPE

Country by Country Regulatory State of the Art

This report describes the regulatory state of the art concerning energy data systems applicable in the Countries where PARENT will be developed. Its content is based on findings in D1.4; answers of PARENT partners to the joint WP2 - WP3 questionnaire distributed in M4; and preliminary talks with national regulatory authorities responsible for energy matters and the protection of private life (NRAs and NDPAs).

The report describes **differences and similarities** in **energy-data systems** in **PARENT** Countries in terms of **current availability of smart metering devices,** the **features of such devices**; **data access architectures** and **the types of data accessible**. The report concludes with a list of the **permits needed by the Project** and mapped until the moment of writing (October 2016) that are both a) certainly needed and b) likely **needed** for the project to develop in each Country / City[1].

1.1 Differences and similarities in smart energy-data systems in PARENT Countries

Timings for installation and **availability** of **smart meters** in **households** in **PARENT Countries** and **cities** differ. The **features of the meters** being installed **also differ** from city to city.

Further to this, **different** in each city are the **data access systems** (and architectures), in particular the **actors** and **dynamics** that make them functioning **and** the **types of data accessible** through them.

Different type of permits must also be obtained in each PARENT Country **from domestic users** and / or their **energy retailers** for accessing meter data (see further below).

1.2 Prospects for availability / not availability of smart meters during PARENT life-span

Compared to other PARENT cities, **Brussels** is the last one in terms of timing where meters for domestic users will be installed. A first conspicuous roll-out is expected in 2018. **Smart meters are available already today in households in Amsterdam, Barcelona and Bergen.** The **PARENT users** that have already been selected in **Barcelona** and **Amsterdam hold smart meters**. In the city of **Brussels**, **PARENT** will make use of another technological device commonly known as "remote reader" (cfr. paragraph 1.3 in this document).

In the city of **Barcelona,** the **DSO responsible for the smart meters' installation** is expected to **complete such process by the end of 2017**. Since it is **not possible** for domestic **consumers** to **refuse the smart meters,** the **Project** can make **100% use** of them **in the**

[1] The lists of permits may grow or diminish as talks with relevant local authorities progress in coming weeks and months. Requirements listed in D2.1 must also be taken into account on top of these lists.

Spanish context. The user-base may be similar to the one that has previously joined the already existing VEA set-up by ENERBYTE.

In **Amsterdam** domestic end-users enjoy the possibility to choose whether having a smart meter or not. In most cases this choice has already been done. For development and sustainability of the VEA business model in the future, it is interesting noticing that **new buildings** and **renovations** in **the Netherlands will in any case be equipped with smart meters. The Project may take this element into account when considering enlarging the number of its users in Amsterdam in the future.**

In **Norway**, public Authorities' plans for **smart meters installations** are the following: **20%** installed **by end 2016; 65%** installed **by end of 2017; 100%** installed **by end of 2018. Domestic consumers have the ability to opt-out from the meter but only if they have a small and predictable consumption and if the metering can be shown to cause a significant and documentable disadvantage for the customer. Until now, the amount of consumers making use of this option has been very small (i.e., estimated 0.3% of the total).**

1.3 Features of the meters being installed[2]

The VEA promoted by PARENT needs to adapt to the **different specific technical features** of the meters installed in Amsterdam, Barcelona and Bergen that, in most cases, are being **chosen by individual DSOs** in line with the general **common minimum functionalities requirements** proposed by the EU in both the 2012 Energy Efficiency Directive and the Commission's Recommendations (Cfr D2.1 in this respect). That is to say:

In **the Netherlands**, the meter has a **display** that can be directly consulted by consumers.

The technology allows for **real-time** or **nearly real-time measurements. Readings** (communication of these measurements from the device to another entity) are **technically possible up to every 15** minutes (whether they are also actually possible depends on the type of consent provided by the consumer)[3].
It is very likely that consumers that will join the VEA will be willing to provide 15 minutes readings. **It must be noted that Amsterdam users will be to a large extent prosumers.**

[2] An important step that the project needs to undertake consists in checking if these features are really the ones available in the cities or are just those announced in "Country plans".
[3] As described later in this document, the consumer has in fact the capability to decide whether granting other parties (thus, the Project) access to readings that are a) frequent, i.e. 15 minutes or b) less frequent such as: daily, weekly, monthly, (but also bi-monthly, yearly). The consumer has also the capability to refuse access to readings to third parties. This possibility has been granted to consumers in response to privacy concerns.

The meter can be connected to an additional device providing an "access port" **for direct readings.** To do so, the **consent of the user must be obtained.**

Every ODA, i.e. "other service provider" (the VEA will be a ODA in NL system gergon) can provide its own device for this, based on the nationally standardised technical specifications of this access port on the smart meter[4].

In **Spain**: the smart meters installed are able to provide information regarding the "active" and "reactive" energy consumption on a **hourly basis**, and **monthly** records of maximum power. The Smart Meter also reveals the contracted power, instantaneous values, current and monthly closings data through a **display in the device**[5]. However this is **raw data** and the **end-user is not able to interpret this info and pass it to a third party.**

The **deployment programs** in Spain **vary in smart meters capabilities**, **not all consumers are able to access their smart metering data in real time through in-home displays**.

PARENT needs thus to receive all data via the DSO web-portal.

In **Norway**: the type of communication infrastructure has been established in the context of previous pilot projects. An **in-home display** in every household **is not part of the roll-out**.
It is **technically possible** for the smart meter to effectuate **15 minutes readings**. It is useful noticing that in the Norwegian context, pilot projects are still currently under development on: **technologies**, **services** and **business models for feedback solutions** in **this Country**.

In the city of **Brussels** the situation is slightly different - As mentioned above, smart meters will only be installed in households in 2018. However, before that date, another type of meters, the **EED meters**, named after the Energy Efficiency Directive, with features similar to those in smart meters, **will be deployed**. The features of the 2 types of meters are the following:

Features of EED Meters:

- Consumers able to read meter display
- No remote reading. Remote actions are technically possible but politically sensitive.
- No remote switch on and off
- Interoperability constraints

Features of smart meters:

- Remote readings allowed
  - Every month
  - Every 15 minutes if consumers pay

[4] Information gathered from answers to PARENT questions of ACM the Dutch Energy National Regulatory Agency.
[5] Information gathered from answers received by partner ENERBYTE to Questionnaire distributed in M4.

