European Energy Retailers (EER) asbl

Response to the Questionnaire in the Non-paper on Digitalisation in the Energy Sector

12 September 2019

Digitalisation in the Energy Sector - Questionnaire

Context

Within the Energy Union, three key targets and policy objectives have been established in light of the 2030 climate and energy framework of the EC: 40% cut in greenhouse gas emissions, 32% share for renewable energy and 32.5% improvement in energy efficiency.

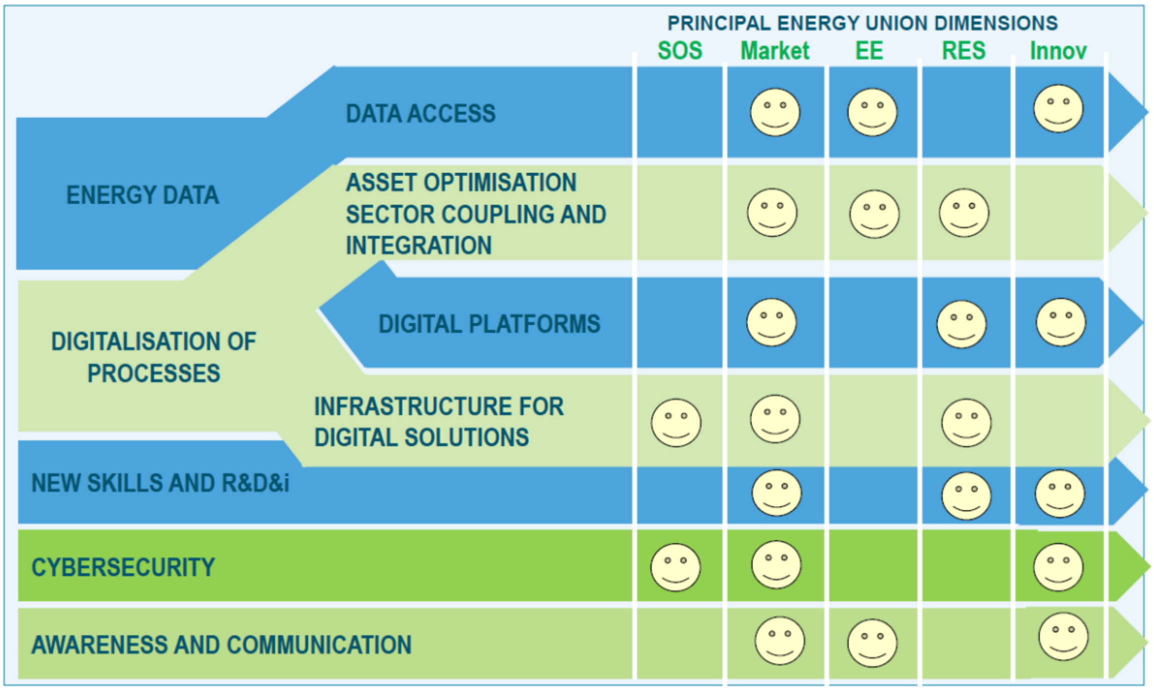
To achieve these objectives, five mutually reinforcing dimensions work together to balance the overarching energy triangle (energy security, sustainability, competitiveness) and enable the achievement of the **2030 climate and energy framework**. These dimensions are: (1) Energy security; (2) Internal energy market; (3) Energy efficiency, (4) Decarbonisation, (5) Research, innovation and competitiveness**.** The Energy Union Strategy also recognises that an innovation-driven transition to a low-carbon economy offers great opportunities for growth and jobs. This would lead to the increasing flexibility in the electricity sector, emergence of new business sectors, new business models and new job profiles. Nevertheless, the transition will also imply adjustments in some sectors, business models or job profiles.

On the other hand, the data-driven nature of the transformation of the energy sector requires understanding the interdependence with the **Digital Single Market**, to ensure access to online activities for individuals and businesses under conditions of fair competition. The relevant areas include: (1) Interoperability and related standards; (2) Horizontal legislation on data: the General Data Protection Regulation (GDPR), free flow of non-personal data (FFD), e-Privacy Regulation; and (3) Cybersecurity.

