

Prosumers

In what ways does the Norwegian regulation of prosumers correspond to the current and future EU/EEA regulation and how can the Norwegian rules eventually be improved in order to promote prosumers?

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*“As to the future,
the task is not to foresee it,
but to enable it.”*
Antoine de Saint-Exupéry

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ABBREVIATIONS

ACER	The European Agency for the Cooperation of Energy Regulators
CEP	The Clean Energy for All Europeans Package
CJEU	Court of Justice of the European Union
EEA	European Economic Area
EFTA	European Free Trade Association
EU	The European Union
DSO	Distribution System Operator
NVE	The Norwegian Directorate of Waterfall and Energy
PV	Photovoltaic
RES	Renewable Energy Sources
TEP	Third Energy Package
TPA	Third Party Access
TSO	Transmission System Operator

1. INTRODUCTION

This thesis deals with one of the most important developments in electricity markets in the last few decades: the rise of prosumers and their regulation in Norwegian, European Union (EU) and European Economic Area (EEA) law. In Norway it was first in 2010 that customers were legally allowed to become prosumers.¹ Since then, there has been rapid development. In 2018 there were 2204 prosumers in Norway and the number is constantly increasing.² Also, in the last ten years, legislation on prosumers in EU/ EEA law has flourished. This legislation has further affected the development of national Norwegian law. Besides, there are new EU/ EEA legislations coming up which will continue the on-going process of developing the prosumer legislation. This thesis seeks to examine the relevant law of the Third Energy Package (TEP), which the Norwegian legislation is built upon. Further, the thesis will compare this current legislation to the newest EU legislation, the Clean Energy Package (CEP). This is relevant, seeing as the content of this package will most likely become the base of the future Norwegian legislation on the subject.

Through such analysis I have adopted the following research question, guiding the content and structure of this thesis:

‘In what ways does the Norwegian regulation of prosumers correspond to the current and future EU/EEA regulation and how can the Norwegian rules eventually be improved in order to promote prosumers?’

In order to answer this question, I will consider legal definitions of prosumers and their rights and obligations as system users. I will look into their connectional, generational and contractual rights and their obligations to pay tariffs and to comply with technical requirements. I will start each discussion by looking into the TEP and then move on to the Norwegian legislation. Finally, I will compare these findings to the new provisions of the CEP.

1.1 WHAT IS A PROSUMER?

¹ NVE, 2010 and Inderberg, Tews and Turner (2018) p. 259.

² EnergiNorge (2019) website.

An energy prosumer is an energy customer that both consumes and produces energy.³ Empowering of energy customers, for instance by allowing them to be prosumers, enables them to be more in control of their choices when it comes to energy. For businesses, this means they have to strive to be even more innovative and competitive. For citizens, this means better information and possibilities to be active in the energy market and more in control of their energy costs.⁴

Decentralised energy generation⁵ using renewable energy sources (RES)⁶ enables customers to become prosumers. By doing so they can reduce their energy bills⁷ and contribute to energy efficiency and energy security. Decentralised renewable energy generation is thus a useful tool to complement centralised generation sources. So, ‘where self-consumption exhibits a good match between production and load, it can help reducing grid losses and congestion (...).’⁸ It can also help save network costs in the long-term that would otherwise have to be paid by consumers.⁹

1.2 RELEVANCE OF THE TOPIC

1.2.1 BRIEF HISTORICAL OVERVIEW

The thesis question is relevant as the roles of customers are changing. Historically, energy production has been national monopolies ruled by vertically integrated companies, often publicly owned. These companies have most often had large centralised plants, producing energy from fossil fuel.¹⁰ At the time, electricity customers were only considered to be passive receivers of electricity.¹¹

³ E-Directive 2019 Article 2 (8).

⁴ COM (2016) 860 final p. 10.

⁵ Distributed generation is defined in the E-Directive 2019 Article 2 (32) as ‘generating installations connected to the distribution system’. Prosumers are distributed generators, as their generating installations are connected to the distribution system.