- Remote switch on and off technically possible but politically not allowed
- PLC technology to communicate with CMs Platform

The smart meters that will be installed in Brussels are expected to be identical to those installed in the Netherlands.

Since EED meters are not suited to the Project's objectives (the DSO cannot chose the location for their installation as it is the site of the buildings that determines if installation is possible[6]) until 2018 and probably beyond, **PARENT** will make use of another type of technology so-called "remote meters" or "sub-meters".

Main features for sub-meters are:

- real-time overview of electricity consumption;
- disclosure of detailed energy use (including pattern recognition for each appliance);
- standby power consumption;
- calculation of energy costs being incurred in real-time;
- user remote-control

1.4 Consumers freedom of opting – in / opting out and choice of the technology

In **Barcelona** it is not possible to choose the type of meter to be installed. This choice is made by the DSO and consumers cannot opt out from having a smart meter[7].

In **Bergen**, consumers can only opt out if they have a small and predictable consumption and if the metering can be shown to cause a significant and documentable disadvantage for the customer. For the moment, the amount of consumers making use of this option is very small (i.e., estimated 0.3% of the total).

In **Amsterdam,** the choice on the type of meter to be installed is also made by the DSO. Further to this consumers cannot completely opt-out from having a smart meter but **they can indeed decide whether to opt out from transmitting the smart meter information to DSOs and other parties.**

As to **Brussels**, the DSO will select 25 street cabins and install.

[7] In Spain the consumer can only chose the type of ownership over the meter. The consumer can buy the meter for around 100€ and he has to take care of both maintenance and upgrades. Alternatively, the consumer can pay a monthly rent of 0,81€ + taxes for the smart meter that remains a property of the DSO. The latter is the most frequent choice. DSO's expenditure for each of the smart meters is estimated in between 20€-30€.

The PARENT VEA, will have to adapt to smart meter / remote meter **technical features**. In addition to this, **the VEA will also need to adapt to data access architectures currently in place and face the imminent developments in this regard.**

1.5 Belgium

1) access to data from sub-meters

Currently, the only rules stemming from local energy regulation and applicable to sub-meters in households are those included in the general regulation on electricity installations: ***Règlement général sur les Installations électriques (RGIE), Arrêté royal du 10 mars 1981, (RGIE)***[8]. This Regulation includes provisions related to **security requirements for physical system resilience**.

The data-processing regime to which **sub-meter devices** are subject is exclusively the one introduced by the **EU General Data protection Regulation** that will enter into effect in 2018**.**

PARENT is considering making use of sub-metering devices that will connect to the household system through a "clip" rather than using devices that entail a more intrusive connection (i.e. cutting wires for instance). **Such a choice would not raise any security/system resilience concern. The installation of devices will be done in compliance of the RGIE.**

The **legal/regulatory regime** for **accessing energy meter data from sub-meters in households is not expected to vary significantly following to the entry info force of national provisions related to access to energy data from domestic smart meters. Many of these rules are still currently under development.**

2) (future) access to data from smart meters in households

Once smart meters will be installed in households and the Belgian CDH Atrias will be operational (expected in 2018 with possibilities of delay), smart metering data will be sent to the CDH on regular intervals. Different metering regimes will apply. It is important noticing that under metering regime R1, the DSO will take a monthly index of consumption. Under metering regime R3, the DSO will read the meters every fifteen minutes. The data will be sent to CDH in one batch during the night (after a minimum **24 hour delay from the moment in which the measurement took place**).

Customers who prefer 15 minute meter readings will have to pay a slightly higher metering tariff to the DSO than the current annual metering tariff of about 14 euros applying to classical meters[9].

[8] Règlement général sur les Installations électriques (RGIE), Arrêté royal du 10 mars 1981.
[9] Source PARENT coordinator meeting with Sibelga of xx.xx.xxxx

As the DSO will only start collecting metering data every 15 minutes upon request of the customer, it will take some time to build up a detailed history of consumption. DSOs, energy retailers and ESCOs (energy service providers) will be able to access the platform. **Agreements will need to be concluded with ESCOs to provide third party data access. Accessing historical metering data will likely be possible only subject to a legally sound agreement between the DSO and the third party[10].**

It is still the individual DSO who will hold a database with the detailed metering data.
The DSOs have to give the **data that is necessary** to the CDH (Atrias) who will hold an access register. So not all the data will be made available, **but only the one deemed as "necessary" for third parties.**

This may determine which VEA services can be offered in future if the VEA wants to extend the scope of its activities to smart meters' measurements. Some open questions are: who will be entitled to access ATRIA data? How is it possible to become an ESCO? Which data will be deemed as "necessary"? thus made available by ATRIA? In which format will the data be made available? Is it a format compatible with VEA? Is it a format "intellegible" by consumers in the case they have direct access to ATRIA?

1.6 the Netherlands

The energy consumption data necessary for the VEA to function, will exclusively originate in households (including house-boats). The project is exploring 2 technological options for gathering the data in Amsterdam:

1. **First option: the project could gather data by means of "smart meters"**

2. **Second option: the project could gather data by means of "remote readers" (also known as sub-meters)**

1. The smart meter option

In the Netherlands: smart meter **data** of consumers is **already accessible for independent service providers** (in Dutch: ODA's: other service providers). So, in the Dutch market, the VEA performs as a "ODA". To access the data, the **consent of the consumer** is a pre-requisite. The **consent can be released for a) "frequent" access or b) "less frequent" access**. This means that **depending on the consent obtained from the consumer, the metering data that can be accessed is either detailed (values for every 15 minutes of consumption), or more aggregated, e.g. daily, weekly, monthly, two-monthly, yearly meter values.**

[10] Ibidem

This is an important finding as it means that if **PARENT** makes use of smart meters in the Dutch context, **the landing page for the VEA must be adapted to "consent" requirements that may specifically apply to the energy sector and probably it should make reference to the type of consent (frequent and/or less frequent) to make sure the project abides to rules.**

Smart meter readings can be accessed via **direct access** to the smart meter through a **device** that is connected to the meter.
To do so, after the **consent of the consumer has been obtained, every ODA can procure his own device**, based on the **nationally standardised technical specifications** of this **access port on the smart meter.**
Also in this case, the **Project** needs to verify whether there is a specific "regulated" consent "model" for the "access port".