The legal basis for bridging the objectives of the Energy Union and the digital transformation of the energy sector is already present in the **Clean Energy for All Europeans package**. The Market Design Initiative introduces new provisions closely related to the digitalisation of the electricity sector. In particular, the provisions within the newly adopted Electricity Directive on demand response, dynamic prices, flexibility procurement, access to data, interoperability and data management. The Energy Performance of Buildings Directive promotes digitalisation of buildings through the establishment of a smart readiness indicator for buildings and through the introduction of requirements for the deployment of recharging infrastructure for electric vehicles. For heating and cooling, the revised Energy Efficiency Directive requires a transition to remote readable metering devices in district heat and cooling networks and in sub-metering systems within multi-apartment and multi-purpose buildings.

Questionnaire

The figure below summarises a possible mapping of the different clusters on the digitalisation of the energy sector and the impact into the principal Energy Union dimensions.



The paragraphs below describe each of these clusters and propose relevant questions to understand better their status and impacts. Please, insert your answers under each question in the boxes below and send your contribution back to ENER-DIGITALISATION-TASK-FORCE@ec.europa.eu **before 15 September**. Please indicate whether you reply as individual expert or as an organisation/association; in the last case, please provide the full name and coordinates of the organisation as well as your position in such organisation.

1. Data Access

Data Access refers to the rules ensuring that data should be sourced easily, while its flows should be constrained to the lowest possible extent. Through this area, the Commission should aim at achieving a fair usage of energy data and boost innovative markets and services by ensuring competitiveness, accessibility and consumer engagement.

Questions

1. **How could the access to non-sensitive energy data be improved in order to increase the accessibility and eliminate market barriers?**

- *A set of minimum services offered by metering system operators providing full access to the collected data for all market participants needs to be defined.*
- *Non-discriminatory, timely and efficient access to smart meter data shall be ensured (including the load curve) to all market parties that need the respective information for fulfilling their contractual and regulated duties. Direct access to data for retailers and 3rd-party service providers shall be granted based on consent by the consumer, or as defined by law or contractual agreements.*
- *Smart meters should be able to provide data through interaction with different technologies (Wireless; PLC; GPRS; IoT).*
- *Common minimum functionalities as defined by the European Commission in 2012 (2012/148/EU) need to be implemented on national level. In addition, those functionalities need to be refined further, based on a reasonable balance between cybersecurity considerations, standardization needs and implementation times while bearing in mind the costs and principles of proportionality.*
- *A common minimum set of data characteristics (granularity, type of data, response times, etc.) and recommended data format for accessing historic consumption data should be defined at a European level.*
- *A standard data format for the real-time data should be provided by the local interface on the meter and the implementation of this interface by the Member States should be monitored.*
- *Metering services should be open to competition. Installation, operation and collecting, processing, storing and transmission of metering data should not be a DSO exclusive task any more. Other metering and energy service providers should be enabled to start offering such services, provided that formal and metrological requirements, including data protection and cybersecurity, are fulfilled.*
- *If the DSO is providing metering services, it has to be done in a strictly neutral way and in particular, if the DSO is owned by an incumbent player.*

2. How could existing initiatives on interoperability standardisation [e.g. for smart appliances] be used to further data access and consumer engagement?

<u>General remark with regard to standardisation:</u> Transparency and open access to information are crucial when developing interoperability standards. The process of defining standards should allow either for active participation by any concerned stakeholder or at the very least should allow for participation through a consultation process. It is of utmost importance that new market players get a fair chance to be involved in the process of defining standards and this is included in the thinking of standardization bodies as a guiding principle for organizing their work. In addition, standardization is necessary at the DSOs level, both in terms of hardware and data flows from the IT systems communicating with suppliers. This standardization is essential to facilitate the deployment of solutions developed by suppliers for energy consumption monitoring. Otherwise, it would be a technical barrier.

3. What data-driven services and related new business models can help the energy transition (e.g. combining health, mobility and energy data to trigger smart home services)?

Aggregation services which pool flexibility from demand side, generation assets and storage devices (including EV batteries) while engaging customers can significantly help the energy transition by matching flexibility with all kinds of system needs. Crucial is access to all markets for aggregation service providers, especially balancing markets and flexibility markets on distribution level, and access to all data points needed to coordinate mixed pools and operate across sector boundaries such as energy, transport as well as heating and cooling.