⁶ Renewable energy is defined in the E-Directive 2019 Article 2 (31) as ‘energy from renewable non-fossil sources, namely wind, solar (solar thermal and solar photovoltaic) and geothermal energy, ambient energy, tide, wave and other ocean energy, hydropower, biomass, landfill gas, sewage treatment gas and biogas’.

⁷ COM (2015) 339 final, p. 6.

⁸ Ibid.

⁹ Ibid.

¹⁰ E-Regulation 2019 Recital 2.

¹¹ E-Regulation 2019 Recital (7).

The liberalisation of the European energy markets started in the 1990s when the European Community decided to open up gas and electricity markets to competition and to create an integrated European energy market.¹²

The liberalisation process has come through various energy packages.¹³ The First Energy Package for electricity is from 1996 and focused on the larger producers third party access (hereafter TPA) to the energy infrastructure.¹⁴ It also had some focus on power consumption by end consumers to be accounted at the open market. The main aim of the package was to create a level playing field for energy producers and other market actors¹⁵, but prosumers were not included. Following was the Second Energy Package from 2003, which had little focus on end consumers. Instead, it focused on the unbundling of energy companies, TPA and monitoring of energy networks.¹⁶

The Third Energy Package is from 2009 and has some focus on end consumers. As stated in the E-Directive 2009 ‘[c]onsumer interest should be at the heart of this Directive (...)’.¹⁷ However, the main focus of the TEP is effective unbundling, better conditions for access to the network for cross-border exchanges of electricity and rules for the establishment of ACER, as the first European body regulating the EU energy market.¹⁸ None of the first three energy packages contains a definition of prosumers as both producers and consumers of energy. In comparison, this has changed with the newest energy package, the CEP from 2018/2019. The three main goals of the CEP are: putting energy efficiency first; achieving global leadership in renewable energies; and providing a fair deal for consumers.¹⁹ This package does to a large extent focus on end consumers generally and prosumers specifically. Essentially, the seed sown with the earlier energy packages of reaching the goal of an internal electricity market grows with the CEP. At the same time, the objectives are extended to also include the objectives of being ‘consumer-oriented’ and ‘flexible’.²⁰ The importance of

¹² Block and Saitova (2017) p. 257.

¹³ The EU’s energy legislation was first based on general articles not specifically related to energy. Yet in 2008, TFEU Article 194 was adopted. This article explicitly makes energy a shared competence between the EU and the Member States.

¹⁴ E-Directive 1996 Articles 17-19.

¹⁵ E-Directive 1996 Recital 12.

¹⁶ See for example E-Directive 2003 Articles 10, 15, 19, 20 and 25.

¹⁷ E-Directive 2009 Recital 51.

¹⁸ See the E-Directive 2009 Articles 9, 26, the E-Regulation 2009 and the ACER-regulation 2009.

¹⁹ COM (2016) 860 final, document 1, p. 3.

²⁰ E-Directive 2019 Article 1.

consumer participation is further underlined in Article 3 (1), which states that ‘Member States shall ensure that their national law does not unduly hamper (...) consumer participation (...)’.

1.2.2 ABOUT THE FUTURE

The liberalising of the markets²¹, the massively improved information²² and the roll-out of intelligent metering systems²³ (also called smart meters), have empowered and enlightened numerous energy customers.²⁴ This means that the main objective today is to make energy customers *active* users of electricity.

Today, most of the world’s energy demand is met by fossil sources²⁵ and the future energy demand is expected to rise.²⁶ Fortunately, most countries understand that the world must make a change in its energy use and take action to be able to meet this growing energy demand in a sustainable way.

This is also a major concern of the EU. As stated by the European Parliament and the Council of the EU: ‘the Union’s energy system (...) in the middle of its most profound change in decades and the electricity market is at the heart of that change’. Further: ‘The common goal of decarbonising the energy system creates new opportunities and challenges for market participants. At the same time, technological developments allow for new forms of consumer participation and cross-border cooperation’.²⁷

The EU further notes that the future electricity system should make use of all available sources of flexibility and innovative technologies in order to integrate the growing share of renewable energy.²⁸

Increases in energy efficiency and in renewable energy are two of the main goals in the energy field for the European Union. For 2020 the goal is a 20 % cut in greenhouse gas

²¹ As described in 1.2.1.

