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# **E.DSO Response to CEER Consultation on Dynamic Regulation to Enable Digitalisation of the Energy System**

**May 2019**

## 1. What impact do you consider that digitalisation will have on the energy system and which are the most important?

Digitalisation will fundamentally alter the energy landscape, adding an additional layer to the physical grid. It is an opportunity and challenge at the same time. For example, digitalisation is a necessary tool to reach the objective of a flexible and sustainable energy system. At the same time, it makes the grid more susceptible to threats such as cyber-attacks. These risks need to be appropriately mitigated.

Digitalisation leads to a smart and efficient operation of the electricity distribution network, for example through the roll-out of smart meters. It will improve grid resilience through a better MV and LV observability and it will strengthen DSOs' investment planning. This will lead to increased efficiency and reduced costs, but also requires high initial investments both for DSOs and pro/consumers.

Moreover, digitalisation allows the empowerment of consumers and facilitates their active participation in the energy markets. As such, digitalisation should not be seen as an end in itself but rather as a means to shape an active energy transition with customers at its heart.

Digitalisation will contribute to the development of the role of regulators and DSOs by increasing availability (lower cost) of data, which could be more readily analysed (becoming information) and then transmitted/communicated to give effect to actions. However, micromanagement by regulators could lead to inefficient decisions.

Digitalisation is based on the availability of data. DSOs hold many datasets which, when made publicly available, can help other stakeholders and market parties with e.g. better decision making, create new services and promote synergies between different sectors. Publishing data in the form of open data can unlock many types of benefits, amongst which contributions to the energy transition. On the other hand, not all data is suitable to make publicly available due to potential breaches of security or violations of privacy regulations.

Digitalisation will facilitate the further electrification and decarbonisation of the economy and the operation of smarter grids through:

- An increased use of consumers' flexibility potential
- Integration of RES and decentralised storage
- Contribution to energy plants for urban communities
- Definition of energy saving programs and facilitation of energy savings thanks to consumption monitoring
- Efficient electric mobility
- Flexible use of electrical heating/cooling
- General management of demand flexibility
- Improved operational efficiency with tools like machine learning, etc.

- Faster interactions with customers using digital tools (chatbots etc.)

All of these aspects are important and interconnected. It is absolutely necessary that regulators, working together with DSOs and TSOs, guarantee that advances in digitalisation are accompanied by the corresponding regulatory changes. These adapted rules should make it possible for DSOs to act as neutral market enablers, information managers and data providers.

Regulators must measure and take into account the financial impacts of digitalisation in order to facilitate its deployment by network operators. They should put in place necessary measures to incentivise distribution system operators to make the grids more digitalised.

## 2. What are your views on the changes for the energy system highlighted in this chapter and are these the most relevant?

The principal changes for the energy system that digitalisation brings are:

### *a. Increasing the efficiency of the existing system*

As CEER pointed out in its working document, the availability of more and better data can be used by regulators and DSOs to make well-informed decisions which improve the efficiency and productivity of the grid assets and procedures and, at the same time, reduce risks. These are some of the key factors:

- Observability: the intelligent network can provide more data to increase observability especially in medium/low voltage (e.g. through smart meter roll-out). It will also enable DSOs to develop new planning methods that will fit better with the network reality and that will rely less on statistical hypotheses
- Reduction of losses (technical and non-technical) with the deployment of Smart Grids, where data on network flows and voltage can be analysed.
- System reliability with the help of real-time information, thereby creating an optimal planning and operation (demand forecast).
- Resilience against cyber-attacks.
- Optimised and extended life cycle of assets.
- Network capacity optimisation, lowering connection costs and DSO investments.

However, more digitalisation in the network requires an additional investment effort, as well as operational expenses, so it must be appropriately considered to make it sustainable. In particular, regulation should take into account the shorter replacement cycles of digital technology in comparison to conventional electric assets.

### *b. Enabling new products and services that alter electricity demand, the most important being:*

- Demand response: to price signals (direct flexibility) or as products (indirect flexibility) as a possible source of flexibility.
- Smart charging: electric vehicles are charged in a flexible way to shift or avoid peaks.

- Battery storage.
- Hosting capacity: making available to users the capacity that they need to generate or consume, e.g. through measuring the load in real-time and giving advice to customers regarding the capacity they should contract.
- New flexible connection agreements: producers and consumers will be able to optimise their connection costs by abiding to DSO the real-time consumption or the consumption restrictions.