There is enormous potential for digitalisation to improve energy services and user comfort in buildings, while also reducing overall energy use. Smart energy management can:

- *help ensure that energy is consumed when and where it is needed*
- *enable demand response*
- *predict, measure and monitor in real-time the energy performance of buildings which allows consumers, building managers, and other stakeholders such as service providers to identify when and where maintenance is needed or where energy savings can be achieved.*

Metering data can be used to visualize and track consumption as well as to monitor generation behaviour. It can also be used in combination with control technology in order to optimize the operation of consumption systems and generation plants by adjusting the service intervals and using damage forecasts for instance. Another approach for using metering data is to encourage consumer behaviour on a case-by-case basis. This is possible, for example, by showing consumption in relation to other consumption. This can be implemented through smartphone apps or online platforms. In that case, the customer can see his current electricity consumption in comparison to the average of all other households or - even better - in comparison to a comparison group that is close to the customer. Proximity can be established by various criteria: Regional proximity, occupational affiliation, size of home, age, energy supplier, etc.

4. How can fair access to data contribute to energy efficiency in buildings and consumer engagement in demand response schemes?

The Clean Energy Package is not only about reducing carbon, but also about empowering consumers. It will be impossible to manage high penetration levels of renewable energy in the system without engaging final consumers. The energy consumer of the future will have to adapt his consumption profile as much as possible to the availability of clean energy and, therefore, energy suppliers and service providers should be able to provide as much information as possible and with the least possible time-lag.

In this context, well-functioning metering services are essential as new pillar of retail competition, including demand response management, self-consumption, balancing and *aggregator tasks, so a common European regulation seems mandatory in such domain. To that end, we deeply appreciate the new European legislative framework, setting out clear provisions on smart metering (Articles 19-21 in the Electricity Directive) and data management (Art. 23 and 34 in the Electricity Directive). The related implementing acts currently under preparation and the required national implementation should not be determined by the DSO views and needs only. Indeed, the consumer´s and third-parties' needs and interests shall be considered as well. It is of utmost importance that DSOs change their perspective and start to treat retailers and third-party service providers as their customers in the overall energy market context.*

More generally speaking, smart meters are an enabling technology that can be used to provide services that may result in a wide range of benefits for all parties across the electricity supply chain, including consumers. Advances in metering technology, and the energy products and services this technology enables, can give consumers more choice and control. With the right technology, information and price signals, consumers are better able to decide how and when they use electricity, and manage the costs of those decisions.

5. **How can open data on meteorological conditions be used to help integration and forecasting of variable renewable energy into the electricity system?**

Renewable energy weather forecasting requires more sophisticated algorithms and analysis as solar and wind penetration increases. Tracking weather impacts on the ramp ups and ramp downs from renewable resources is crucial to resilience as the knowledge about expected amount of solar and wind power production is needed for real-time load balancing.
For security of supply, it will be important to have different forecasting services available and ideally, there is healthy competition in the weather forecasting vendor market, including competitive price structures as well as easy access. If everyone is using the same model and data base, the risk for system stability will increase in case of forecasting errors or any other irregularity in the data.

2. Digital Platforms

Digital platforms are data-driven solutions that have the potential to create new markets and services throughout the whole energy chain. Through this area, the Commission should strive to achieve (1) open markets through fair competition and market access, (2) interoperability to boost technological change and (3) consumer choice to strengthen consumer participation in the energy transition.

Questions

1. **Which digital platforms already exist in the energy sector for (i) flexibility markets (congestion management) and (ii) trading day ahead, intraday and balancing? Can they be used for selling electricity and demand side flexibility products?**

(i)

Digital platforms to support flexibility markets on distribution level *are still in infant stages, though there are examples in Europe which address the issue of grid congestion:*

- *NODES vision is to build Europe's most customer-centric, integrated energy marketplace to unlock the value of local flexible power resources and support the drive to a sustainable, emission-free future.*
- *GoPACS is an innovative platform to keep the Dutch grid reliable and affordable. It's the result of cooperation among grid operators TenneT, Stedin, Liander, Enexis Groep and Westland Infra.*
- *The Enera Project, developed by the energy group EWE AG and the European Power Exchange EPEX SPOT with the system operators Avacon Netz, EWE NETZ and TenneT, is a market platform available to system operators and flexibility providers of the project consortium.*

(All of the above mentioned examples can be used for selling electricity and demand side flexibility products.)