The DSO, reads the meter data remotely. In the Dutch context, all DSO's are working together in one organisation, called EDSN (Energy Data Services of The Netherlands, www.edsn.nl). The ODA can apply for the service offered by EDSN for getting smart meter data of individual consumers. Then the ODA has to build some ICT-interface and perform some external certification and auditing for his procedures and technical implementation, before EDSN gives access rights to the service. After this, the ODA has to prove the consent of the specific consumer before it receives the consumer's smart meter data via the EDSN.

Recently the "**Code of Conduct for handling of smart meter data by ODA's"** was approved by the Dutch Privacy Authority**.** Similar Codes of Conduct already exist for several years for suppliers and network operators.
In the case **PARENT** decides to make use of smart meters in the Netherlands, it will need to abide to this Codes

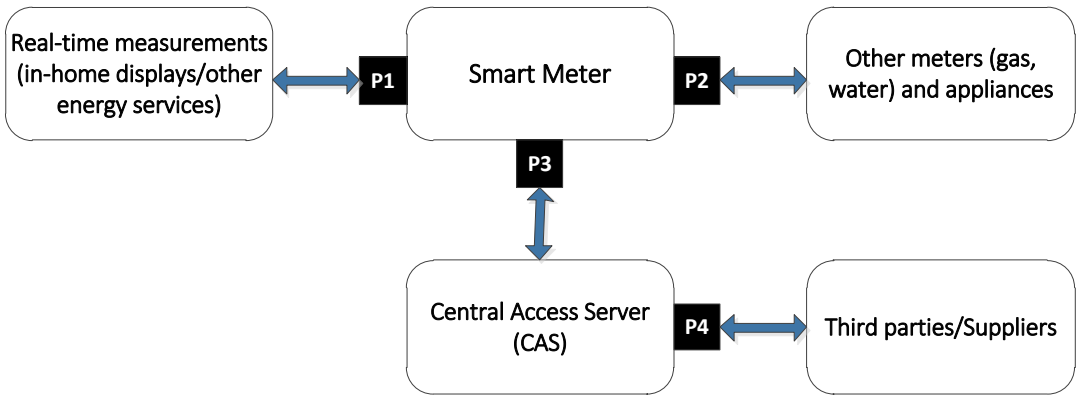


Figure 4.2: Smart meters communication interfaces in the Netherands.

Consumers can **access their consumption data** via **the DSO web portal,** with **quarter hourly readings** available **one day after consumption**.
The smart meters are equipped with **four interfaces** that allow different data access settings (see Figure above). Consumption data is stored locally in households and consumers can purchase additional hardware to access real time metering data via the P1 meter interface.

The P2 meter interface is designated to connect to other available meters (e.g., gas and water meters).

P3 allows communication between the smart meter and the central access server (CAS), run by the DSO to read and manage all smart meters.

If a consumer accepts a smart meter but does not allow for detailed readings, the default outcome is that the P3 gate **will send consumption data to the DSO six times per year for billing purposes.**
Consumers have thus the capability to choose.

Suppliers and third parties can access metering data through the P4 gate, with consent from the consumer, via the CAS. The consent can be of 2 types: it can be either given for frequent readings or for restrained ones.

Energy service providers can connect to smart meters either directly through the P1 interface or indirectly through the P4 interface. Currently, there are ODA's in The Netherlands that use P1, and there are ODA's that use P4.

The available energy service providers in the Netherlands can be listed in a database targeted at consumers, which is run by Milieu Centraal, a public energy advice service, and Netherlands Enterprise Agency (RVO). Milieu Centraal (Centraal, 2016) website provides energy saving advice and resources. Consumers are directed in this website to a database of energy management tools, where they can search for energy management services based on their interests.
The **Project** should find out **whether appearing in the data-base is a compulsory requirement or not.** In any case, it may be interesting at a certain point for **PARENT** to appear in this data-base (to acquire further visibility towards consumers). Pro and cons for such a move could be explored by Dutch Pilot leaders.

2. The sub-meter option

Similarly to the Belgian case, the rules applicable to sub-meters in households are those aiming at the protection of the electricity system in terms of safety and security. Whilst, the applicable data-processing regime is exclusively the one introduced by the **EU General Data protection Regulation** that will enter into effect in 2018**.**

In the case **the Project** decides to make use of sub-meters, it has to analyse the case of the possible interaction of the data collected from prosumers with the activities of the DSO.

1.7 Norway

In **Norway,** an in-home display in every household meter is **not** part of the roll-out.

The current situation is one where **DSOs** provide smart metering data to suppliers, and utilities allow consumers to access their **hourly metering data via web portals**. The data is available to consumers **one day after consumption**.

In the **future, system** to go live in February 2017, consumption data will be reported into a central data centre **"Elhub"**. **Elhub will provide access for all market players (DSO, retailers, and energy service companies).** Third parties will be able to access **consumption data from consumers who will have given their permission via the Elhub. Consumers** will also be able to access independently to their consumption data in Elhub through their **supplier's webpage**[11]**.**

To make sure it adds value in the Norwegian context, the **PARENT** project must take into account the **services consumers can already enjoy** and should gather **information on most recent developments of pilot projects in Norway that are exploring business models for feed-back solutions** (as we learnt in D1.4).

1.8 Spain

In **Spain** DSOs gather a) **consumption data** and b) **historical data**.

a) Consumption data is made available, in a **standardised way** to **consumers**, **suppliers**, and **third parties**.

Access to meter-data from suppliers: DSOs release the data in **hourly aggregates** to suppliers. DSOs:

- provide **"secure" access to its servers**, where each **supplier** can **download data from its clients**, with a **maximum delay** of **seven working days from the moment the measurement took place**, and
- **keep a two-year record of hourly consumption data**.

Access to meter data from consumers: Electricity consumers in Spain can access their **hourly consumption data free of charge** through **web portals** run **by DSOs**. Utility companies are responsible on **informing consumers** about how the latter can access their own data. In addition to **graphs and figures**, designed **to help analyse and improve consumption habits, the customer will also be able to download the validated hourly consumption data**. Since the deployment programmes in Spain vary in smart meters

[11] Hourly data will be stored for a minimum of 3 months and a maximum of 15 months, and monthly and yearly data for 3 years.

capabilities, **not all consumers are able to access their smart metering data in real time through in-home displays**.