New products and services must be coherent with the regulation to avoid inefficiencies and situations in which certain players can benefit particularly against the general interest. Also, new access options and planning methods need to be designed and implemented, extensively based on probabilistic approaches.

Nevertheless, the focus should not be limited to electricity demand only. Of course, dynamic tariffs are an essential part, but one should also consider solutions and services based on digitalisation that focus more on power quality of local generation / demand. New market places, bringing together local generation with local demand, can create novel ways for customers to interact with one another and with the grid operators.

The current tariff system in most countries is not sufficient to build the digitalised, decentralised energy system of the future. As an example, PV + battery owners in the current system could be exempted from grid tariff payments (net zero consumption), but still use the grid as “insurance” at times of low wind/solar generation (‘dark doldrums’). A capacity tariff element is key regarding cost-reflective use / contribution to grid investments. Such an element would by itself support more grid-friendly behaviour and could even be enhanced by further elements to benefit customers providing their flexibility to grid operators, both in case of demand as well as generation.

### *c. Creating new digital marketplaces that transform the way the sector transacts*

As far as peer-to-peer exchanges are concerned, it is necessary to underline that this model should be considered in the local context such as direct energy trade between neighbors, local balancing, and for managing sources and services of flexibility at the local level.

Regulation should guarantee:

- Non-discriminatory participation of consumers in these platforms with clearly stated responsibility for their actions.
- An appropriate system of charges (including e.g. distribution charges) that is fair to all consumers (and applicable not only to those active on the platforms).
- Possibility for DSOs to use flexibility mechanisms (also in the case of blockchain technology being used) in particular for local congestion management.
- Securing (with adequate compensation) backup power supply in cases of inefficiencies of peer-to-peer platform.

The peer-to-peer model would also require data from smart meters of different market participants, which may result in numerous entities gaining access to these data.

Therefore, it is crucial to develop the right model of sharing and use of data, to ensure the security of metered entities as well as the whole electricity system.

Of these three most relevant changes, the first one (increasing the efficiency of the existing system) is currently taking place, so it is important to learn from this process to highlight the benefits of digitalisation. The last one will need further development to fully understand the advantages. Moreover, a market model has to be defined with new rules for DSOs as neutral market enablers, especially with the development of new flexibility mechanisms which will have a direct impact on the distribution grid.

### **3. In your view, what are the most important value propositions for consumers, which should be prioritised?**

The value propositions for consumers to be prioritised are:

- Availability of smart meters (in the framework of the results of the cost-benefit-analysis by the Member State) that facilitate the exchange of information regarding the state of the network and also the active participation of the consumer in the electricity market, which is why it is considered the basis for the development of future smart grids as well as potentially contributing to the improvement of efficiency energy. In particular, smart meters help consumers to monitor and understand their own energy consumption, which is the basis for any behavioural change. This last element could be the role of a supplier, an aggregator or an authorised third party to increase flexibility and lower the costs for customers while increasing their participation. It would be impractical for DSOs to develop digitalised home appliances or home energy management that are already being developed by another type of industry and at very competitive prices (with economies of scale).
- Cost savings: Digitalisation creates the potential for increased efficiency and better information. Any cost savings from the efficiencies in the current system will lower bills for consumers if they are passed on. As far as DSOs are concerned, regulators have a role in setting or approving the charges incurred by network operators and in deciding whether or not any cost savings made by the DSO, through digitalisation of the network, is to be passed on to the end customers. It will be important to ensure that investments are made to maximise efficiency from a whole-system perspective. Consumers will also benefit from earnings and from cost savings due to demand side participation, for which digital solutions are indispensable.
- Smart networks improve the quality of supply.
- Digitalisation, through smart meters, makes it possible for customers to manage domestic demand and allows prosumers to trade their energy, which will lead to the possibility of optimisation of the in-home energy system (participation in the flexibility markets).

## 5. What are the key enablers needed to unlock the benefits of digitalisation for consumers?

The key enablers needed to unlock the benefits of digitalisation for consumers are:

- Making the data available:

The most obvious enabler for digitalisation is smart meters (which allow for the data to be held in a way that is efficient and secure, compliant with the General Data Protection Regulation) within the framework provided by the cost-benefit analysis of the Member States. Numerous DSOs are implementing smart meter roll-outs across Europe. As neutral market facilitators under the scrutiny of NRAs, DSOs are in most European countries best placed for managing metering and consumption data, and ensuring data privacy.

They will also need to manage these data for network operation purposes. Giving them a broader role in data management avoids the duplication of efforts and is the most cost-effective solution.