Another set of digital platforms concern the ***operation of virtual power plants (VPP).*** *VPPs are operated for example by Entelios, Centrica, Lichtblick, Next Kraftwerke, Statkraft Markets and tiko energy solutions (for Sonnen in Germany). A Virtual Power Plant is a network of decentralized, medium-scale power generating units such as wind farms, solar parks, and Combined Heat and Power (CHP) units, as well as flexible power consumers and storage systems. The interconnected units are dispatched through the central control room of the Virtual Power Plant but nonetheless remain independent in their operation and ownership. The objectives of a VPP depend on the market environment in which it is operated. In general, the aim is to network distributed energy resources (often renewable energy resources like solar, wind, hydropower, and biomass units) as well as flexible power consumers (also called demand response or demand side management) and storage systems in order to monitor, forecast, optimize, and dispatch their generation or consumption. By being aggregated in a VPP, the assets can be forecasted, optimized, and traded like one single power plant. That way, fluctuations in the generation of renewables can be balanced by ramping up and down power generation and power consumption of controllable units.*

Integrating renewable energy sources into existing markets is another primary objective of a VPP. Individual small plants can in general not provide balancing services or offer their flexibility on the power exchanges. By aggregating the power of several units, a VPP can deliver the same service and redundancy and subsequently trade on the same markets as large central power plants or industrial consumers.

(ii)

Digital platforms for trading Day-Ahead and Intraday *are more developed:*

- *Day Ahead Trading Nordpool*
- *Day Ahead Trading EPEX*
- *XBID (by EPEX Spot) → Intraday, including cross-border activities*
- *Trayport → Wholesale trading platform in the European markets*

Other platforms:

- *OTC Trading Platforms (e.g., ENMAC)*
- *Regelleistung.net → platform operated by the German TSOs (Amprion, Transnet BW, TenneT, and 50hertz) for balancing markets in Germany*

In Italy, the market for ancillary services (MSD) is being reformed in order to allow participation of smaller devices and demand-side operators, and the newly designed capacity market also allows participation by demand as a provider of load reduction on demand.
However, energy communities are de facto impossible at the moment because the regulation provides that no peer to peer electricity sales can happen among electricity consumers unless a licenced national distributor is involved as electricity carrier.

In Spain, there are real-time balancing markets that are managed by the System Operator. Though, the prequalification requirements for participation are too strict and this limits competition significantly. For example, only generation can participate and a balancing capacity of 300 MW is required; thus, limiting the number of potential counterparties. Currently, there is some work in progress to reduce the existing threshold of 300 MW. However, it might be fixed at 100 MW and without any demand participation which is still limiting competition. With digitalization and IoT, we will be able to connect millions of houses and operate their appliances to provide balancing services to the System by, for example, lowering 1 degree of 1 Million of air conditioners. Legislation is still very far from what technology is enabling already now or at least in the near future.

In France, the TSO (RTE) proposes a balancing mechanism to mobilise reserves to maintain the generation-demand balance in real time and contribute to resolving network congestion. French producers and consumers as well as foreign actors can participate in this balancing mechanism. Moreover, the French capacity mechanism allows participation by demand as a provider of load reduction on demand since 2017.

In Germany, all balancing services (FCR, aFRR, and mFRR) are open to all market parties and all technologies, as long as they fulfil the technical requirements. Primary control (FCR) is procured by using weekday tenders with a planned move to four-hour blocks at the end of 2019.The minimum bid size to participate is 1 MW and pooling is allowed. Secondary control (aFRR) is procured in auctions on a daily basis in six four-hour blocks. The minimum bid size is 5 MW for the Germany and Luxemburg LFC block and 1 MW for the LFC area. Pooling is allowed and all technologies that can prequalify can participate, except for RES. Tertiary control (mFRR) is procured in auctions on a daily basis in six four-hour blocks. The minimum bid size is 5 MW for the Germany and Luxemburg LFC block and 1 MW for the LFC area. Prequalification is possible for wind turbines that want to provide negative mFRR. The required activation period for this market is 4 hours.

2. In order to create fair competition and access to new markets and services, how should the role of existing and new digital platforms be developed? What should be the criteria to harmonise or not those digital platforms?

