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Power to the energy consumers

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Power to the energy consumers

Prof. Dr. S Lavrijssen[*]

Abstract

In the Winter of 2016 the European Commission published a package of proposals for the reform of EU energy legislation. This contribution deals with the question what can energy consumers expect from the proposals regarding their rights and chances to actively participate in the energy market in the transition towards a Smart Energy System. It is positive that the package proposes to enhance consumer protection and consumer empowerment by clarifying and expanding the rights for the so called "active" consumers, including prosumers. Whether the consumer will really be empowered to take part in the energy market will to a large extent depend on several legal and economic factors. First, Member States still have considerable leeway to specify the main principles regarding tariff regulation, the role of distribution system operators (DSOs) and consumer participation. The exact specification of these principles is complex and involves careful balancing of short and long term interests of consumers. Second, behavioral economics' research shows, that consumer behavior very often is not rational nor energy efficient from the perspective of the consumers. Energy contracts will become more complex with different types of (e.g. dynamic) retail prices. This creates a greater risk for consumers making wrong decisions in decision-making processes regarding energy (service) contracts. Therefore, care should be taken that newly generated data by smart devices such as smart meters is presented in a user friendly (transparent, verifiable, objective, personal) way to the energy consumers. Considering the uncertainties regarding future behavior of the energy consumer, the EU and national legal frameworks should not set the market design in stone. This entails that national regulatory authorities should be attributed sufficient leeway to assess the necessity and proportionality of the required level of consumer empowerment and access regulation and to adjust regulations when necessary.

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1. Introduction

1. The European Union and its Member States face major challenges in reducing CO2 emissions and combating the threat of climate change. By ratifying the 2016 Paris Agreement the European Union committed to its 2014 targets of reducing greenhouse gas emissions by at least 40% by 2030 (compared to 1990 levels) and by 80–95% by 2050 (compared to 1990 levels). In addition, the European Council had agreed to target at least a 27% share of sustainably generated energy within the European Union, and to improve energy efficiency by at least 27% by 2030.[1] Recently, the European Commission proposed to update and make these objectives legally binding in the so-called Winter Package for the reform of European energy legislation.[2] The proposals were accompanied by the Communication 'Clean Energy for All Europeans' and aim to speed up the clean energy transition, growth and job creation'.[3] The Winter Package marks the development towards a new market design of a smart and sustainable energy system in Europe and its Member States. The transition towards a Smart Energy System is characterised by several elements: [4]

2. It entails a transition from centrally generated energy from fossil fuels to energy generated from more volatile, local, renewable sources, such as wind energy and solar energy.[5] Due to the introduction of demand-side management[6] and storage facilities for

[1] European Council, 'Conclusions-23/24 October 2014' EUCO 169/14. European Commission had considered objectives of 27% and 25% respectively in January of 2014 (Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Policy Framework for Climate and Energy in the Period from 2020 to 2030', COM (2014) 015 final).

European climate targets for 2020 were set previously by the Council of the European Union in the Presidency Conclusions, 7224/1/07 REV 1, Brussels, 8/9 March 2007' 7224/1/07.

[2] Commission, 'Proposal for a Directive of the European Parliament and of the Council amending Directive 2012/27/EU on energy efficiency' COM (2016) 761 final (Proposal for Directive on energy efficiency) Article 1(1) updates the objective of energy efficiency from 27% to 30%. Commission, 'Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources' COM (2016) 767 final/2 (Proposal for a Directive on energy from renewable sources) Art 3, will make the Union target of 27% of overall share of energy from renewable sources in gross final consumption in 2030 legally binding. All documents are published at the following website: http://ec.europa.eu/energy/en/news/commission-proposes-new-rules-consumer-centred-clean-energy-transition.

[3] Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European investment bank, 'A clean energy for all Europeans'' COM (2016) 860 final. pp. 3.

[4] PwC global power and utilities, 'Blokchain- an opportunity for energy producers and consumers?', http://www.pwc.ch/en/2017/pdf/pwc_blockchain_opportunity_for_energy_producers_and_consumers_en.pdf [assessed April 2017], See Frontier Economics, 'Scenarios for the Dutch Electricity Supply System' (2015) <https://www.rijksoverheid.nl/documenten/rapporten/2016/01/18/frontier-economics-2015-scenarios-for-the-dutch-electricity-supply-system> accessed 16 March 2017 and ECORYS, 'The Role Of DSOs In A Smart Grid Environment' (DG ENERG 2014)].

[5] According to Directive 2009/28/EG of the European Parliament and the Council to promote the use of energy from renewable sources and amending and subsequently appealing Directive 2001/77/EC and Directive 2003/30/EC, [2009] OJ 2 140/16 (Renewable Energy Directive) Article 2(a), energy derived from renewable are non-fossil sources, namely, wind, sun, aerothermal, geothermal and hydrothermal energy

energy (e.g., in batteries), the system becomes more flexible and more supply-driven than demand-driven.[7] Energy consumers increasingly become "prosumers"; they not only withdraw energy from the transmission network, but also produce energy themselves and supply it into the network flexibly. Consumers, possibly via block chain technologies, will be enabled to supply energy to their peers acting on digital platforms. IT applications are utilized for optimal alignment of supply and demand and the integration of flexibility services delivered by local distribution, storage facilities and Electric Vehicle charging units connected to the local grids.[8]

3. Considering the abovementioned developments, the European Commission recognizes that, for the transition to a sustainable energy supply, a fundamental reappraisal will be required of existing European and national laws, regulations, and decision-making procedures. The legislative framework and legal safeguards currently in place are still based on the traditional market model, in which centrally-managed, large-scale production units supply energy to meet the demand from users. From this perspective, users are viewed as passive agents rather than active players that want to act as "prosumers".[9] So a discrepancy between technological and economic developments in the energy sector and the assumptions of the existing regulatory framework can be identified, which can be seen as an example of regulatory disconnection that needs to be restored.[10]

4. New rules need to create transparency and scope for changing roles of market participants, such as distribution system operators and consumers as producers.[11] This

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and energy from the ocean, hydropower, biomass, landfill gas, gas from sewage treatment plants and biogases.

[6] Demand-side management or demand response encompasses all deliberate changes in the consumption patterns of end-users of electricity geared to changing the time point of energy use, the level of current energy use or total energy use. See also CEER, 'Advice on the Take-Off of a Demand Response Electricity Market with Smart Meters' (2011) <http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Customers/Tab2/C11-RMF-36-03_DemandResponse-with-SM_1-Dec-2011.pdf> accessed 16 March 2017 and Eurelectric, 'Views on Demand Side Participation' (2011),<http://www.eurelectric.org/media/61240/dsp_report_0810-02_simple_page_final-2011-030-0638-01-e.pdf> accessed 1 September 2016. pp. 9–10;

[7] The term flexibility refers to the capacity of market participants to respond as quickly as necessary to fluctuations in supply and/or demand. TNO, 'Naar een toekomstbestendig energiesysteem: flexibiliteit met waarde [Towards a future ready energy system: The value of flexibility]', (2015) pp. 7.

[8] The definition of the European Commission is: "A Smart Grid is an electricity network that can cost efficiently integrate the behaviour of all users connected to it – generators, consumers and those that do both – in order to ensure economically efficient, sustainable power system with low losses and high levels of quality and security of supply and safety", Commission, 'Smart Grid Mandate: Standardization Mandate to European Standardization Organizations (ESOs) to support European Smart Grid Deployment' (2011) M/490 pp. 2 footnote. See R. Hoenkamp, Safeguarding EU Policy Aims and Requirements in Smart Grid Standardization (1st edn, BOXPress 2015), pp. 4.

[9] Yael Parag and Benjamin K. Sovacool, 'Electricity Market Design for the Prosumer Era' (2016) 1 Nature Energy.

[10] Anna Butenko, 'Sharing Energy: Dealing with Regulatory Disconnection in Dutch Energy Law' (2016) 4 EJRR, pp. 701-716.

[11] S.A.C.M. Lavrijssen, 'The right to participation for consumers in the energy transition', (2016) 25(5) European Energy and Environmental Law Review. pp. 152-171.

contribution examines the changing role of the energy consumers and the legal provisions for consumer protection and empowerment as proposed by the Winter Package. What can consumers expect from the proposals regarding their rights to actively participate in the energy market in the transition towards a Smart Energy System? For this purpose, the contribution will consist of two parts.

5. First, this article will analyse whether the newly proposed legal (substantive and legal) safeguards for consumer protection and consumer empowerment, if adopted, will be able to empower the consumer to take part in the energy market in an active manner by either buying, selling, producing and/or trading energy. The assumption of EU energy legislation is that the EU consumer will be an active player in the energy market in different roles (buyer, producer, trader and supplier). Experiences with consumer behavior under the third package of European energy legislation and behavioral economics research show that a significant part of the energy consumers remain very passive in the energy market, as they may not actively decide on their energy contracts and may refrain from choosing the most optimal energy contracts. Amongst others by drawing on behavioral economics literature, the possible benefits and limits of the proposed instruments for consumer empowerment and consumer protection are discussed.