Access to Third Parties: Third parties can access the **hourly consumption data** via **the DSO web portals** after receiving **permission from consumers**. Once permission is obtained, the third party can **use the consumer's "meter ID".** The consumption data is available with max. 1 week delay from the moment in which the measurement took place. Regarding the **energy management services, energy service companies need to be registered as or associated with retailers**. The Third party can then offer energy efficiency services to the consumer but **needs renewal of permit every 2 years.**

b) Historical data is accessible through a **database called "SIPS"** that is provided by the DSO. Access to this platform is **granted through the unique ID of the smart meter** and with the explicit **permit** of the user.

Today, the set of data made available by the DSO is:

- Contracted power
- Tariff and Peak/valley periods (DH)
- Voltage (single or three phase)
- Date of reading (initial/final) and Reading
- Town supply point (including full address)
- Name of the holder of the supply point and full address.
- Historical data consumption (period + consumption of the last 2 years) - Last change of energy retailer and/or energy contract

Information removed from SIPS distributors:

- Location of the supply, including full address (type of street, street name, number, floor and
door) influence in user's validation process
- Name (or company name) of the holder of the supply point influence in user's validation
- Full address of the holder of the supply point influence in user's validation process
- Last change of energy retailer and/or energy contract

2 Actors responsible for energy efficiency services in each Country and PARENT[12]

Actors responsible for energy efficiency services in PARENT Countries are DSOs, retailers and other market actors broadly defined as "third parties".

[12] First elements of reflection on possible business models for PARENT in each Country.

In general, **electricity retailers** have access to the same information that can be accessed by consumers and third parties (thus **PARENT)** in **Spain**, the **Netherlands** and **Norway**.
In these Countries but also in Belgium, some **retailers** already provide **energy data services** to **their consumers through apps and other channels to their consumers**.

More specifically, in Norway: possible business models for feedback solutions **are making the object of pilot studies.** These studies are expected to be completed by xxxx. There are several pilot programmes running, including a demonstration project on **different types of feedback solutions**, for which science software company Onzo has been selected by **energy supplier Fjordkraft**. A **competition for energy suppliers** who want to do **pilots on technologies, services and business models for feedback solutions** was announced on May 1, 2015, rewarding seven winners with partial financing for pilot projects. **Utilities are obliged to provide consumers with information that enables them to compare consumption, prices and costs over time.**

In **Spain**, the **DSO** allows **consumers to visualise a hourly consumption curve via a (webserver)**. However, **the DSO cannot provide the consumer with any other additional service (advise, tips on energy efficiency)**. The **DSO cannot** provide the **consumer** with **historical data** either.

In the Spanish context, **retailers** can offer services very similar to those offered by the VEA because they are enabled to receive all data (consumption data and historical data) from the DSO (for instance, they are entitled to receive the hourly curve information for **billing purposes** and **"other" services to the consumer**).

Differently from the DSO, the **retailer can** thus **offer to the consumer "added value services"** (tips, advice on how to improve consumption patterns) based on the **hourly curve measurements, historical data, tariffs, energy efficiency improvements** etc. In **Spain,** any third party (thus PARENT) willing to access **historical data** and **other data concerning contracted power** and **contractual data** needs to enter in **agreement with the retailer.**
.

In **Belgium** – Retailers and sub-meter providers are already offering energy advice services to their consumers. When the CDH (Atrias) will be operational, network operators (e.g. Sibelga), energy retailers (e.g. Lampiris) and ESCOs (energy service providers) will be able to access the platform.

All this means that the **PARENT citizen's platform** will need **to go beyond the type of services citizens** are already **able to receive** from their **retailers and sub-meter operators** in the Netherlands, Norway, Spain and Belgium.
As seen, in Norway **retailers even have an obligation to offer these services to consumers.**

3 Type of data accessible in each Country and PARENT

3.1 Types of raw data needed by the VEA and access requirements for each data type

- Consumption data **in good resolution** and up to a certain **frequency**.

  In **Amsterdam,** consumption data **from smart meters** is available at a **frequency** that depends on the type of **consent released by the user.** Data can be accessed (via the central data hub or the access port) with a delay of max 1 day. It is unknown to what extent **resolution** is fine-grained. **Sub-meters data** holds a real-time nature. Measurements allow detecting with high precision which electronic installation is in use.

  In **Barcelona,** the **Project** can access **consumption data** in **hourly aggregates,** in **low resolution,** in **maximum seven days** after the **consumption day.** This is possible after receiving the **consent of the consumer** to **use its meter ID** to **access the DSO web-portal.**

  In **Norway, hourly readings** are currently available via the DSO **1 day after the day of consumption.** It is unknown to what extent **resolution** is fine-grained.
  As of February 2017, **15 minutes readings** will be available via Elhub and will probably be accessible **after 1 day**.

  In **Brussels,** sub-meters will be used. Sub-meters data holds a real-time nature. Measurements allow detecting which electronic installation is in use. In the new system **(in 2018),** readings from smart meters will be available up to every **15 minutes** (if the consumers agree) with max **1 day delay.**

- Data on historical consumption (that could be for any day, week, month and year) for a period of at least 24 months[13].
- **ENERBYTE** explains that **it is necessary to access the historical data** to apply the **energy saving algorithms**.

  In **Spain** access to **historical data** is **possible through agreement with the energy retailer. Historical data is accessible through a database called "SIPS" that is provided by the DSO. Access to this platform is granted through the unique ID of the smart meter obtained with the explicit permit of the user. So, if both the retailer and the user agree, the VEA can access historical data[14].**

  In the **Netherlands historical meter data from smart meters** is **stored by EDSN**. Currently, this refers to the yearly meter values, and meter values related to switch events or moving in/out events. Historical meter data is **only available to the network operator owning the connection**, **and** to **energy suppliers who supply, will**

[13] As stipulated by the 2012 EU Energy Efficiency Directive.
[14] ENERBYTE in agreement with 2retailers to access historical data.

supply in near future, or recently supplied energy to the specific customer. No access to historical data is allowed for market actors other than suppliers. ACM informs: *ODA's are not allowed to access the historical data as stored in the central database of EDSN. (Only access possible for suppliers). ODA's are free to directly contact consumers for providing the ODA with copies of their historical bills*[15]. **The use of sub-meters will allow the construction of historical profiles.**

In Brussels, **the use of sub-meters will allow the construction of historical profiles** [16].