Currently, many different actors, both in the regulated and unregulated domain, are developing and piloting platforms with many different variations. In the long-run, this is carrying the risk of markets being highly fragmented and a platform landscape being extremely complex and costly. Proprietary technology may lead to inaccessibility for many customers and lock-in effects. Without a standard format for communicating information, it is expensive to develop products and services that function in every market, or respectively can be integrated in every digital platform. Crucial to avoid such a scenario will be the use of open standards (data formats and communication protocols for data exchange) which is a pre-requisite for ensuring interoperability and transparency while fostering competition. It needs to be ensured that all connected generation assets and devices are able to provide and receive information using open source compatible software to allow for interoperability across technologies and platforms as well as at different levels (e.g. with other devices, with building management systems and with the grid). A starting point for this might be to have the API (Application Programming Interface) of the platform published in order to make the technology accessible for innovations.

It may be necessary to involve standardization bodies such as CEN-CENELEC to further develop the role of digital platforms. However, in the process of developing standards it is vital to ensure transparency and open access to information. The process should allow either for active participation by any concerned stakeholder or at the very least should include an open consultation process. It is crucial that new market players get a fair chance to be involved in the process of defining standards and awareness regarding this issue is included in the thinking of standardization bodies as a guiding principle for organizing their work. However, it is vital to take into account that a healthy balance between regulated interoperability, or respectively standardization, and innovation is needed. We highly recommend retaining as much as possible an open environment in terms of technology and open ecosystems in terms of platforms as this is where the magic of innovation is happening.

In addition, there is a need for competition supervision with sufficient and appropriate competences to limit market power and prevent abuse. Therefore, anti-trust control is important and instruments must be provided to allow ex-post intervention by public authorities.

Furthermore, we also would like to raise a word of caution regarding over-regulation: Several platforms in parallel may be okay and it may be legitimate to have varying platforms which serve a different sense and purpose. If there are too many platforms, a natural market shakeout can be expected by means of cooperation or mergers and acquisition (as witnessed with power exchanges in Europe for example).

3. **How should we ensure that the governance of platforms facilitates data access, exchange, interoperability and ensures data sovereignty (i.e. no lock-in) for those who supply data to the platform?**

Minimum requirements will be needed to ensure transparency and interoperability, i.e. the use of open standards as mentioned above. At least a common interface should be developed in case of different platforms to support easy access and a level-playing field for market parties. In addition, it is of utmost importance that platforms are operated and managed by a fully neutral facilitator and all market parties, both traditional and innovative players, have equal access to information. The neutrality of platform operators needs to be monitored closely by public authorities. They should have the possibility to intervene if neutrality is infringed.

4. **What are the data-driven service models of the future? In order to stimulate the creation of new data-driven services, could technological innovations [such as Big Data, AI, Blockchain, Service Platform Architectures] be used to (i) manage how electricity flows, (ii) perform energy forecasting, (iii) create new remuneration/financing mechanisms, and (iv) create new ways of managing transactions (smart contracts, Blockchain)?**

Technological innovations can certainly be used to address all of the above mentioned cases. The potential applications of just blockchain applications in the energy sector are far-reaching and may have an enormous impact both in terms of processes as well as platforms. For example, blockchain may reduce costs and enable new business models and marketplaces, can better manage complexity, data security, and ownership along grids, can engage prosumers in the energy market acting as enabler for the creation of energy communities, can enhance the transparency and trust of the energy market system, can guarantee accountability while preserving privacy requirements, can provide a framework for more efficient utility billing processes and transactive energy operations. Blockchain may also be used for issuing certificates of origin, particularly for green energy production and renewable energy sources, for developing peer-to-peer energy transactions schemes and for establishing energy management schemes for electric vehicles.
Big Data and AI could be used together to manage the complexity of the system (energy supply, weather forecasting, grid management). These two technological innovations allow a better handling of the energy assets, getting a holistic point of view of the supply chain, and a better understanding of the correlation of the different actors. For example, renewable energy is using big data to improve the maintenance of the installations and to optimize the energy production.