6. Secondly, whereas it is important that consumer rights are reinstated and extended by the proposed amendments, European legislation still leaves quite some leeway regarding the market design and institutional context in which the consumers can operate. Imperfect market and institutional design at the Member State level, including regulated retail prices, non-liquid wholesale markets, concentrated markets, and insufficient unbundling from the DSOs from energy (supply) services, may frustrate the development of retail competition and an active participation of energy consumers.[12] As a consequence, consumers may not have a real option to make effective their right to choose their own supplier, to be informed of and to choose between alternative (dynamic) electricity contracts. Therefore, this paper addresses some key issues that directly impact the possibilities for consumer participation in the energy market and that need to be resolved by the Member States; the exact delineation of the role of DSOs vis-à-vis the consumers, the design of tariff regulation for network access and safeguarding consumer participation in regulatory procedures.

7. The contribution is structured as follows:

8. Section two analyses the main objectives and values of European energy legislation and highlights what is meant by the concept of energy consumer according to EU law. Section 3 discusses the changing role of the distribution system operators vis-à-vis the consumers in the energy transition. Section 4 deals more specifically with the proposed legal provisions of the Winter Package that aim to contribute to consumer protection and empowerment. Amongst others, by drawing on experiences with consumer behaviour under the third package and insights from behavioural economics research into behaviour of energy consumers, section 5 sets out the limits and possible benefits of the proposed instruments. Section 6 evaluates some key substantive and procedural issues that have to be decided by the Member States regarding the empowerment and protection of energy consumers. Section 7 ends with some observations and conclusions.

[12] ACER/CEER, 'Annual report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2014', (2015) pp. 21-113.

2. Historical Evolution EU energy legislation

2.1. Principles underlying current legislation

2.1.1. Objectives and public interests

9. Before the liberalization of the energy market in the European Union, the national energy markets were dominated by legal national monopolies. Large-scale, vertically integrated energy companies were responsible for the production, supply, and transport of electricity via transmission and distribution systems.[13] Liberalization laws -implementing European directives- were enacted to break open these national markets gradually, in order to promote fair competition between energy companies within the European Union, to secure for energy users the right to freely choose their suppliers, and to establish a single European internal energy market. The foremost underlying objective and public interest guiding the current (now third) package of European directives and regulations on energy is safeguarding the affordability, reliability, safety, and sustainability of the energy supply for energy consumers.[14] When the energy directives refer to energy customers, they include different groups of consumers (or customers), namely, household consumers, large business users and small and medium sized business users.[15]

10. The hope of the European legislature has been that promotion of competition and freedom of choice among consumers would lead to improved efficiency among energy companies, translating in turn into qualitatively higher standards of service at more affordable energy prices.[16] The energy consumer thus is viewed as a driver of competition. Over time, the European energy directives and consequent directives, such as the Renewable Energy Directive[17] and the Energy Efficiency Directive,[18] have set increasingly high demands regarding environmental and climate policy. Thus, inherent in the third package of European energy legislation and the Energy Efficiency Directive is

[13] Lavrijssen (n11).

[14] See Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank: A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy , COM (2015) 080 final. See, for a detailed discussion of the concepts of affordability, sustainability and security of supply, S. A. C. M. Lavrijssen and Irina Bordei, 'ACER: Demystifying the European energy supervisor from a consumer perspective' (2012) 10(5) Oil Gas and Energy Law Intelligence pp. 1–26.

[15] On this, see S. A. C. M. Lavrijssen, 'The Different Faces of the Energy Consumers: Towards a Behavioral Economics Approach', (2014) 10(2) Journal of Competition Law and Economics. pp. 257-291. In the third energy directive, the term customer encompasses various groups of customers: wholesale customers, household customers, non-household customers, vulnerable customers. See Simone Pront van-Bommel, ''De Energieconsument Centraal?' ["The Energy Consumer Central?"]', De Consument en de andere kant van de elektriciteitsmarkt [The Consumer and the other side of the Electricity Market] (1st edn, Centre for Energy (Centrum voor Energievraagstukken 2010).

[16] Lavrijssen (n 145) supra. pp 8.

[17] Renewable Energy Directive (n 5) supra.

[18] Directive 2012/27/EU of the European Parliament and the Council of 25 October 2012 regarding energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC [2009] OJ L 315/1 (Energy Efficiency Directive)

the idea that consumers must be stimulated to be more efficient in their energy use.[19] The European legislature thus assumes not only that the consumer is a driver of competition, but also that the consumer can play an active part in reducing CO_2 emissions and achieving the environmental and climate targets of European energy policy. To help consumers to fulfil the roles of drivers of competition and of the European environmental and climate goals, the third Energy Package provides for some minimum requirements regarding consumer empowerment.[20] Consumer empowerment refers to the provisions that aim to assist consumers to play an active role in the energy market by providing them with clear and user-friendly information about their rights, their energy consumption, the price of their energy supply, and effective dispute settlement and complaint handling procedures, as well as by providing them with information about access to representative organizations promoting consumer interests.[21]

11. Research shows, however, that a substantial share of household consumers is by no means consistent in playing the role of driver of competition and energy-conscious consumer.[22] This consumer inertia can partly be explained by biases in consumer behaviour.[23] On the other hand, it has also become apparent that the active participation of consumers in renewable electricity markets requires adaption of the existing European and national legal frameworks. Consumers face several obstacles for active participation in the market of renewable electricity. For instance, as the current European legal framework does not mention the word prosumer, it is not clear whether prosumers, that produce and sell their own energy, have the same consumer protection and empowerment rights as traditional, more passive consumers. The Commission points out, that the current design of the retail market prevents consumers from being fully able to benefit from such opportunities which is a consequence of various factors, such as the regulation of retail prices,[24] lack of access to smart meters[25], legal obstacles for self-generation and

[19] See, e.g., Directive 2009/72/EC of the European Parliament and of the Council concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC [2009] OJ 2 211/29 (Electricity Directive) Recital 6 and 50. See also Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC [2009] OJ 2 211/39 (Gas Directive) Recital 47.

[20] Lavrijssen (n 15) supra. pp. 7.

[21] Electricity Directive (n 19) Recital 50-55, Article 3(3), 3(5), 3(7), 3(9), 3(11), 3(12), 3(13) and Annex I.

[22] Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Delivering a New Deal for Energy Consumers' COM (2015) 339 final.

[23] See Section 5 below.

[24] Commission, 'Proposal for a directive of the European parliament and of the Council on common rules for the internal market in electricity' COM (2016) 864 final (Proposal for the amendment of the electricity Directive) pp 5-6.

[25] A smart meter is a digital meter that measure electricity use in almost real time (in intervals of 15 minutes) and can be read at a distance. R. Hoenkamp, G. B. Huitema & A. De Moor-van Vugt, 'The Neglected Consumer the Case of the Smart Meter Rollout in the Netherlands' (2011) 4 Journal of Renewable Energy Law & Policy.

the development of local energy communities,[26] and absence of clarity of new roles/responsibilities, such as the role of the distribution system.[27]

12. In the view of the Commission, the energy market and the legislation and regulations governing it must adapt to a new reality. Roles and responsibilities in the new market design of a smart and sustainable energy system have to be made transparent, local energy communities have to be given a role in legal frameworks, new market players have to be given sufficient room to operate, and energy companies and system operators have to draw up new contracts with consumers/prosumers who want to generate energy for themselves and supply it flexibly into the network.[28] Variable electricity generated from renewable energy resources or distributed generation will play an increasing role in the generation mix in the future. Because of the volatile and less predictable nature of electricity generated from renewable energy resources, short-term electricity markets, which allow trading of renewable energy across the borders, are key for a successful integration of renewable energy into the market.[29] A key assumption of the proposed Winter Package is that the distribution system operators will perform a crucial role in facilitating the energy transition. Consumers should enabled to participate in the short term flexibility markets in an active way, amongst others by buying and selling energy and delivering flexibility services (services responding quickly to fluctuations in demand and supply). The next section discusses the changing role of the DSO vis-à-vis consumers and the proposed changes in the Winter Package to clarify the DSOs role in facilitating the energy transition.

3. The role of the transmission and distribution system operators vis-à-vis the consumers

3.1. The DSOs' core task

13. Transmission and distribution systems still, to this day, form the backbone of energy provision and the transition towards a smart and sustainable energy system in the Member States of the European Union. The system operator's key responsibility is to operate, develop, manage, and maintain the system so as to ensure reliability of supply, sustainability, and affordability of the transport of gas and electricity.[30] The system operator must, in the short term and in the long term, guarantee that sufficient transport capacity is available to meet any reasonably expected level of demand for the transport of

[26] Butenko (n 10) supra. According to Proposal for the amendment of the electricity directive, (n 24) article 2(7), local energy communities can be seen as an association, a cooperative, a partnership, a non-profit organization or other legal entity, which is effectively controlled by local shareholders or members, generally value than profit-driven, involved in distributed generation and in performing activities of a distribution system operator, supplier or aggregator at local level, including across borders.