- Power contracted and contractual data are also necessary for the VEA to function.

4 Country by Country Permits needed

The following section list the permits **mapped until October 2016** that are **certainly** needed or **likely** needed **for the project to develop in each Country / city**. The **lists** of permits **may growth or diminish** as talks with relevant local authorities progress in coming weeks and months. **Requirements listed in D2.1 must also be taken into account on top of these lists.**

4.1 Permits needed in Belgium

For sure:

- **Consent of user to grant access to her/his consumption data through sub-meters** (in line with **GDPR provisions** - Cf. D2.1).

Possible:

- **Consent of user to collect data to build-up historical profiles**.
- Green light on the security and safety of the sub-meter intervening on the electric installation in line with **Règlement Général sur les Installations Electriques (RGIE).**

4.2 Permits needed in the Netherlands

Option1 - use of smart meters:

For sure:

- **Consent of the consumer differentiating between a) "frequent" access or b) "less frequent" access**.

[15] Answer of ACM to email from PARENT enquiring on energy data access in the NL.
[16] In Belgium historical data can be obtained by consumers directly (bills) but accuracy may not be enough.

- Abide to "**Code of Conduct for handling of smart meter data by ODA's"** approved by the Dutch Privacy Authority[17]**.**
- **No access to historical data is allowed for market actors other than suppliers.** But ODA's can directly contact consumers for providing the ODA with copies of their historical bills.

Possible:

- **Application to EDSN for getting smart meter data of individual consumers.**
- **Procurement of device**, based on the **nationally standardised technical specifications** of the **access port to the smart meter.**
- Consent for the "access port" reporting specific **"I consent to….", relative on access port sentences.**
- Build-up of **ICT-interface** and **performance of external certification and auditing** for **procedures** and **technical implementation**, before EDSN gives access rights to the service (and after consumers' consent has been received).

Option 2 - use of sub-meters:

For sure:

- **Consent of the consumer according to GDPR specifications**
- **Notification to Dutch DPA**

The available energy service providers in the Netherlands **can be listed in a database** targeted at consumers, which is run by Milieu Centraal, a public energy advice service, and Netherlands Enterprise Agency (RVO). Milieu Centraal (Centraal, 2016) website provides energy saving advice and resources. Consumers are directed in this website to a database of energy management tools, where they can search for energy management services based on their capabilities and interests.

4.3 Permits needed in Norway

For sure:

- Third parties will be able to access **consumption data from consumers who have given their permission via the Elhub. Consumers** will also be able to access independently to their consumption data in Elhub through their **supplier's webpage**

- Not clear what the situation is to access historical data.

[17] Similar Codes of Conduct have already existed during several years for suppliers and network operators.

4.4 Permits needed in Spain

- **Permission from consumers** to use the **"meter ID"** and **access** :
  - the **hourly consumption data** in **CVS** or **Excel format** with via **the DSO web portals**
  - the **historical data** through the **"SIPS".**
- **Association** with **retailers to access historical data** (and for **PARENT** to be able to provide **energy management services)** with **permit renewal every 2 years.**

5 What's next? steps to be undertaken in each Country

Who does what – indicated in orange. All actions must be undertaken asap. The List of relevant national regulatory authorities is in paragraph 6.

5.1 All Countries / Cities

A. Read **D2.1**. All partners.
B. Read **section 4** in this document. All partners.
C. Get acquainted with **Regulatory Authorities in your Country** as listed in **section 6** in this document. All partners.
D. Explore any possible type of **interoperability barrier** (including technical requirements) between the VEA and the smart meters being installed. All partners.
E. Notification of **processing activities** to **National Data Protection Authority** (N-DPA). Partners **to get well acquainted** of the **national notification requirements** and be **ready for notification** that will take place as soon as **PARENT coordinator** will have identified the technical partner acting as the "controller" of processing activities for the consortium.
F. Ask whether there are **specific "consent"** or other requirements that may specifically apply to the energy sector in each national context (in addition to requirements stemming from EU GDPR – cfr. D2.1). The project may need to make them explicit in the VEA **landing page**. All pilot leaders take contact with **National Data protection Authorities** and **Energy Authorities** in this regard.

- Explore how it is possible to access info on **power contracted and contractual data**. Will data accessible through bills be enough? Can the project "legally" use data from bills issued by retailers? Pilot leaders to find out.
- Added – value with regard to services offered by retailers. What type of "advantages" can the project offer? Participation and sense of community is certainly where the emphasis should be. **The project cold also suggest for instance forms of co-governance of the platform among citizens, local authorities and the Parent technical partner for its services and maintenance in the mid-long term after that the living – labs conclude.** Partners to think about this important point.

5.2 Barcelona

A. Should the request of consent from users explicitly mention the possibility to use the consumer's "meter ID"? Should this be in the VEA landing page? As a question? As a description of what we will do with the consent once received? Spanish partner to ask the Data protection Authority.
B. Does the VEA need to be **associated with retailers**? Spanish partner contacts relevant stakeholders and ensures permits potentially needed by retailers are appropriately released and validated, if needed, by competent authorities (Comisión Nacional de los Mercados y la Competencia / National Commission for Markets and Competition (CNMC) and/or AEPD www.agpd.es).
C. Are there specific consent modalities for PARENT to be able to **access the SIP for historical data**? Spanish Partner to ask SIP if there are new requirements that must be taken into account for them to grant access to historical data following to new data protection rules in Europe. Or should the permit be asked to the retailer?
D. The Third party can offer energy efficiency services to the consumer but **needs renewal of permit every 2 years.** What are the consequences of a denial on a medium-long term business perspective? Let us think of this important aspect.