5. **Which digital platforms are being developed to support sharing energy within energy communities, including for allowing them to be open to cross-border participation)?**

Examples of peer-to-peer platforms are:

- *Enyway (Germany): https://en.enyway.com/*
- *Elblox (Germany): https://www.elblox.com/en/home*
- *Lumenaza (Germany): https://www.lumenaza.de/en/our-services/*

- *Entrnce/Alliancer (Germany / Netherlands): https://www.alliander.de/loesungen/peer-to-peer/*
- *Sonnen (Germany): https://sonnen.de/sonnencommunity/*
- *Piclo Flex (UK): https://piclo.energy/*
- *Vandebron (Netherlands): https://vandebron.nl/*
- *Pylon (Spain): http://pylon-network.org/es/ and http://klenergy-tech.com/*
- *Ilek (France): https://www.ilek.fr/*

3. Asset optimisation, sector coupling and integration

The Commission aims to establish to what extent digitalisation can accelerate to the optimisation of processes and infrastructure to further decarbonise the energy sector and integrate renewables into the energy network. This are will assess whether ICT can be of use to link energy carriers, integrate the energy sector with other sectors and/or optimise assets such as buildings and wind turbines.

Questions

1. **How can digitalisation facilitate sector coupling and sector integration? What are the existing use cases? Which digital technologies applicable to sector coupling exist in the market?**

According to the IEA (2017), the greatest transformational potential for digitalisation is its ability to break down boundaries between energy sectors, increasing flexibility and enabling integration across entire systems.

Digitalisation is enabling:

- *local optimization (maximizing self-consumption, selling surplus and optimizing the purchase of remaining power needs)*
- *smart demand response*
- *integration of variable renewable energies by better matching energy demand to times when the sun is shining and the wind is blowing*
- *smart charging technologies for electric vehicles*
- *facilitation of DER development such as household solar PV systems and storage by creating better incentives and making it easier for producers to store and sell surplus electricity to the grid.*

With digitalisation it will be possible to recognize whether there are renewable production surpluses. If this can be detected or predicted in an early stage, the surplus can be channeled into conversion technologies (power-to-x) instead of having to curtail it. Furthermore, the scale of decentralization required by the energy transition can only be based on digitization as communicating with millions of actors in a very short time-frame will not be possible otherwise. In that sense, big data tools and AI are able to process the data needed to communicate with millions of actors.

2. How to speed up the investment in digitalised (remotely monitored and controlled) assets, in particular in areas/sectors where this is not the priority (e.g. buildings, electricity or district heating grids in Southwest and Central Europe)?

No response by EER to this question.

3. **What are the socio-economic and regulatory preconditions for enhancing the use of digital technologies that facilitate sector coupling? For example, how could digitalisation facilitate the deployment of power-to-gas?**

The complexity of digitalisation illustrates one of its typical consequences: sectors that have had little or nothing to do with each other are converging. There are good reasons for this. In the past, energy business models were usually clearly defined in economic and legal terms. The value chain was more or less as follows: The electricity supplier buys electricity from the producer and delivers it to the consumer via the grid. This structure is linear; the interfaces at which the market players come into contact with other market partners are determinable and limited in number. The digital transformation in combination with the energy system transformation (power is no longer fully generated from centralized and conventional thermal power plants, but increasingly produced from a large number of variable renewable sources connected at distribution level) breaks through this linear structure.

Smart metering is becoming the core of the digital energy industry: Operating metering systems, particularly for most household and commercial customers (for industrial customers the case is slightly different), is changing from reading one data point once a year to managing large and constantly changing data clouds. The data streams need to be made available to third parties (companies such as energy service providers / aggregators / suppliers and others, prosumers and other final consumers).

For economic success of the digitalization in the energy sector, it is necessary to enable market actors to develop value-added services and create additional business opportunities. The basic challenge is this: Which economic advantages can be achieved by using the data streams in the core business of the market partners?

Network operators will benefit from new tools to manage their grids more efficiently and integrate increasing *amounts of intermittent renewables into the system. In the long term, interaction between intelligent appliances, smart grids and home platforms will be key for unlocking consumption patterns based on automation and remote controls.*

Obstacles related to the smart meter roll-out which need to be overcome include: ***data privacy and cybersecurity concerns, lack of standardization and interoperability****, as well as* ***data access organized in an efficient and non-discriminatory way for all authorized parties and market actors.*** *Many of these challenges will only be mastered if the regulatory framework is fit for purpose and all types of data are covered by consistent and appropriate regulation.*

4. In order to integrate renewable and low-carbon gas into the gas network, how would connectivity and data analytics contribute to measuring and metering?