[27] See also CERRE, 'The Changing World of the DSO in a Smart Energy System Environment: Key Issues and Policy Recommendations.' (CERRE 2016).

[28] Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Launching the public consultation process on a new energy market design' COM (2015) 340 final and Commission (n 24) supra.

[29] Ibid, pp. 4.

[30] See for the tasks of the transmission system operators, Electricity Directive (n 19) Art 12 and for the tasks of the distribution system operators, Electricity Directive, (n 19) Art 25. See also, Gas Directive (n 19) Art 13 and 25. In the Netherlands, see article 16 of the Dutch Electricity Act 1998. See also Lavrijssen (n 11) supra.

electricity and gas. These systems operators make it possible for energy to be transported, imported and exported, and ultimately, to be supplied to end-users. System operators thus fulfil a crucial role in ensuring the safety, affordability and reliability of supply for end-users. Like current legislation, the architecture of these transport systems is still based mainly on the traditional model of centralized production and supply of energy in response to demand from a passive end-user. Therefore, it is expected that billions of euros in investment will be needed over the coming years to render these systems "smart", among other things, by investing in the necessary IT applications and network designs.[31]

14. The system operators have a legal monopoly in the implementation of the system operation functions assigned to them. This explains that independent national regulatory authorities have the legal mandate to regulate access to the transmission and distribution systems by setting tariff methods and/or tariffs and conditions that govern network access for the users of the system. [32]

15. The system operator must ensure the safety of the system. Transmission system operators are responsible, among other things, for balancing demand and supply, so as to ensure the proper functioning of the energy system.[33] Some market participants (suppliers, traders, large buyers) have what is called "programme responsibility". This means they are required to draw up programmes setting out their planned inputs and withdraws of energy from the network for the following day. They must then submit these programmes to the transmission system operator. Demand and supply must be balanced in the programmes. If this is not the case, the transmission system operators must bring the system into balance. They do this by buying in reserve and control capacity on the balancing market, the costs of which are passed on to the party which caused the imbalance.[34] The role of the transmission system operator could change in this respect in the future. Due to the growing role of local facilities for sustainable energy provision (distributed generation) with volatile production, the expected growth of electric vehicles and charging stations, local congestion (capacity limitations) and imbalances in the network could become increasingly frequent occurrences in the distribution systems.[35] By making distribution systems smarter, it becomes possible for distribution system operators to also play a role in balancing demand and supply and in applying local congestion management in the distribution systems.[36] Prosumers or aggregators – these are companies that trade on behalf of a large group of consumers –

[31] The Commission estimated that the investment needed in electricity and gas transmission and storage infrastructure to modernise and expand Europe's energy infrastructure is in the order of € 200 billion until 2020. Around two-thirds of that is for electricity and smart grids infrastructure. Commission, 'Report from the Commission to the European Parliament and the Council On the implementation of the European Energy Programme for Recovery and the European Energy Efficiency Fund' COM (2016) 0743 final.

[32] Lavrijssen (n 11) supra.

[33] See, for instance, Article 16, second paragraph, under (a), of the Dutch Electricity Act 1998. Explanatory memorandum Stroom Bill, p. 25.

[34] TNO (n 7) supra, pp. 22.

[35] See CERRE (n 27) supra. pp. 11

[36] CEER, 'The Future of the Role of DSOs, A CEER Conclusions Paper', (2015) <http://www.ceer.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Cross-Sectoral/Tab1/C15-DSO-16-03_DSO%20Conclusions_13%20July%202015.pdf> accessed 22 March 2017.

could then, for example, supply flexibility services to the distribution system operators by using more or less energy or by producing it during periods of underloading or overloading of the capacity of the electricity system. At present, however, household consumers have no programme responsibility in the current system. They also do not have access to flexibility markets, and they cannot provide flexibility services to the transmission system operator yet. Energy suppliers have programme responsibility for household consumers. Usage data for household consumers is derived from standard user profiles.

16. The distribution system operator is responsible for measuring the amount of energy used and produced by the household consumers. The distribution system operator also makes measurement devices available for small connections. During the coming years, the traditional household meters should be replaced by "smart meters" that can be read out at a distance. Use of smart meters paves the way for better insight into customers' actual energy use. This also creates opportunities to deviate from standard user profiles when drawing up the energy programmes. This should make it easier to give consumers/prosumers a role in providing flexibility services. Demand and supply can be balanced in a more efficient way. For instance, this can be done by shifting peak loads and by stimulating consumers to use energy at times when there is an overload of renewable energy and to supply energy when there is a shortage of energy. Smart demand side management, in combination with transparent network reinforcement programmes, enable DSOs to accommodate the new energy flows in an efficient and affordable way. This would reduce the need for DSOs to enlarge the network capacity to the maximum extent, as the available capacity is used in a more efficient way.[37]

3.2. The changing role of the DSO vis-à-vis the consumers

17. Clearly the role of the transmission and distribution system operators will inevitably change as a result of the energy transition.[38] The distribution system operators are increasingly evolving from a passive system manager, based on the "network responding to demand" paradigm, into an active system manager, to which network users, including consumers, can provide services according to system management objectives. This complexity will not change the core responsibilities of DSOs (e.g. maintaining grid security) but may hinder their fulfilment (e.g. if unable to manage demand peaks, and DER flows).[39] Therefore, DSOs are reorganising themselves in terms of business models, re-training of crucial staff, digitalisation of grid operations and other important managerial issues.[40] The processes, known as 'active network management' are necessary for DSOs to carry out their core tasks and responsibilities in an SES.[41] There is a further shift with the distribution network becoming a platform in the ICT sense for the sharing of different types of data and energy services among market players and consumers.

[37] CERRE, (n 27) supra. pp 1.

[38] EvolvDSO, 'Development of methodologies and tools for new and evolving DSO roles for efficient DRES integration in distribution networks' (2014) D 1.3. pp 29. This section builds on CERRE (n 27) supra.

[39] Ibid. pp 80.

[40] EURELECTRIC, 'EURELECTRIC's vision about the role of Distribution System Operators (DSOs)' (2016) http://www.eurelectric.org/media/258031/dso_vision_final_100216_web-2016-030-0092-01-e.pdf accessed 22 March 2017. pp 6

[41] EvolvDSO, (n 38) supra. pp 31.

There is wide consensus among policy-makers that DSOs are well suited to act as neutral market facilitators. This notion expresses the idea that the DSOs can enable and facilitate the development of local flexibility markets in a neutral way, for instance by exchanging data on the network use and on congestion areas in the area of their distribution systems.[42] They can play a central role in enabling flexibility services delivered by distributed generation connected to their grids to reach the market, which they can procure themselves for the fulfilment of their system operation tasks.[43] The evolving DSOs' tasks and responsibilities related to the role of neutral market facilitator, including the role of facilitator of market flexibility, are not addressed by the current European legal framework. Neither are they addressed by the legal and regulatory frameworks in force in many countries.[44] In particular, energy regulators have yet to recognise the broadening role of DSOs as neutral market facilitators that facilitate the development of market flexibility to integrate renewable energy sources connected to the DSOs' grids in an optimal way. Neither do legal frameworks yet take into account that new market players, such as aggregators and storage service providers, are entering the market. Aggregators may act as intermediaries in trading the flexibility of consumers and prosumers. Legal regimes or network codes may not always provide aggregators equal access to the flexibility markets for offering flexibility services to the TSOs or DSOs, which hampers the development of flexibility markets and demand response programmes. Neither do legal regimes provide clear indications as to what these aggregators may look like, and whether the role of aggregators can also be fulfilled by other players, such as suppliers or Balance Responsible Parties (BRP). Different alternatives and business models are possible.[45]

18. Due to these uncertainties, legal discussions arise regarding the exact delineation of the role of the DSOs as neutral market facilitators and their main responsibilities vis-à-vis other market players. As will be discussed below, the Winter Package aims to tackle uncertainties regarding the role and the responsibilities of the DSOs vis-à-vis the consumers and other market players

3.3. The Winter Package and the new role of the DSO vis-à-vis consumers

19. The proposed provisions in the Winter Package also acknowledge the abovementioned evolving role of the DSO vis -a -vis the consumers and the need for

[42] Ibid. pp 36

[43] EDSO, 'Response to the consultation paper on generation adequacy, capacity mechanisms and the internal market' (2013)<https://ec.europa.eu/energy/en/consultations/consultation-generation-adequacy-capacity-mechanisms-and-internal-market-electricity> accessed 22 March 2017 https://ec.europa.eu/energy/en/consultations/consultation-generation-adequacy-capacity-mechanisms-and-internal-market-electricity accessed 22 March 2017. pp 3; CEER (n 36) supra. pp 16; EURELECTRIC (n 40) supra. pp 3. *Flexibility* can be seen as the modification of generation injection and/or consumption patterns in reaction to an external signal (price signal or activation) in order to provide a service within the power system (EURELECTRIC, 'Response to the consultation paper "Regulatory and Market Aspects of Demand-Side Flexibility"' (2014) <http://www.eurelectric.org/media/115897/demand_response_-_ceer_consultation_-_final_clean-2014-030-0036-01-e.pdf > accessed 22 March 2017. Therefore, flexibility entails the ability to foresee changes in SES conditions and adapt to them in a swift, secure and cost efficient manner (ECORYS, (n 4) supra. pp 36).