5.3 The Netherlands

Option 1 - use of smart meters:

A. Pilot leaders to get acquainted with document: **"Code of Conduct for handling of smart meter data by ODA's"** recently approved by the Dutch Privacy Authority. UU informs technical partner about its contents and steps to undertake to abide with it.
B. **PARENT** can apply for the service offered by EDSN for getting smart meter data of individual consumers. Apparently **PARENT** has to **build some ICT-interface and perform some external certification and auditing for his procedures and technical implementation, before EDSN gives access rights to the service**. After this, **Parent** has to prove the **consent** of the specific consumer before he receives this consumer's smart meter data via EDSN. UU contacts EDSN **www.edsn.nl.** to explore the operational aspects of this info and provide a briefing to technical partner in this respect.
C. Apparently **Energy service providers can connect to smart meters either directly through the P1 interface or indirectly through the P4 interface.** ACM Informs: *"Currently, there are ODA's in The Netherlands that use P1, and there are ODA's that use P4. It seems to me of no use to use both ports on the meter, but you may have arguments to want both types of access"*. UU to explore pro and cons of these options in "regulatory" terms.
D. In **the Netherlands**, specific **"consent" requirements apply when it comes to collecting energy meter data**. **There are different types: detailed (every 15 mins), restrained, very limited etc**. We expect that **consumers joining the VEA will grant "detailed" access to the VEA**, **we have nevertheless to make sure we prove to authorities this has been the case.** UU to ask energy regulator (ACM) whether, to be

in line with Dutch law, the landing page of the VEA should include reference to the different types of consent.

E. The available energy service providers in the Netherlands can be listed in a database targeted at consumers, which is run by Milieu Centraal, a public energy advice service, and Netherlands Enterprise Agency (RVO). Is this something the VEA should do? Or is this not compulsory? what are pro and cons? (visibility with consumers? Other?) UU could you please find out?

Option 2 – use of sub-meters:

F. UU to get acquainted with necessary step to undertake the notification procedure.

5.4 Norway

- As of February 2017, consumption data will be reported into a central data centre **"Elhub"** (i.e., a Central Data Hub model). **Consumers** will be able to access their consumption data in the central Elhub through their **supplier's webpage (Elhub, 2016).** It would be interesting to understand what benefits this data provides to consumers: just a picture about the consumption patters? Adequate information that already enables the consumer to autonomously reduce their consumption if they learn how to interpret their own data?
- What should the project do to access **historical data**? maybe Elhub people know?
- Enter into contact with Elhub operator to ask what are the requirements that should be satisfied by PARENT to access data. Should the project register somewhere? Should it undertake other administrative steps?
- What are most recent developments re: development of pilot projects exploring business models for feed-back solutions? Anything **PARENT** should take into account / abide to? (to avoid embarking in business models that are not suitable in NW?)

5.5 Belgium

- To ensure the Project is in line with provisions in RGIE, the provider of smart metering devices will need to prove of their compatibility with other of electronic installations in households

6 List of National Regulators

RESPONSIBLE FOR DATA PROTECTION

6.1 Belgium

Commission de la protection de la vie privée
Rue de la Presse 35

1000 Bruxelles
Tel. +32 2 274 48 00
Fax +32 2 274 48 10
e-mail: commission@privacycommission.be
Website: http://www.privacycommission.be/

6.2 Netherlands

Autoriteit Persoonsgegevens
Prins Clauslaan 60 P.O.
Box 93374 2509 AJ Den Haag/The Hague
Tel. +31 70 888 8500 Fax +31 70 888 8501
e-mail: info@autoriteitpersoonsgegevens.nl
Website: https://autoriteitpersoonsgegevens.nl/nl

6.3 Norway

Datatilsynet
The Data Inspectorate
P.O. Box 8177 Dep
0034 Oslo
Tel. +47 22 39 69 00; Fax +47 22 42 23 50
e-mail: postkasse@datatilsynet.no

6.4 Spain

Agencia de Protección de Datos
C/Jorge Juan, 6 28001 Madrid
Tel. +34 91399 6200
Fax +34 91455 5699
e-mail: internacional@agpd.es
Website: https://www.agpd.es/

RESPONSIBLE FOR ENERGY

ENERGY

6.5 Belgium

BRUGEL
46 avenue des Arts, bte 14
1000 Bruxelles
Tél: 0800 97 198 (de 9h à 12h)
Gén: 02 563 02 00
Fax: 02 563 02 13
Informations générales : info@brugel.be

6.6 The Netherlands

Authority for Consumers and Markets (ACM)
P.O. Box 16326 2500 BH The Hague
Visiting address: Zurichtoren
Muzenstraat 41, 2511 WB The Hague
Tel: +31 70 722 22 06
Fax: +31 70 722 23 55
E-mail: deinternational@acm.nl
Web: http://www.acm.nl

6.7 Norway

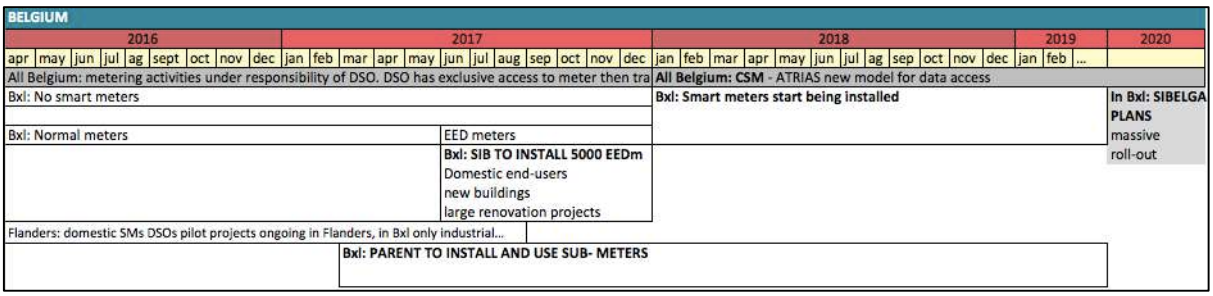
Norges vassdrags- og energidirektorat / Norwegian Water Resources and Energy Directorate (NVE)
Middelthunsgate 29
P.O. Box 5091 Majorstua
0301 Oslo
Tel: +47 22 95 95 95
Fax: +47 22 95 90 00
E-mail: nve@nve.no
Web: http://www.nve.no

6.8 Spain

Comisión Nacional de los Mercados y la Competencia / National Commission for Markets and Competition (CNMC)
Calle Alcalá 47
28014 Madrid
Tel: +34 91 432 96 00
Fax: +34 91 577 62 18
E-mail: contacto@cnmc.es
Web: http://www.cnmc.es

7 ANNEX - Comparative tables

7.1 Timeline of expected developments in each Country



The Netherlands

2016									2017												2018												2019		2020
apr	may	jun	jul	ag	sept	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	ag	sep	oct	nov	dec	jan	feb	...	
In NL responsibility for installation and ownership of the meters and metering activities is the DSOs. A body called EDSN offers data management services.																																			By end of 2020 80% coverage of smart meters
1.5 million Dutch households have smart meters so far.									New contracts for 6 million smart electricity and gas meters by 2020 from operators together managing 70% of the approximately 8 million connections in the market will largely close the gap.																												