No response by EER to this question.

5. In order to improve consumer's energy consumption awareness, how would smart meters measuring calorific value, in addition to gas volume, contribute to more accurate billing?

No response by EER to this question.

6. How can policy instruments support the deployment of a critical mass of energy-smart appliances?

With regard to the deployment of energy-smart appliances we would like to stress that less regulation can open room for innovation that is geared towards customer needs. Less regulation also means lower costs which allows for new products to be sold or marketed in a competitive environment. Be aware that over-regulation can impede your good intentions.

7. How can smart buildings and energy-smart appliances contribute to a broader integration of RES, optimise local consumption and improve energy efficiency?

Digitalisation opens up the opportunity for millions of consumers as well as producers to sell electricity or provide valuable services to the grid by matching demand to the needs of the overall systems in real-time. According to the IEA, increased storage and digitally-enables demand response could reduce curtailment of solar PV and wind power in the EU from 7% to 1.6% in 2040, avoiding 30 million tons of CO2 emissions in 2040.

Connectivity is the key factor. It permits the linking, real-time monitoring, aggregation, control and management of large numbers of individual energy-producing units and pieces of consuming equipment as well as storage devices – big or small. Crucial in the process are predictive analytics and automated response; both are changing the ability of decentralized energy solutions to interact with the energy system while at the same time optimize local consumption and improve energy efficiency.

8. What digital solutions are available to allow for differentiation of electricity sources at charging stations for electric vehicles?

There is no technical barrier to allow for differentiation of electricity sources at charging stations. The reason why this is not done is because charging points are typically defined as a final customer (and not the electric vehicle!). This at least is the case in Germany and Spain, and was done with the intention to not put each single charging station in the logic of being an electricity supplier and hence having to follow all the rules and regulations that are in place for *electricity suppliers. The idea was to avoid complexity and high costs deriving from those rules and regulations.*

So far, charging station operators have not identified a need to show customers the energy mix of the electricity supplied at the charging station. However, charging operators can develop communication strategies to differentiate their energy and reach agreements with their supply point retailer to define the type of energy they want to receive. Technically this would already be possible today.

4. Infrastructure for digital solutions

Digital infrastructure enables decarbonisation and further decentralisation, which can lead to more flexibility in the energy sector. Through this area, the EC should assess whether legislative action is needed to support the development of IT infrastructure for digital assets and services in the energy sector.

Questions

1. **What opportunities would a digitalised energy network bring to decentralised and/or energy communities models?**

    - *P2P trading: New tools such as blockchain could help facilitate peer-to-peer trading within local energy communities.*
    - *Local balancing / flexibility markets*
    - *EV balancing services*
    - *Allow for high numbers of small-scale renewable power plants and storage deployed at distribution network level*

2. **In order to enable the decarbonisation of the energy sector, how would digitalisation contribute to system/grid management assets and services?**

Network operators will benefit from new tools to monitor and manage their grids more efficiently and integrate increasing amounts of intermittent renewables into the system. In the long-run, interaction between intelligent appliances, smart grids and home platforms will be crucial for unlocking consumption patterns based on automation and remote controls. Digitalisation enables the development of market platforms which provide grid operators with the opportunity of procuring services provided by demand response, storage and distributed generation.

3. How to ensure that the future telecommunication infrastructure provides the type and quality of services (at a competitive/reasonable cost) that the energy transition requires?

No response by EER to this question.

4. Given the development of new technologies such as 5G, IoT, blockchain and AI, how can consumer's connectivity and security be ensured?

No response by EER to this question.

5. What digital solutions are available to allow remote management of isolated electricity systems in rural areas and/or islands?

No response by EER to this question.

5. Cybersecurity

Given that energy services are essential to the economy, and that these services are progressively subject to data-driven transformation, their cybersecurity should be ensured. Hence stressing the interaction and interdependence between energy and digital infrastructure. Through this area, the Commission should therefore ensure the security of the digitalised energy services and infrastructure, in order for consumers to make digital choices.