As neutral digital enablers, data will be collected, used and made available to third parties (e.g. as open data) by DSOs, but also by network users (suppliers, TSOs) and new service providers to develop innovative solutions.

More important than the organisational approach is the requirement for appropriate accessibility and interoperability.

DSOs need the necessary data to allocate and activate the flexibility whereas the network user needs the data to participate in a non-discriminatory way in the market to offer his flexibility potential.

Also, TSOs/DSOs can share more data about the network, which benefits cooperation between different regulated parties or market parties, which in turn will also indirectly benefit the consumer. Providing open data is seen as a high-potential facilitator of the energy transition. By unlocking data from its original owner and offering it publicly, re-use may enable system-relevant innovation. People, companies and organisations may use open data to launch new ventures, analyse patterns and trends, make data-driven decisions and solve complex problems. Large-scale sharing of data, therefore, has the potential to unlock economic value by enabling the development of new products, services and markets.

By providing data free of charge for everyone to (re-)use, open data reduces potential market entry barriers for smaller enterprises and new entrants. It enables anyone to access and use the data provided and to combine it with other data sets or analytical tools. This way, third parties can offer new services to consumers and market parties, including the DSOs themselves. This has clear benefits not only for the parties directly involved, but for society as a whole. The more parties working on the same topic, the more options become available and the more efficient the overall system will become. Furthermore, open data also minimises the risk of excessive first-mover advantages and with-it potential lock-ins, thereby reducing the risk of the monopolisation of market segments.

As operators of critical infrastructure, DSOs offer essential services to society and have access to large amounts of data. Before making data available to the general public, important considerations have to be addressed first. Once data is made publicly available, it is impossible to withdraw it. It is therefore essential to recognise sector-specific considerations in order to decide which data can be made publicly available and which not. This is of utmost importance, especially for operators of critical infrastructure and essential services such as DSOs, that are dealing with security- and customer-sensitive data, subject to GDPR as well as network and information security regulation

- New products and market places:

New products and market places as well as the needs and interaction with the regulated domain, must be defined to enable transactions and to make full use of consumers' potential for balancing and congestion management, among others. Price signals are important but also capacity elements play a crucial role to ensure an efficient use of the grid. Typically, such new products may require consumers to have smart meters, so where consumers do not yet have smart meters installed, the products cannot be deployed. However, this does not imply that every customer should have the obligation to have a smart meter installed – this depends on the respective cost-benefit analysis of each Member State. What should be ensured is that every customer who voluntarily wants to have a smart meter installed has access to this technology. Besides, DSOs may decide to propose new services enabled by the network digitalisation (e.g flexible connection agreement).

- New business models:

Alternative business models may increase competition, thereby lowering overall system costs and maximising social welfare. Nevertheless, regulation must ensure a level playing field. The same rights and obligations should apply to comparable entities. This means, irrespective of number of customers, all grid operators on distribution level would have to provide the minimum set of information. In addition, efforts for the provision of such data e. g. in the cloud, should be recognised as part of the non-controllable costs in the respective regulation. This also means that new business models should not serve the exclusive purpose of avoiding legitimate and necessary contributions to cover the overall cost of the energy system. Responsibility for energy imbalances also cannot be avoided. Regulators will need to consider how to regulate appropriately new platforms and players with impartial rules that guarantee fair practices and cost-sharing among those that remain connected to the electricity system. These rules must not follow a particular type of model: the first step is to establish them under principles of equity, and then the new models can be developed.

- Facilitation of grid services from Distributed Energy Resources:

Regulators should ensure that network price controls encourage DSOs to take advantage of new sources of flexibility where they are more efficient than investing in new network capacity.

DSOs and TSOs working together should ensure that efficient options are taken forward, whether for grid reinforcement or for procurement of flexibility.

Incentivising the use of smart digital solutions can be done by treating them as virtual grid assets. This Smart Expenditure (SmartEx) approach means that where DSOs can come up with digital solutions which have the same function as the physical asset, these solutions should be included in the DSO's capital base, subject to revenues with WACC-treatment. The profit of the cost-efficient solutions should be divided between the DSOs and the consumers.

## 6. What are the main risks for consumers arising from digitalisation of the energy sector?

The main risks for consumers arising from digitalisation of the energy sector are:

- Privacy and data protection:

The rights to access smart meter data should be governed by the General Data Protection Regulation. DSOs and regulators have to be committed with best practices.

In the global scope of data protection, consumers' energy consumption data are not the most relevant in relation to privacy if we compare them, for example, with the data exchanged in the communications business. Nonetheless, the highest possible standard of data protection must be ensured by all involved parties. This is why E.DSO and its members favour the information cascade. Data should be made available to all eligible parties, as granular as necessary but as aggregated as possible.