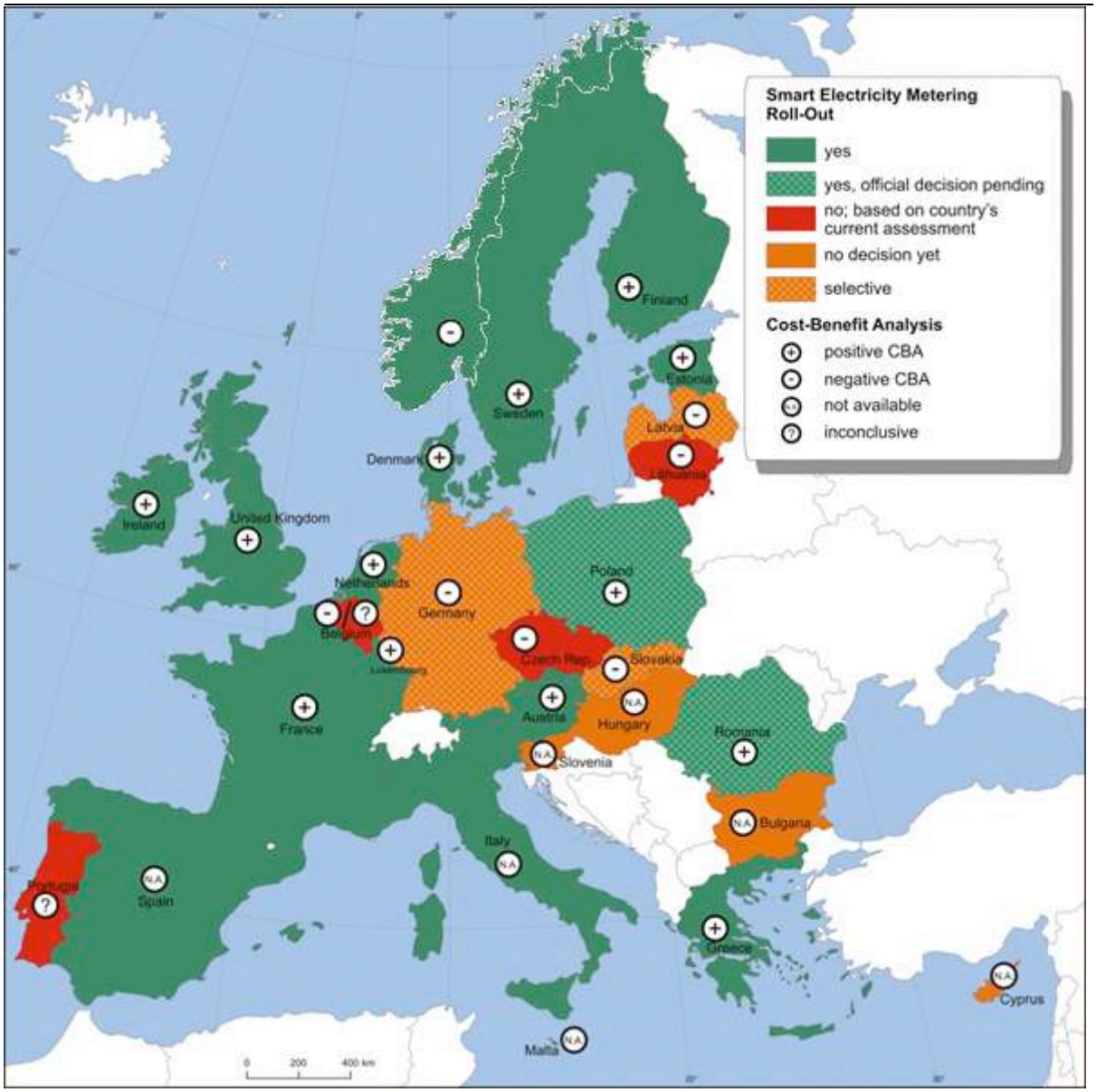
Norway

2016									2017												2018												2019		2020
apr	may	jun	jul	ag	sept	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	ag	sep	oct	nov	dec	jan	feb	...	
DSOs provide smart metering data to suppliers. Consumers can access their data via web-portals. The data is available one day after consumption																																			
The roll-out of smart meters is being done by the DSOs (regulated monopoly).																																			
100% smart meter roll-out by 2019 which accounts for 2.8 million smart metering points (Venjum & Hagen, 2015).																																			
Smart meters are being installed in all households following to decision of Norwegian authorities (different from BE where market is pushing for their introduction.																																			
Plans for 20% installed by end 2016									Plans for 65% installed by end of 2017												Plans for 100% installed by end of 2018													
Several pilot programmes are running.... Energy suppliers are "testing" **"technologies", "services" and "business models"** for **"feed-back solutions"**. Previous pilot projects have focused on "**communication infrastructure**" and "**data management**".																																			
									Elhub goes live - February 2017, consumption data will be reported into a central data centre "Elhub" (i.e., a CDH model). The consumers will access their consumption data in the central Elhub through their supplier's webpage (Elhub, 2016).																							

Spain

2016									2017												2018												2019		2020
apr	may	jun	jul	ag	sept	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	ag	sep	oct	nov	dec	jan	feb	...	
In Spain is the DSO the responsible of installing and collecting the smart meter data and making it available to 3rd parties.																																			
									new data fields will be made available in SIPS database																												
									a new technical modality to receive data from the DSO has become operational																												
A single DSO is responsible for the smart meter installation in the city of Barcelona and it is expected to complete such installation by the end of 2017. It is mandatory for the consumer to have a smart meter by 2018 in Spain. Expected installation of 27 millions of smart meters.																																			