Questions

1. **To what extent is the Commission Recommendation on Cybersecurity[1] implemented? What needs to be further considered to address the particularities of the energy sector in terms of cybersecurity, namely real-time requirements, cascading effects and the mix of technologies?**

   General remark with regard to cybersecurity: We fully agree that cybersecurity is fundamental and critical infrastructure should be protected as much as possible to avert most threats. However, in all security efforts a balance assessment between hazard potential and expenditure for the suggested security measures is needed. A general obligation that all operators of non-critical infrastructures have to fulfill the same security levels and duties as the operators of critical infrastructure (as defined by the EU Directive on Security of Network and Information Systems and subsequent national regulation) is exaggerated and unreasonable, especially with regard to the overall costs and process-related delays in rolling-out new products and services. Obligations have to be designed according to the technologies in use and according to the potential risks involved. It will be important for national regulatory authorities to strengthen their expertise, skills and capability in the digital realm. However, as stated by CEER in its Cybersecurity Report published in October 2018, an excessively burdensome administrative approach should be avoided. "Safety and security at all costs" should not inhibit innovation altogether. Regulators should therefore strive for a reasonable balance between security, costs and time to implement.

[1] Commission Recommendation of 3.4.2019 on cybersecurity in the energy sector, C(2019) 2400 final, https://ec.europa.eu/energy/sites/ener/files/commission_recommendation_on_cybersecurity_in_the_energy_sector_c2019_2400_final.pdf

2. How would you estimate the costs of addressing the particularities? Can you provide examples?

No response by EER to this question.

3. How can digitalised distributed renewable power generation contribute to the resilience of the EU electricity system?

As a general rule, if all are dependent on the same system, this increases vulnerability. Hence, the pooling of numerous decentralised resources inherently reduces the risk of failure compared with a large single unit. However, worrying is the large number of renewable energy systems that are easily accessed by hackers (as can be demonstrated by "Shodan" for example) as there is little to no security testing required.

4. How can we ensure that digitalised distributed power generation (renewables, flexibility via e-mobility, etc.) is not a liability to the resilience of the EU electricity system?

No response by EER to this question.

5. What is the right approach of information sharing at a higher level? (e.g. events, etc.)

Governments and energy companies need to be both proactive and adaptive. In some cases, innovative solutions might be found when energy companies work together. For example, Austrian energy market actors have decided to set up a joint team on cybersecurity called the "Computer Emergency Response Team" (CERT), with the aim of saving costs, pooling expertise and improving early visibility of attacks and risks. It would be worth hearing about their lessons learnt since starting the initiative in 2016.

The EU Agency for Network and Information Security has been coordinating major cybersecurity exercises since 2010. Making sure that results and lessons learnt are disseminated appropriately and widely shared with the whole energy sector in the EU would be extremely valuable. The same goes for the work of the European Energy – Information Sharing Analysis Centre (EE-ISAC) which has started its operation in December 2015.

All of this could be realized in form of best practice reports / events dedicated to sharing experience and best practices both on European and national level; recommendations and guidelines published by the EU Commission; regular dialogue between stakeholders, Member States and the EU Commission.

6. New skills and capabilities, Research and Development

The digitalisation of the energy transition must be supported by new technological developments and upgrade of skills of energy companies and public administration.

Question

1. How can we promote digitalisation in energy Research & Innovation as part of the next framework programme, ensuring a close link with energy policies and full consistency with EU energy and climate objectives?

No response by EER to this question.

7. Horizontal actions, communication and awareness

In order to increase its impact on the energy sector, digital solutions must be understood throughout the energy sector including consumers. SMEs and consumers will need support in understanding the processes and seizing the benefits of digitalization. Industry is likely to apply innovative ICT solutions; however, optimizing the consumer interface might remain a challenge. The entire sector should gain awareness about engaging in digital solutions in a legal and secure way.

Questions

1. **How could consumer trust and engagement be fostered when implementing digital solutions in the energy sector?**

Technological innovations and digitalisation are likely to stimulate consumers' interest and desire to actively engage and participate in energy markets. However, this is neither a causal relation nor a sure-fire success. Especially, if consumers need help from third-party service providers in order to realize any benefits such as cost savings or convenience, they will not give consent to access their data if they are not well informed about the benefits of doing so. Equally important to technological innovations are information campaigns to consumers explaining the benefits and advantages of the new services available. Trust of consumers in the new services must be build. In that respect, the public sector could lead by positive example and take a role model function.

2. What are the benefits of digitalisation? Which initiatives already exist in Europe? How can awareness be fostered?

No response by EER to this question.