- Cybersecurity risks (increasing):

Energy systems are more resilient to cybersecurity threats than other types of systems. This is because many network operators deployed their own communication means before the global development of the internet. The fact that the communications of smart meters are controlled by the DSOs under the supervision of the regulator offers greater guarantees of resilience against cyber-attacks.

- Complexity and diversion of products and market parties:

With the advent of digitalisation, new products and services arise while new businesses can fail. Insight in the reliability of new businesses is missing. This can be a risk for the customers of these new services.

Moreover, when access to data allows the entry of new players, responsibilities must be clearly defined, also in case of any damages caused or impacts on the security of supply. In case of open data provision, for example, it must be clear who is liable for any incorrect information. Open data providers such as DSOs, for instance, should not be held accountable for any inaccuracies of products resulting from the data's re-use.

## 7. What would a “whole energy system” approach look like – would this unlock more benefits of the digitalisation of the energy system?

When we consider a whole energy system approach, much more data will be shared between different parties within the system. This will unlock more benefits, cost reduction and efficiency gains. Decisions will be made considering all information available and taking into account the different benefits and disadvantages in all levels of the system.

**8. Do you agree with the analysis presented here on the key areas in which energy regulators should focus?**

We agree with the fact that digitalisation is bringing important changes to the energy system and it provides the opportunity for increased efficiency of the existing electricity network. As it was said, smart meters should be considered as a first step where appropriate, but further progress is needed to unlock the value of the data and ensure that consumers are empowered and adequately protected. Therefore, regulation must adapt to the new environment that digitalisation is creating.

In particular, the following aspects should be emphasized:

1. It is mentioned in the text that “energy companies are not the most trusted”. It should be pointed out that this does not apply to DSOs since they are present in the regions and have direct contact with their customers. DSO normally rank high in consumer confidence evaluations. Nevertheless, utilities have been forced to incorporate in the electricity bill a series of costs unrelated to the service. The loss of confidence is due largely to increased electricity prices. At the same time, the smart meter roll-out can be a difficult topic with certain customers as earnings for customers become evident only slowly. On the other hand, quality of supply in Europe has improved substantially.
2. It is also mentioned in the text that “there is some reluctance in the industry to share information once cyber-attacks have occurred”. In particular, utilities, as providers of essential services, have protocols to avoid cyber-attacks that are coordinated by entities established for this purpose. As a result, there have only been serious impacts on the electrical system in Ukraine in 2015. The rest of the attacks were physical (vandalism).
3. We agree with the analysis made in the document about new models in relation to concerns about Energy Communities and Peer-to-Peer approaches. As a general rule, as they are emerging, they will have to demonstrate their benefits for society. DSOs should accompany the process and facilitate the development where it proves to be valuable for society.
4. Regarding incentive schemes for regulating DSOs, including for innovation (page 40), we also agree with the fact that the bias should be avoided, taking into account that flexibility services are not always substitutes for physical grid assets. Some decisions to build assets rather than to procure flexibility are perceived as a bias even when they are not, for example when comparing wired assets with non-wired services (e.g. batteries) with different reliability. Nevertheless, flexibility should be chosen when economically more efficient, taking into account all benefits and disadvantages. In most European regulatory frameworks, sufficient incentive mechanism to use efficient flexibility are still to be designed.

5. Given the significant changes brought about by digitalisation, DSOs consider the experimentation approach to be the most suitable for testing procedures, evaluating IT needs or market interest. We recommend that sandboxes be established to test new regulatory proposals before changing the rules (results cannot be known in advance). Simulations can be used to calculate the effects of new rules (cost-benefit analysis) and also for making a scenario for the development of digitalisation and its effects. The experimentation approach is necessary, especially regarding flexibility at the distribution level which must be very local. The catalogue of options should be kept open for various solutions, not only from the market.

In this challenge, the participation of regulators and DSOs is key to achieve the objectives.