[44] CEER (n 36) supra. pp 18.

[45] CERRE (n 27) supra. pp 25

clarification of the DSOs' roles vis-à-vis the consumers and other market players. Therefore, article 32 of the proposed amendment of the electricity Directive considers:

> *"Member States shall provide the necessary framework to allow and incentivize distribution system operators to procure services in order to improve efficiencies in the operation and development of the distribution system, including local congestion management. In particular, regulatory frameworks shall enable distribution system operators to procure services from resources such as distributed generation, demand response or storage and consider energy efficiency measures which may supplant the need to upgrade or replace electricity capacity and which support the efficient and secure operation of the distribution system. Distribution system operators shall procure these services according to transparent, non-discriminatory and market based procedures".*

20. The proposals acknowledge that DSOs play a key role in facilitating that flexibility services delivered by flexibility units, such as storage units and distributed generation, connected to their grids can reach the market in a transparent and non-discriminatory way. Energy storage facilities can supply flexibility, as they can, in the electricity system, defer an amount of the electricity that was generated to the moment of use, either as final energy or converted into another energy carrier.[46] The assumption is that the DSO procures the services for an efficient operation of their networks, but they do not compete in delivering these services themselves.[47] This is expressed by the limited possibilities for the DSOs to own, develop, operate and manage recharging points for electric vehicles and energy storage facilities. Furthermore, the Winter Package aims to delineate the responsibilities and rights of the other market players, including aggregators, consumers and TSOs. The position of aggregators is recognized; they are seen as market participants that combine multiple customer loads or generated electricity for sale, for purchase or auction in any organized any energy market. For instance, they can participate on behalf of energy consumers in flexibility markets. Where consumers wish to conclude a contract with an aggregator, such engagement shall not require the consent of the consumer's supplier. As DSOs may partly take over some of TSOs tasks related to system balancing and congestion management, the new package also acknowledges that DSOs and TSOs need to enhance their cooperation in system operation, investment planning, data exchange and in ensuring the security and safety of the system.[48]

[46] Proposal for the amendment of the energy directive (n 24) supra. Article 2(47).

[47] ACER and CEER, 'European Energy Regulators Overview Paper: Initial Reaction to the European Commission's proposal on Clean Energy', (2017). pp 2.

[48] For instance, according to Commission, 'Proposal for a Regulation of the European Parliament and of the Council on the internal market for electricity' (Proposal for a revised electricity Regulation) COM (2016) 861 final/2. Article 51(2), which regulates the tasks of the new EU DSO entity, EU DSO and ENTSO shall cooperate "*on the monitoring of implementation of the network codes and guidelines which are relevant to the operation and planning of distribution grids*", as well as adopt best practices on "*issues such as exchange of data between operators and coordination of distributed energy resources*". See also CEER (n 36) supra. pp 16

4. Consumers and the fourth phase of EU energy regulation

4.1. An analysis of the legal provisions of consumer protection and consumer empowerment

21. One of the key goals of the Winter Package is "enable all consumers to fully participate in the energy transition, managing their consumption to deliver efficient solutions which save them money and contribute to overall reduction of energy consumption".[49] The role of the consumers should further evolve from a passive one, merely purchasing energy, to an active one.[50] All provisions related to consumer empowerment and consumer protection are equally applicable to consumers only using energy and the so-called 'active' customers. Active customer means a customer or a group of jointly acting customers who consume, store, or sell electricity generated on their premises, including through aggregators, or participate in demand response or energy efficiency schemes, provided that these activities do not constitute their primary commercial or professional activity.[51] The package provides for several new and reinforced provisions on consumer empowerment specifying and adding to existing provisions of consumer protection and consumer empowerment laid down in the current Electricity directive and Energy Efficiency Directive.[52] The specific consumer protection and empowerment provisions of the Electricity directive can be seen as specifications of and additions to the provisions of the general consumer law directives of the European Union.[53] As considered by Advocate General Trstenjak, the various legislative acts of the European legislator in the area of consumer protection are bound to each other and must be seen as part of a global and uniform system of complementing measures.[54]

22. The following provisions related to consumer protection and consumer empowerment are included in the proposal for the amendment of the electricity Directive[55];

- The right to free choice of supplier (existing right; Article 4);
- While respecting contractual obligations, right to change supplier, within three weeks, without any switching related fees being charged (renewed; Article 12);
- The right to conclude a contract with an aggregator, without the consent of the final customer's supplier (new; Article 13);

[49] Commission (n 22) supra. See also Proposal for the amendment of the energy directive (n 24) supra. Recital 4.

[50] Butenko (n 10) supra.

[51] Proposal for the amendment of the electricity directive (n 24) supra. Article 2(6).

[52] Commission, 'Evaluation of the EU Framework for Metering and Billing of Energy Consumption' SDW (2016) 399 final. See also Lavrijssen (n 15) supra.

[53] Directive 2011/83/EU of the European Parliament and of the Council of 25 October 2011 on consumer rights, amending Council Directive 93/13/EEC and Directive 1999/44/EC of the European Parliament and of the Council and repealing Council Directive 85/577/EEC and Directive 97/7/EC of the European Parliament and of the Council [2011] OJ 2 304/260 (Consumer Directive).

[54] Case C-92/11 *RWE Vertrieb v. Verbraucherzentrale Nordrhein-Westfalen* [2013], ECLI:EU:C:2013:180 Opinion of AG Trstenjak. par 69. See for a detailed analysis of existing provisions related to consumer empowerment and consumer protection, Lavrijssen (n 15) supra pp. 7.

[55] Proposal for the amendment of the electricity directive, (n 24) supra.

- Basic contractual rights (renewed: Article 10);
- Entitlement to a dynamic electricity contract, meaning an electricity supply contract between a supplier and a final customer that reflects the price at the spot market or at the day ahead market at intervals at least equal to the market settlement frequency (new; Article 11);
- Consumers have access, free of charge to at least one certified price comparison tool (new; Article 14);
- Frequent billing and billing information. Information in bills shall be correct, clear, concise and presented in a manner that facilitates comparison (reinstated, specified; Article 18);
- Final consumers are entitled to generate, to store, consume and sell self-generated energy, without being subjected to disproportionately burdensome procedures and non-cost reflective charges (new; Article 15);
- Ensuring the rights of local energy communities to participate in the energy market as final consumers, generators, distribution system operators or aggregators (new; Article 16);
- Entitlement to a smart meter, under fair and reasonable conditions (new; Article 21).[56]
- Right to out-of-court dispute settlement (updated: Article 26).

23. The abovementioned proposed provisions show that the European Commission is willing to take a big leap forward. The new consumer empowerment provisions aim to ensure that by giving consumers transparent and comprehensible information about new contracts and services, they can benefit from new technological possibilities and new contract forms related to the transition towards SES by making well informed choices. By becoming an active consumer, the consumer can benefit financially from lower energy costs, from offering flexibility services themselves and from better access to renewable energy sources. As the consumer, individually or collectively via an aggregator or local energy community, may deliver flexibility for balancing energy demand and supply in an optimal way, his behaviour may contribute to a more efficient network use and reduce the need for large and expensive investments for network capacity upgrading.[57] Whether the newly stated provisions will actually enhance consumer empowerment and consumer protection in the energy market, however, depends on several economic and legal matters.

24. Therefore, section 5 will study more in depth, by analyzing behavioural economics' studies on consumer behaviour, what influence may be expected from the new consumer empowerment and protection provisions on consumer behaviour in the energy sector. Secondly, to what extent consumers can really benefit from their new rights, depends also to a large extent on important choices that have to be made by the Member States regarding market design and institutional design to ensure there are flourishing retail markets for energy (services) in which the consumers can actively participate. The paper discusses three important market design and institutional issues that have to be decided by the Member states, including the role of the DSOs vis-à-vis the consumers and other market parties, the design of tariff regulation and consumer participation in European and national procedures for establishing the tariffs and conditions for access to the energy systems.

[56] For the definition of smart meter see (n 25).

[57] CERRE (n 27) supra. pp 18.

5. Possible benefits and limits of consumer empowerment and consumer protection provisions

5.1. Behavioural insights and the energy consumer

25. European energy legislation is based on the assumption that energy consumers function as Homo Economicus.[58] Energy consumers are seen as perfect textbook examples of people who make economic decisions that maximize their welfare, based on rational convictions and with sufficient knowledge and information.[59] While energy consumers are expected to actively participate in the energy market, by informing themselves about alternative energy (service) contracts and by consciously making choices about their energy contracts and energy use, empirical studies into consumer behaviour in the energy markets show otherwise.[60] Various academic research, as well as studies, conducted in the energy sector by or on behalf of the European Commission, ACER/CEER and national energy regulators indicate that, when entering into energy supply contracts, consumers remain very often inactive or fail to make optimal choices in terms of price and quality of the energy supply contracts.[61] In addition to mal-functioning retail markets, this is partly the result of the psychological factors that influence consumers' behaviour. Several reasons explain this consumer inactivity.[62] First, time varying discounts, or present-biased preferences refer to the phenomenon that changing consumer preferences very often are not based on an objective assessment of the costs and benefits of various decisions, but on the immediate satisfaction of financial or other needs. Often consumers are tempted to assign more weight to short-term (immediate) benefits than to longer term benefits.[63] For instance, in the short term energy consumers may not want to invest time in searching an optimal energy contract. From this perspective potential longer term financial benefits of switching to another supplier do not outweigh the short term search costs. [64] Second, empirical research into the behaviour

[58] Lavrijssen, (n 15) supra.