7.2 Comparative tables from D1.4



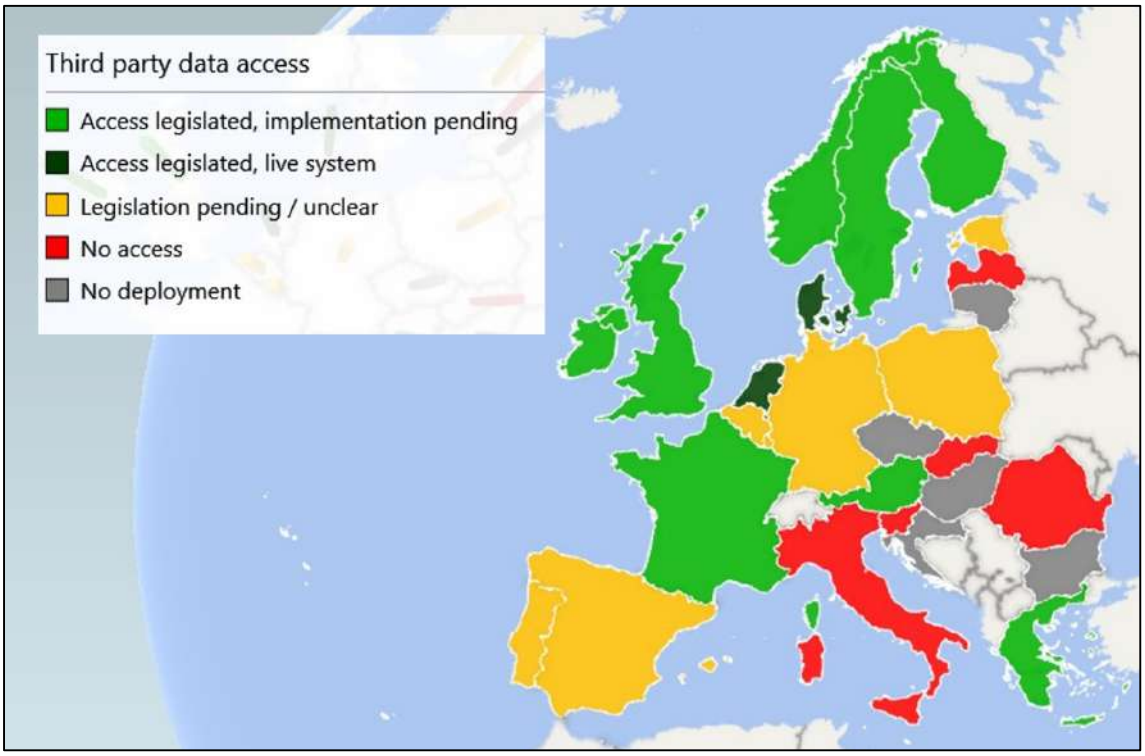
3.2.1 – Figure: Smart electricity metering systems roll-out status in Europe until 2016 (source: http://ses.jrc.ec.europa.eu/sites/ses.jrc.ec.europa.eu/files/files/electricity.jpg).

7.2.2 – Table: Smart metering systems roll-out details by 2020 in the four targeted countries

Country	Belgium	Netherlands	Norway	Spain
CBA completed	Yes	Yes	Yes	Completed by five main DSOs, not publically available
CBA outcome	Negative	Positive	Negative	Not available
Expected Diffusion rate by 2020 (%)	No wide scale roll-out of SM by 2020	100	100	100
Smart metering points implemented	NA	1500000	265000	18500000
Smart metering points to be installed by 2020	NA	7600000	2800000	27768258
Roll-out period Start Date	NA	2012	2013	2011
Roll-out period End Date	NA	2020	2019	2018
Responsible party implementation and ownership	DSO	DSO	DSO	DSO
Financing	NA	Network Tariffs	Network Tariffs	Network Tariffs

3.2.3 - Table: Advantages and disadvantages of the three data management models.

	Advantages	Disadvantages
The DSO model	the most efficient model in data handling	less transparency in data handling than the CDH-model
The CDH model	the most guarantees for transparent, non-discriminatory and neutral data handling	increased regulatory and administrative costs due to setting up a new regulated agent who should cooperate with DSOs
The DAM model	provide a high level of innovation	required regulation of the metering companies and risks of limited access of other market actors and DSOs to smart metering data



3.2.4 - Figure: Third party smart metering data access in the EU countries and Norway
Source: (Beviz, 2016).

3.2.5 - Table: Summary of smart metering data management and access for countries.

Country	Metering data management (responsible party)	Metering Data Management Model	Frequency of metering readings	Max. delay between consumption and data access	Metering data access
Belgium	Regulated monopoly (DSOs) (in future: independent CDH Atrias)	Currently: Decentralised access and data storage (DSOs). In future: Centralised service hub and decentralised storage	Sub-meters: Once per year in the residential sector Smart meters: Regional variations. Mainly, there will be 15 minutes reading for smart electricity meters	NA	The sub-metering data are held by every individual DSO, which provide the data to energy suppliers. Most energy suppliers have web portals providing the annual metering data to their customers In Future: consumers will be able to access their own data via the CDH Atria when it goes live in 2018 Third party: Currently: they cannot access the sub-metering data of all customers In Future: access will depend on legislation updates (most likely an agreement with the DSO is needed)
Netherlands	Regulated (DSOs, with data stored at metering points)	Centralised service hub and decentralised data storage	10 seconds real-time/15 min reading	1 day	Consumers: from the CDH through their supplier's web portal Third parties: via the CDH with the consent of consumers
Norway	Regulated (TSO)	Currently: Decentralised access and data storage (DSOs). In future (2017): Centralised access and centralised data storage	Hourly. Future: 15 min reading	1 day	Consumers: Currently: From the DSOs through their supplier's web portal In future (2017): from the CDH Elhub through their suppliers' web portal Third parties: Via the Elhub with the consent of consumers
Spain	Regulated (DSOs)	Decentralised access and data storage (DSOs)	Hourly	1 week	Consumers: through a web portal provided by the DSO Third parties: through an agreement with the retailer and with the consent of the consumer