**9. Which of the specific draft proposals should regulators pursue? Which should they not undertake? In both cases, please explain the reasoning for your answer. Bearing in mind that resources will not allow progress on all actions by regulators simultaneously, please indicate your top 5 priorities for action by regulators in the near term.**

Proposals	Comments	Priority
1. DSOs to focus on the quality of their network data...	The deployment of smart meters and sensorisation helps with that and improves operation and quality of supply.	
2. Where new entrants are at a competitive disadvantage...	DSOs, as regulated entities, facilitate active participation of new market entrants, including active consumers. They provide all necessary data to eligible parties, on the basis of active customer consent.	
3. For data privacy and competition issues, energy regulators should work with the authorities...	They should cooperate with all relevant actors. Regulation must be clear on what data can be made available to whom and on the roles and responsibilities of new actors, incl. Citizens Energy Communities. Availability of data brings benefits to DSOs/TSOs but also to consumers, but has a high risk for consumers as well. Therefore, this point should be a priority.	5
4. For cybersecurity, as a minimum, take forward the recommendations...	NRAs need to be prepared to monitor and evaluate cybersecurity expenditure, particularly of regulated entities. DSOs/TSOs/suppliers should have a cybersecurity strategy and they should set clear and effective cybersecurity measures prior to embracing new technologies such as Cloud Computing or systems for the handling of Big Data.	
5. NRAs to monitor experience with new products...	We welcome this initiative. Regulators can provide independent analysis. We believe that cross-industry learnings are a key asset that should be more emphasised. In changing environments, NRAs need to adapt faster and thus need to get a better understanding	5

	of possibilities for customers currently being prevented by regulation. However, regulators need to take into account that such fast developments might also be used to the detriment of customers that need to be protected against any abuse.	
6. Regulators to consider best model for regulation of intermediaries	It is necessary to prevent some players from gaining privileges (e.g. inefficient aggregation).	
7. As part of their regular processes, NRAs to review network tariffs...	The development of distributed resources and the empowerment of consumers depend on the development of tariffs that avoid inefficient systems and that create the right incentives.	1
8. Regulators to monitor development of platforms and new marketplaces....	Particularly, market power issues should be carefully monitored or preferably be assessed before implementing a platform. We would encourage to keep regulation to a minimum to allow such markets to develop / function. Nevertheless, we recognise that, due to a number of expected interactions between different layers (transmission – distribution – local – micro grid) and possible establishment of local flexibility markets or mechanisms, the role of regulators will likely be increasingly important.	
9. As part of their regular processes, NRAs to review network tariff regulation...	Concerning incentives for system operators, i.e. the remuneration of their costs, it is indeed essential not to create a bias towards specific solutions or types of costs. However, it is important to stress that not all regulatory frameworks are biased towards capital intensive solutions. Many regulatory frameworks already incorporate technology-neutral elements, such as or output-based elements. It must be ensured that the chosen flexibility services truly replace traditional investments, where this is efficient. Again, the right incentives must be in place. Benefits of flexibility are only created if the right incentives are in place.	2
10. DSOs to explore market-based procurement for flexibility services...	It is interesting to carry out proposals that allow the DSOs, as business experts, to lead the search for new solutions. When DSOs are allowed to procure system flexibility services, this will serve as an incentive to replace traditional investments with flexibility where this is efficient.	3
11. DSOs and TSOs to review product definitions for grid services...	DSOs and TSOs are well-placed to define grid service requirements and should do so. It is already done in coordination with service providers.	
12. Regulators to review progress on TSO/DSO relationship...	We agree because there has to be a balance between DSOs and TSOs so that each is responsible for its own system. This also entails the exact procedures for data	

	exchanges which must be defined at national level. This is the first step towards considering the energy system as a whole.	
13. NRAs to strengthen their expertise, skills and capability in the digital realm.	We fully agree. The regulatory framework can only be sufficient when the necessary expertise is in place. In a fast changing digitalised system, the level of expertise, skills and capability is essential.	3
14. Regulators develop best practice approaches to enable trials of new products and business models (“sandboxes”)	Important to insist on the development of sandboxes that allow testing new models and services. In addition to true sandboxes, compensation mechanisms can also be considered. Sandboxes’ temporary rules have to be flexible to avoid being locked into a definitive model or service.	3

**10. Do you have any other general observations to make on the topic of this consultation paper?**

Some countries and companies have already relevant experience in the digitalisation of the energy system (advanced smart meter roll-out, open data, etc.), so some of the topics discussed in this document have been conveniently analysed – for instance, in what refers to the availability of data obtained from the meters for consumers (hourly consumption and instantaneous power). These experiences could be taken into account.

It is important to insist that the new framework cannot be defined without analysing the technological reality and real experiences. In many cases, smart meters have proven to be of value to the client and the DSOs, notwithstanding the fact that in future generations the functionalities can be improved.

In order to reap the benefits of digitalisation, data sharing should be prioritised and regulatory frameworks should be considered where risks for consumers are mitigated but benefits gained by sharing data should be facilitated.



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