[59] Cass R. Sunstein and Richard H. Thaler, 'Libertarian Paternalism is not an Oxymoron' (2003) 70 The University of Chicago Law Review. pp. 1166 and Russell B. Korobkin and Thomas S. Ulen, 'Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics' (2000) 88 California Law Review.

[60] See for an overview of behavioural economics research into the energy consumers' behavior, Lavrijssen (n 15) supra.

[61] Lavrijssen (n 15) supra. pp. 16. Michael G. Politt and I. Shaorshadze, 'The role of behavioral Economics in Energy and Climate Policy'(Cambridge University 2011) , ECME Consortium, 'The Functioning of the Retail Electricity Markets for Consumers in the European Union' (DG Health and Consumers 2010) http://ec.europa.eu/consumers/archive/consumer_research/market_studies/docs/retail_electricity_full_study_en.pdf accessed 22 March 2017, OFGEM, 'What can Behavioural Economics Say about Energy Consumers?', (2011) <https://www.ofgem.gov.uk/ofgem-publications/75192/behavioraleconomicsgbenenergy.pfd> accessed 22 March 2017, Oxera, 'Behavioural Economics and Its Impact on Competition Policy' (ACM 2013) <http://www.oxera.com/Oxera/media/Oxera/downloads/reports/Behavioural-economics-and-its-impact-on-competition-policy.pdf?ext=.pdf> accessed 22 March 2017

[62] See the literature mentioned in footnote 61.

[63] See also G. Loewenstein, Leslie K. John and Kevin Volp, 'Using Decision Errors to Help People Themselves', *Behavioral Foundations of Public Policy* (1st edn, Princeton University Press 2012).

[64] OFGEM (n 61) supra pp. 14.

of energy consumers shows that consumers have a preference for the status quo and are loss averse. [65] Consumers strongly prefer to prevent potential losses rather than to achieve potential gains, and thus show more willingness to take risks to prevent loss than risks to achieve a profit. This results in a status quo bias and inertia, with consumers feeling disinclined to investigate whether choosing a different contract or another supplier would be beneficial. This in turn prevents them from making a move.[66] Third, energy consumers also are cognitively limited and experience barriers when processing information, a phenomenon that can also be placed under the theory of bounded rationality.[67] Energy consumers have difficulties in assessing energy contracts and tariffs. The complexity of tariff information and the wide variety of tariff options in the energy sector constitute significant barriers to switching.[68] Consumers may consequently opt for simpler strategies that minimize efforts to search for an energy supplier and a supply contact. Rather than choosing the optimal offer, they may simply opt for the first contract they run into that offers to supply energy on acceptable conditions and at acceptable tariffs. They may also decide not even to start searching for a better energy supply contract. [69]

26. A recent ACER report identified that consumer inertia, deriving from the lack of consumer interest in the market and from consumer loyalty to existing suppliers, is a key factor for the low switching rates in European retail markets. Based on a joint survey conducted by ACER and the European Consumers Organization BEUC among energy experts and NRAs on the topic of consumer switching behaviour, the report concluded that the above mentioned behavioural biases (partly) explain for consumer inertia in the energy markets of the EU member states. [70] The perceived (insufficient) monetary gain, the lack of trust in new suppliers, the perceived complexity of the switching process as well as satisfaction with the current supplier were identified as the most influential 'preventers' of consumer switching behaviour.[71] Also, the switching process may be perceived to be too complex or too burdensome by consumers in terms of the benefits it provides.[72] In addition to this, the report mentions that consumers may also switch in error.[73] It is reported that consumers may not maximize their gain or even may switch to a more expensive offer due either to a lack of attention paid in the choice of offers or due to their inability to compare prices. [74] The complexity of pricing and the range of energy

[65] Politt and Shaorshadze (n 61) supra. pp. 4, Daniel Kahneman and Amos Tversky, 'Prospect Theory: An Analysis of Decision under Risk' [1979] 47(2) Econometrica 263-292, R. Thaler and C. Sunstein, *Nudge, Improving decisions about Health, Wealth and Happiness* (1st edn, Yale University Press 2008).

[66] Thaler & Sunstein (n 65) pp. 8, 37.

[68] Politt and Shaorshadze (n 61) supra. pp. 4 and Herber A. Simon, 'A Behavioral model of Rational Choice' [1955] 69(1) Quarterly Journal of Economics 99-118.

[68] OFGEM, (n 61) supra and ECME Consortium, (n 61) supra pp. 21.

[69] Ibid pp. 11-13.

[70] ACER/CEER, (n 12) supra.

[71] Ibid. pp. 95.

[72] Ibid.

[73] ACER/CEER, (n 12) supra pp. 100, referring to Chris M. Wilson and Catherine Waddams Price, 'Do Consumers Switch to the Best Supplier' [2010] 62(4) *Oxford Economic Papers.* pp. 647-668.

[74]ACER/CEER, (n 12) supra. pp. 100 referring to Stefania Sitzia, Jiwei Zheng and Daniel J. Zizzo ,' Inattentive Consumers in Markets for Services',[2015] 79(2) Theory and Decision. pp 307-332.

products, as well as an increasing number of offers, and their bundling, with additional charge-free or payable services, makes it increasingly difficult for consumers to search for new contracts, compare them and to make decisions that are beneficial for their own economic situations.[75]

5.2. The benefits and limits of information and transparency provisions

27. In light of what has been discussed above, the crucial question therefore, is whether the legislator can reasonably expect the energy consumer, that already experiences severe difficulties to properly assess the complex information concerning tariffs and contracts in the market for traditional energy supply contracts, to become more active and make well informed and optimal choices in a Smart Energy System.

28. The proposed provisions in the consumer package partly build on the so-called information paradigm, suggesting that increasing transparency will facilitate consumers' decision making and will lead to better decisions.[76] However, there is a real risk that simply overloading consumers with information about all new options and services in the energy market will not help them and may even make things worse as there will be a greater variety of more complex contracts. New types of contracts and services will be offered, such as demand service contracts with dynamic retail pricing. Dynamic retail prices (and network tariffs) can be used to give incentives to the users to adopt the timing (peak shifting) and level of network use (peak shedding) to the degree of overall network utilization.[77] This means that consumers can pay higher or lower prices for their energy use, depending on actual market conditions and real-time energy prices. If consumers do not make correct assessments concerning their energy use and energy needs and the prices that are actual, they run new financial risks (high energy bills) they have not been exposed to before.

29. While the European provisions assume that all necessary information for consumers should be transparent, accurate, comprehensible and easy to compare, the proof of the pudding is eating it. It should also be ensured that the information available for consumers, is sufficient.[78] This means that the information has a certain level of quality in order to enable the consumer to make adequate decisions in the energy market.[79] According to Oehler & Wendt, information should be clear, should fit with consumers' personal needs and be verifiable. This enables consumers to trust the information provided, to use it without necessity and to double check. [80] While Oehler & Wendt focus on consumer information regarding financial products, the increasing complexity and risks of dynamic energy (service) contacts makes their findings also very

[75] Ibid.

[76] Andreas Oehler and Stefan Wendt, 'Good Consumer Information: The Information Paradigm at its (Dead) End?' [2016] Journal of Consumer Policy.

[77] S. Neuteleers, M. Mulder & F. Hindriks, 'Assessing Fairness of Dynamic Grid Tariffs' [2016] SOM Research reports, volume 16014-EFF, Groningen; University of Groningen, SOM Research School. One has to distinguish between dynamic retail prices that are set by the energy companies and the dynamic network charges that are charged by the national regulators.

[78] Oehler and Wendt (n 76) supra.

[79] Ibid.

[80] Ibid.

relevant for the energy sector. Consumers are neither financial nor energy experts and they will need some guarantees and tools to help them access, compare and apply relevant information to their personal needs. To partly mitigate the problems of the information problem, Oehler & Wendt suggest that, in addition to improving consumers' energy and financial literacy, non-governmental consumer organizations and/or independent national regulatory authorities should play a role in collecting, verifying, checking, and disseminating necessary and sufficient information regarding energy products. They could also be involved in drafting minimum standards for disclosure documents that focus on essential information of the costs and benefits of all products and that allow for comparison.

30. An important tool in enhancing consumer empowerment, is stimulating consumers' access to the smart meter and the real time and historical consumption information that can be generated by this meter.[81] While Directive 2009//72 EC and Directive 2006/32 already promoted the roll-out of smart metering systems by the Member States, the proposed amendments of the energy directive take a leap forward. Member States have to ensure the implementation of smart metering systems in their territories that shall assist the active participation of customers in the electricity markets, though the implementation may be subject to a cost-benefit assessment.[82] A new provision gives energy consumers –under certain conditions- an entitlement to be provided with a smart meter. However, simply installing a smart meter in consumers' houses will not be enough.[83] The information generated by the smart meters has to be communicated to consumers in an easily understandable and digestible format, for instance by means of a display. Furthermore, consumers have to be informed about the possibilities of smart meters regarding the information on energy costs, time of use prices and energy use. In practice, these additional feedback tools (like a display) are not always provided to the consumers, leaving the consumer empowering possibilities of the smart meters untouched. [84]

31. Independent comparison tools, for the comparison of energy (service) contracts, can help energy consumers to process complex information.[85] This will only happen, however, if these price comparison tools, are independent, transparent, up to date, accurate, complete, accessible, and user friendly. [86] From this perspective, it is positive

[81] Lavrijssen (n 15) supra. pp. 8.

[82] Proposal for the amendment of the electricity directive, (n 24) supra. Article 19(2)

[83] Ibid. Article 21

[84] Gans, W., Alberini, A., Longo, (2013), 'Smart meter devices and the effect of feedback on residential electricity consumption: Evidence from a natural experiment in Northern Ireland', *Energy Economics*, 36, 729, Planbureau voor de Leefomgeving, 'De Slimme Meter, Uitgelezen Energie(k)?' (The Smart Meter, Exquisite Energertic) (2016) < http://www.pbl.nl/sites/default/files/cms/publicaties/PBL-2016-de-slimme-meter-uitgelezen-energiek-2122.pdf> accessed 22 March 2016, background study by K. Vringer and P. Dassen, Den Haag 2016.

[85] Harriet C. Gamper, 'How can Internet comparison sites work optimally for consumers?' [2012] 35(3) Journal of Consumer Policy 333-353

[86] Lavrijssen (n 15) supra. pp. 27, referring to CEER, 'CEER Draft Advice on Price Comparison Tools: A CEER Public Consultation Paper" (2011) <http://www.ceer.eu/portal/page/portal/EER_HOME/EER_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/CUSTOMERS/Price%20Comparison%20tools/Consultation_Documents/C11-CEM-45-05_Draft-advice-Price-Comparison-Tools_11-10-2011.pdf > accessed 25 March 2017.

that a new provision in the proposal for an amended electricity directive requires that consumers have access, free of charge, to at least one certified price comparison tool. While the design and supervision of price comparison tools is getting increased attention by European and national policy-makers, as well as the NRAs of the Member States, they are usually not sophisticated enough (yet) to compare the wide range of energy (service) contracts, including Demand response contracts that are possible in a Smart Energy System. Certification criteria and supervision and certification processes should therefore be designed in a way to make sure that they keep up with the dynamics of the energy markets; The comparison tools should enable consumers to benefit from the comparison of new services that are offered by the energy (service) companies, but also should leave sufficient leeway to the parties offering price comparison tools to innovate in the design and operation of the tools.

32. It is positive that the newly proposed European provisions provide for new obligations regarding the tools for the generation (smart meters) of consumption information, and energy costs and also for the assessment of that information (price comparison tools). Care should be taken that this newly generated information is presented in a user friendly way to the energy consumers. Otherwise, there is a true risk that consumers do not make use of the possibilities for consumer empowerment offered by technological innovations such as smart meters and smart services.

6. Market design and institutional issues decided at Member States

6.1. The role of the DSO and the delineation of core and non-core activities

33. Section 3 discussed, that the role of the distribution system operators vis-à-vis the energy consumers and other market players change in the transition towards a Smart Energy System. At the Member State level the debate is ongoing on the question of what functions the distribution system operator should be allowed to fulfil, beyond its core functions to operate and maintain the distribution system network in a reliable, safe, affordable and sustainable way. Some researchers are of the opinion that system operators should not be too constrained to innovate in new, sustainable hybrid energy infrastructures, such as new storage infrastructures, Electric Vehicle charging points, and connections between different infrastructures such as heat and electricity.[87] They advocate for allowing system operators to also fulfil (temporary) competitive non-core functions to stimulate the energy transition and promote competition. Competitive non-core activities are activities that are not inseparably linked to the performance of the DSOs' core tasks and for which competition may be possible. DSOs may benefit from synergies between the development of core and non-core activities, which may help them to create new, innovative energy services. Others, however, claim that system operators must confine themselves to their core functions. Indeed DSOs have network monopolies, so care should be taken that they do not distort competition in the development of

[87] Think, 'From Distribution Networks to Smart Distribution System' (2013) <http://cadmus.eui.eu/bitstream/handle/1814/27615/THINK_Topic_12.pdf?sequence=1&isAllowed=y> accessed 29 March 2017. Ecorys, (n 4) supra. par. 6.3.2. See also the critical comments of Maarten Meijburg and Ruud Schalij Energeia, 'Afwijzen van wetsvoorstel Stroom een Blessing in disguise" ["Rejection of STROOM bill is a blessing in disguise"]' (Energeia, 14th January) <http://energeia.nl/columns/column/512921-1601/afwijzen-van-het-wetvoorstel-stroom-een-iblessing-in-disguisei> accessed 25 March 2017.

alternative technologies and infrastructures to the detriment of the consumers.[88] DSOs generally have a low-risk profile due to their core monopoly activity and the fact that costs are normally covered by regulated tariffs. For these reasons, it could be argued that non-monopolistic grey areas in principle should not be entered into by the DSOs. A recent CERRE report distinguishes the following non-competitive tasks in the future SES[89]

- Flexibility services (storage services, demand response programmes);
- Infrastructure provision for electric vehicles;[90]
- Infrastructure provision for storage facilities;
- Energy efficiency services;
- Ownership and management of metering equipment.[91]
- Hosting of other services on the electricity distribution networks;[92]

34. In theory, most of these activities are, or can be, competitive and the actual level of competition is different across geographical and product markets.[93] The provision of flexibility services, infrastructure for electric vehicles, infrastructure for storage facilities and efficiency advice are potentially competitive activities that interface with, and may contribute, to an efficient fulfilment of the DSO's core tasks. For example, DSOs may procure and manage flexibility for fulfilling their core tasks such as guaranteeing sufficient network capacity,[94] but they do not have to be flexibility service providers themselves.[95] They need to have some control over electric vehicle charging points (such as information about the points and distance between them) to maintain system balance, but they do not have to provide the charging infrastructure themselves.

35. The right delineation between the DSOs' core and non-core tasks is of the utmost importance for the energy consumers. On the one hand, if DSOs are not in the position to

[88] CEER (n 36) supra. pp 6, 9-11 argues that the more that DSOs are involved in non-core activities, the greater the need for regulatory control or unbundling. They also define some non-core (potentially) competitive activities.

[89] CERRE (n 27) supra. pp 26

[90] It should be noted that in some areas (for instance big cities) electric mobility could potentially take off through competition alone, however in other areas, private investors are not willing to invest in electric vehicle infrastructure. This hampers the decarbonisation of transport and may warrant Member States to stimulate (temporary) DSO involvement in the infrastructure for electric vehicles by stimulating an optimal level of charging points.

[91] CERRE (n 27) supra. However, de facto metering is a core activity in most Member States, except in the UK. This is due *inter alia* to the close synergies in the operation of the grid and the operation of metering systems.

[92] DSOs, thanks to the synergies and capillarity of their networks, can play an important role for other strategic sectors, such as the telecommunications sector, since they can allow to reduce the cost of new advanced services for the system as a whole. Directive 2014/61/EU of the European Parliament and of the Council of 15 May 2014 on measures to reduce the cost of deploying high-speed electronic communications networks [2014] OJ 2 155/1 introduces the obligation for network operators (e.g. DSOs) to grant access to their network with the purpose of hosting very-high-speed communication infrastructure reducing its cost.

[93] CERRE (n 27) supra. pp. 26.

[94] EDSO (n 43) supra and CEER (n 36) supra.

[95] Eurelectric (n 40) supra. pp. 5

pick up activities that are necessary for the facilitation of the energy transition and that are not offered by other market parties, such as the role out of Electric vehicle infrastructure, this may hamper the transition to a low carbon energy system. On the other hand, if they do too much, there is a risk that they can distort competition in potentially competitive activities. This means that Member States and the national authorities have to balance carefully the short and long term interests of the consumers in delineating the DSOs' core and non-core tasks, considering the relevant economic, social and technological circumstances of each region. In the Netherlands, it is proposed that the DSO may be granted a temporary task to develop potentially competitive non-core activities in case these are important for the future development of the smart grid and other market parties cannot sufficiently deliver these services yet.[96]

36. In the Winter Package the European Commission seems to have chosen to follow the Dutch approach. It is proposed that, in principle, DSOs shall not own, develop, manage or operate energy storage facilities or recharging point for Electric Vehicles, unless others have not shown their interest -following an open and transparent tendering procedure- and the National regulatory authority has assessed or approved that a derogation is necessary.[97]

37. If the DSO takes on new roles, sufficient controls and ex ante regulations will be required to ensure that it does not use access to commercial data to gain undue competitive advantages or create market distortions.[98] There is consensus around the need to impose a minimum of unbundling requirements on DSOs active in competitive downstream markets which are supervised by the national regulatory authorities, but not in their scope and depth across the Member States.[99]

38. In order to ensure that legal frameworks and regulatory decisions regarding the DSO involvement in non-core activities do not frustrate competition and innovation, it is to be appreciated that the Winter Package requires national regulators to be granted the power to ex ante define the actual scope and conditions of DSO involvement in two main non-core competitive activities. National regulators should base their decisions on an assessment of the actual and prospective competitive level in a certain region or Member State as well as the level of unbundling of the DSOs from energy supply and energy service activities.

6.2. The design of tariff regulation at the national level

39. National regulatory authorities have a key task in setting tariff methodologies and/or tariffs for access to the energy networks in an ex ante way. Therefore, they can exert considerable influence on the affordability of the energy bills of energy consumers as network tariffs may cover a significant part of the consumers' energy costs in some Member States, such as in the Netherlands. The third legislative package contained stricter requirements regarding independence of the national regulatory authorities.[100]

[96] CERRE (n 27) supra. pp 27.

[97] Proposal for the amendment of the electricity directive, (n 24) supra. Articles 33 and 36.

[98] CERRE (n 27) supra, pp 27 referencing to CEER (n 36) supra. pp. 14.

[99] CERRE (n 27) supra, pp 27.

[100] Electricity Directive (n 19) supra. Article 35. Gas Directive (n 19) Article 39.

They must be independent from market participants, but they must also function to some extent at arm's length from the political establishment (parliament and the responsible Minister). That means that the Minister may set general policies that the national oversight authority has to comply with, but the Minister may not issue instructions pertaining to specific cases.[101] The strict requirement of independence is aimed at ensuring impartial and transparent regulation by the oversight authority. This is of particular importance in sectors that have traditionally been strongly interwoven with the government, and where the State, as in the energy sector, is still the sole (100%) shareholder in market participants (the network operators). The Third Package also provided for expanded requirements regarding the powers of market oversight authorities and stricter transparency requirements for companies in wholesale markets.[102] The discretionary (regulatory) powers of the oversight authorities have been greatly expanded, including the establishment of tariffs and the conditions for access to energy systems.[103]

40. Current European regulations and directives provide for the main principles for tariff regulation[104], including the principles of transparency[105], non-discrimination[106], objectivity[107], non-distortion[108], cost recovery[109], cost-reflectiveness[110] and

[101] See TIAT case 29 June 2010, ECLI:NL:CBB:2010:BM9470; See also S. A. C. M. Lavrijssen and Annetje Ottow, 'Independent Supervisory Authorities: A Fragile Concept' [2012] 39(4) Legal Issues of Economic Integration. pp 419-445.

[102] Pront-van Bommel (n 15) supra. pp. 458–459 and Commission, 'Communication from the Commission to the Council and the European Parliament: Prospects for the internal gas and electricity market' COM (2006) 841 final.

[103] See Electricity Directive (n 19) Article 37, first and fourth paragraph and Gas Directive (n 19) Article 41, first paragraph and fourth paragraph. See also Leigh Hancher and Pierre Larouche, The coming age of EU regulation of network industries and services of general economic interest. in P Craig and G De burca (eds), *The evolution of Eu law* (Oxford university Press 2011) pp 743-782

[104] See also: CEER, 'Electricity Distribution Network Tariffs: CEER Guidelines of Good Practice' (2017) < http://www.ceer.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Electricity/2017/CEER%20DS%20WG%20Best%20Practice%20Tariffs%20GGP%20-%20%20external%20publication_final.pdf > accessed 25 March 2017.

[105] Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003 [2009] OJ 2 211/15 (Regulation on Cross-border exchanges in electricity), Article 14 and Electricity Directive (n 19) Article 37.

[106] Under the prohibition on discrimination, which is a fundamental principle of EU law, comparable situations must not be treated differently unless such difference in treatment is objectively justified (Case C-17/03 *Vereniging voor Energie, Milieu en Water and Others v Directeur van de Dienst uitvoering en toezicht energie* [2005] ECR I-04983 ground 48) in the European directives and regulations (Case C-439/06 *Energy management proceedings Citiworks AG* [2008] ECR I-03913 ground 55). Thus a grid manager is not allowed to abuse its dominant position by discriminating between different customers. See S.A.C.M. Lavrijssen, 'Opportunities in EU case law for achieving Dutch sustainable energy target' [2013] 19(6) Utilities Law Review. pp 9 and Regulation on Cross-border exchanges in electricity (n 105) supra Article 14, Electricity Directive (n 19) Article 32 and CEER (n 104) supra pp. 15.

[107] Electricity Directive (n 19) supra. Article 32.

[108] This principle can be inferred from the principle of allocative efficiency. Tariffs should incentivize the users to use the grid efficiently. See REF-E, AF Mercados and Indra, 'Study on tariff design for distribution systems' (DG ENERG 2015) pp. 35. Tariffs should avoid distorting decisions around access and use of the network. Distribution networks should not be a barrier to innovate market offers that will add value

predictability.[111] Cost reflectivity entails that tariffs paid by network users should reflect the cost they impose on the system and give appropriate incentives to avoid future costs.[112] Right price variables should be chosen to ensure the costs are allocated to those users who impose costs on the network. The primary cost drivers are location, time of use and power quality.[113] Cost reflectiveness also entails that tariffs shall be cost reflective of cost savings in networks achieved from demand side and demand response, including savings from lowering the cost of delivery or of network investment and a more optimal operation of the network.[114] The provisions of the Winter Package do not provide for new principles, but more clearly specifies how these principles should be applied. For instance, it reinstates the principle of non-discrimination and confirms that it is also applicable to production connected at distribution or transmission level as well as to storage.[115] While the third package conceives demand response and consumer participation by delivering flexibility as a recommended option for the Member States, the Winter Package is more strongly worded in this regard. [116] There is a legal mandate for the regulatory authorities to take into account the need for flexibility and to incentivize participation in Demand Response Programmes.[117] The Winter package strives to further harmonize the structure of the distribution tariffs, but these proposals are rather controversial as Member States and national authorities want to retain sufficient

or reduce costs for consumers (flexibility and energy efficiency). See CEER (n 104) supra pp. 15. Sunk costs should be allocated in a way that minimizes distortions to production/consumption and investment decisions made by grid users. Transpower New Zealand, 'Confirmed Pricing Methodology: Final Design Principles' (2002) < https://www.hks.harvard.edu/hepg/Standard_Mkt_dsgn/Transpower_design_prin_3-29-02.pdf > accessed 25 March 2017.

[109] Electricity Directive (n 19) supra article 37, DSOs should recover efficiently incurred costs. It must not only include short-term costs but also a sustainable development to safeguard the needs of future customers. CEER (n 104) supra pp. 15.

[110] Tariffs paid by network users should reflect the cost they impose on the system and give appropriate incentives to avoid future costs (See CEER (n 108) supra pp. 15). Peak capacity, required in peak moments, determine the future expansion of the network. Traditional electricity tariffs did not reflect the real costs of using electricity during demand peaks, nor are the costs distributed fairly: households with high demand and low consumption receive implicit subsidies from households with low demand and high consumption. Cost reflective tariffs ought to allocate network costs to those who incur them, reducing the cross subsidies between users (See S. Neuteleers, M. Mulder and F. Hindriks (n 77) supra and CUAC 'Cost reflective pricing: Engaging with network tariff reform in Victoria' (2015) <https://www.cuac.org.au/research/cuac-research/400-cost-reflective-pricing-engaging-with-network-tariff-reform-in-victoria/file> accessed 26 march 2017 pp 1). See also Electricity Directive (n 19) supra. Recital 36 and Regulation on Cross-border exchanges in electricity (n 109) supra. Article 14.

[111] Network users can effectively estimate the costs of their use of the distribution system, facilitating efficient long-term investment. CEER (n 104) supra. pp. 15

[112] Ibid.

[113] Ibid

[114] Energy Efficiency Directive (n 18) Annex XI.

[115] Proposal for a revised electricity Regulation (n 48) supra. Article 16.

[116] In principle, network tariffs must support dynamic pricing for demand response by final customers. Electricity Directive (n 19) supra recital 45 and article 15 and Energy Efficiency Directive (n 18) supra Annex XI.

[117] Proposal for a revised electricity Regulation (n 52) supra. Article 16 and Proposal for the amendment of the electricity Directive (n 24) supra. Article 17.

leeway to fine-tune the tariffs to the varying economic and physical conditions of the regions in which the different DSOs operate.

41. Depending on the exact amount of harmonisation, the question of how to design the actual tariff methodologies will to a large extent fall within the leeway of the national regulatory authorities. There are different options, such as fixed charges, capacity usage based tariffs, energy usage based tariffs, Time of Use tariffs and interruptible tariffs, each with different costs and benefits.[118] For instance, *ex ante* capacity tariffs have advantages of simplicity, stability and predictability for both the consumers and DSOs.[119] The disadvantage, however, is that these types of tariffs do little to encourage energy efficiency and system flexibility.[120] Capacity usage based tariffs can be more attuned to actual user patterns and allow for more cost reflective tariffs, but they are also more complex.[121] Tariff structures can also have Time of Use elements, such as critical peak pricing[122] and price rebates, implying that the price of network use may vary, encouraging the reduction of demand in periods of high consumption.[123] While these more complex tariff structures may stimulate consumers to adjust their use to actual market conditions, which may lead to more dynamic and allocative efficiencies, the complexity of information and choices increases. According to behavioural economics literature this may hamper consumers from actively participating in the energy market. If overloaded with too much and too complex information and too many choices, customers are likely to find it difficult to select among options and instead, will tend to satisfice and rely on heuristics (e.g., stick with the default option) to guide their decision making.[124] Additionally, if the pricing structure itself is too complicated, customers are not only unlikely to choose it in the first place, but they may also find it difficult to utilise effectively on a daily basis. They may struggle to keep track of the changing schedule of fees in order to know precisely when (and for how long) to reduce demand.[125]

42. Moreover, consumers with access to flexibility resources, such as storage and solar PV, can largely avoid network costs, but other network users may not be in this

[118] See for an explanation of the different types of tariffs: CEER (n 104) supra. pp. 19 and further.

[119] Ibid. pp. 21.

[120] Ibid.

[121] Ibid.

[122] According to Ibid. pp. 23, Critical Peak Pricing is where usage is charged based on a short period of time. It recovers the costs of building and maintaining the network based on consumption at times of peak demand, which is the main driver of investment costs.

[123] Ahmad Faruqui, Ryan M. Hledik and John Tsoukalis, 'The Power of Dynamic Pricing' (2009) 22(3) The Electricity Journal. pp 42-56, uses Californian data and Cajsa Bartuscha, Karin Alvehagb, 'Further exploring the potential of residential demand response programs in electricity distribution' (2014) 125(15) Applied Energy. pp. 39–59 uses Swedish data.

[124] Benjamin Scheibehenne, Rainer Greifeneder and Peter M. Todd, 'Can there ever be too many Options? A Meta-Analytic Review of Choice Overload' (2010) 37 Journal of Consumer Research, makes a meta-analysis of the literature of choice overload and conclude that the adverse effects of the increasing in choice options are not "very robust".

[125] Elizabeth V. Hobman and others, 'Uptake and Usage of Cost-Reflective Electricity Pricing: Insights from Psychology and Behavioural Economics' (2016) 57 Renewable and Sustainable Energy Reviews. pp 455–467

position. It would not be considered fair, if consumers with less access to flexibility resources would be charged higher and higher tariffs, while other ones could avoid these costs by going off grid with the option to reconnect, if necessary.[126] Therefore, the broader impact of different tariff structures and the impact on more vulnerable groups should be considered as well. Each authority will have to decide which methodology suits better the geographic circumstances of the region in which each DSO operates, considering the density of the network, the type of network users and the amount of connected distributed generation, storage capacities and Electric Vehicle Charging Units.

6.3. A right of initiative for energy consumers

43. It follows from the foregoing paragraphs that, as a consequence of the energy transition, consumers are anticipated to play a more and more active role in system management, among other things, by participation in Demand Response Programmes. It is therefore important not only for the substance of regulation, but also for decision-making processes, to be adapted to these changing roles and relationships. Accordingly, they should have a strengthened voice in national and European administrative procedures for the determination of the tariffs and conditions for access to the energy system.[127] The energy directives and the new proposals of the Winter Package contain very few procedural provisions for the national authorities. This entails that the customers' right to participate vis-a-vis national regulatory authorities depends on national procedural rules, in accordance with the principle of national procedural autonomy.[128] In line with their new and active roles, for instance as prosumer or as a consumer participating in Demand response programmes, Member States should provide energy consumers with adequate opportunities for exerting influence in advance on the conditions established and the tariffs set for accessing the energy system. Building support for the substance of energy decisions can help prevent the need for lengthy and costly judicial proceedings after the fact. For instance, introduction of a right of initiative for organizations representing consumers in modification of energy codes regarding conditions and tariffs for use of the energy system, would substantially strengthen the voice of these organizations in energy regulatory decisions.[129] With a right of initiative, representative organizations could counter the current procedural imbalance in national and EU procedures, in which only the system operators may submit proposals for (modifications of) the codes and the European Commission or national authorities make the decision.[130] The anchoring of a right of initiative in national legislation is highly recommended for the purpose of ensuring adequate legal protection and consumer empowerment for energy consumers. This would be consistent with the developments towards a Smart Energy System in which an active role of consumers is foreseen.

[126] CEER (n 104) supra, pp. 23.

[127] Lavrijssen (n 11) supra.

[128] See for an explanation of this principle, Lavrijssen, S. 'More intensive judicial review in competition law and economic regulation in the Netherlands' (2009), in O. Essens, A. Gerbrandy and S. Lavrijssen (eds.), National Courts and the Standard of Review in Competition Law and Economic Regulation, Groningen, Europa Law Publishing, p. 175.

[129] Consultation report STROOM, (2014) < https://www.internetconsultatie.nl/stroom> accessed 25 March 2017. pp. 25

[130] *Kamerstukken II 2014/15, 34 199, nr.* 7, pp. 10–11. See also Lavrijssen (n11) supra.

7. Conclusion

44. The Winter Package aims to restore the regulatory disconnection between the legal framework regulating the energy market and the technological and economic developments in this market, in which consumers increasingly play an active role in keeping the energy system safe, secure, sustainable and affordable. The Winter Package underlines the development towards a Smart Energy System by delineating new roles and responsibilities, by abolishing the legal barriers frustrating an active role of the energy consumers and by enhancing consumer protection and consumer empowerment by clarifying and expanding their specific rights for active participation in the energy market.

45. As the basic lines of the proposals provide a scenario for the future regulation of the energy market, important steps are taken. The extent to which the consumer will really be empowered to take part in the energy market to a large extent depends on several legal and economic factors. First, agreeing on (the details) of the Package will take place through a long lasting political negotiating process, relating, for instance, to the role of the DSOs, the relationship between DSOs and TSOs, the regional cooperation between TSOs, the design of capacity mechanisms and the harmonization of tariff regulation, and may still take several years. So Member States and regulators are stimulated not to await the outcome of the political process, but to do what is necessary and possible to facilitate the energy transition and the activation of the consumers.

46. Secondly, as discussed, EU Member States still have considerable leeway to implement basic provisions of the future energy market and to specify the basic principles according to the legal and economic conditions of the regions in which DSOs and consumers operate, which may vary across Member States. As was illustrated by discussing the different options for the design of tariff methods, these choices involve the weighing of different, sometimes conflicting principles, such as the interest of cost reflectiveness and simplicity.

47. Furthermore, there is still quite some uncertainty regarding the speed of the transition towards a Smart Energy System and the behaviour of the energy consumers in this transition, which may not always be rational or energy efficient from the consumers' perspective. Energy contracts, such as demand response contracts, become more complex, and there will be a greater variety of contracts with different types of (eg. dynamic) retail prices. This creates a greater risk for consumers making wrong decisions in decision-making processes regarding energy (service) contracts. Therefore, care should be taken that newly generated information by technological possibilities such as smart meters is presented in a transparent, user friendly and sufficient way to the energy consumers enabling them to verify, personalize and trust the relevant information. Otherwise, there is a true risk that consumers do not make use of the possibilities for consumer empowerment offered by technological innovations such as smart meters and smart services.

48. Another important question is what will be the number of consumers participating in local energy communities and in what way. If these communities will take over some of the DSOs' system operation tasks and may go off grid, the DSOs' legal and natural monopolies may erode because of the development of private community networks. This will in turn raise the question whether it will still be justified to regulate access to the distribution systems by setting the tariff methods and/or tariffs as it is foreseen by the current proposals. Or is it justified to abolish ex ante tariff regulation as there may be more alternatives for consumers to access to energy networks? In the latter case there will

be a growing role for the application of general competition law by the national competition authorities dealing with possible market distortions and abuses of market power in an ex post way.

49. Considering the uncertainty of technological, economic and behavioural developments, the EU legal framework and the national laws should not set the market design in stone. This entails that national regulatory authorities will have to be attributed sufficient leeway to assess the necessity and proportionality of the required level of consumer empowerment and ex ante access regulation. National regulatory authorities should have the power to adjust regulation to the technological and economic conditions of the markets in which consumers, local energy communities, distribution system operators and other market parties operate. In case competition flourishes and consumers have sufficient alternatives in the energy (services) market and for accessing the energy system, the role of ex ante access regulation and specific consumer protection provisions probably diminish and the role of general consumer protection law and of competition law should grow for dealing with market distortions that may harm consumers.