²² E-Directive 2009 Annex I (i), Article 3 (16) and Annex I (a).

²³ E-Directive 2009 Annex 1 (2).

²⁴ Smart metering system is defined in the E-Directive 2019 Article 2 (23): ‘an electronic information system that is capable of measuring electricity fed into the grid or electricity consumed from the grid, providing more information than a conventional meter, and that is capable of transmitting and receiving data for information, monitoring and control purposes, using a form of electronic communication.’

²⁵ IEA (2019) table for global electricity generation mix by scenario 2018.

²⁶ IEA (2019) table for electricity demand by sector and scenario, 2018-2040.

²⁷ E-Regulation 2019/943 Recital 3.

²⁸ E-Regulation 2019 Recital 7.

emissions (from 1990 levels), 20 % of EU energy from renewables and 20 % improvement in energy efficiency.²⁹

For 2030 the goals are increased to at least 40 % cut in greenhouse gas emissions (from 1990 levels), at least 32 % of energy from renewables and at least a 32,5 % improvement in energy efficiency.³⁰

Distributed energy generation using RES in combination with energy efficiency³¹ is key for achieving these goals. Here active customers generally and prosumers specifically play a leading role, as the shift from being passive customers to becoming active prosumers maximise a variety of economic, environmental and operational benefits in form of micro-generation, demand reduction, demand response, data management and energy storage.³²

1.3 RESEARCH QUESTION AND LIMITATIONS

The research question sounds as follows: *‘In what ways does the Norwegian regulation of prosumers correspond to the current and future EU/EEA regulation and how can the Norwegian rules eventually be improved in order to promote prosumers?’*

Thus, the main focus of the thesis is to explore the current and possible future legislation on prosumers, encompassing definitions, rights and obligations.

Prosumers can act either individually or together with others, through energy communities³³³⁴ or aggregation³⁵. The obvious advantage of acting collectively is the ability to act more

²⁹ The European Union, 2020 Climate & Energy Package.

³⁰ The European Union, 2030 Climate & Energy Framework.

³¹ Energy efficiency is defined in the E-Directive 2019 Article 2 (30) as ‘the ratio of output of performance, service, goods or energy, to input of energy’. Easier said: energy efficiency is simply to use less energy to perform the same task (definition from the Environmental and Energy Institute (website)).

³² Espe, Potdar and Chang (2018) p. 4.

³³ Defined in the E-Directive 2019 Article 2 (11) letter a to c as ‘a legal entity that: is based on voluntary and open participation and is effectively controlled by members or shareholders (...); has for its primary purpose to provide environmental, economic or social community benefits to its members or shareholders or to the local areas where it operates rather than to generate financial profits; and may engage in generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provide other energy services to its members or shareholders’.

³⁴ For more information about energy communities see Espe, Potdar and Chang (2018).

efficiently and to be more reliable in providing sustainable energy supply.³⁶ Still, the main focus of the thesis is prosumers operating individually. Despite this, the thesis is relevant for all forms of prosumers as the basic rules for prosumers are the same. However, there are some specific rules for aggregation³⁷ and citizen energy communities³⁸. These specific rules will not be considered in the following.

Prosumers' production of energy is often combined with participating in demand response programmes. The point of demand response is to reduce and/ or shift the time of the energy use in response to market signals, like the amount of energy available on the grid.³⁹ This thesis does not cover demand response.

The thesis is also delimited to other energy carriers than electricity. This implies that gas will not be covered by the thesis.

In addition, the thesis will not look further into the advantages or disadvantages of the different energy sources. Nor will it look further into the economic or environmental issues that can arise *after* the generation installation has been taken into use.⁴⁰

³⁵ Defined in the E-Directive Article 2 (18) as 'a function performed by a natural or legal person who combines multiple customer loads or generated electricity for sale, purchase or auction in any electricity market'.

³⁶ Espe, Potdar and Chang (2018) p. 5.

³⁷ See for example the E-Directive 2019 Article 13 and 17.

³⁸ See for example the E-Directive 2019 Article 16.

³⁹ E-Directive Article 2 (20).

⁴⁰ See for instance Lesniewska (2017) p. 460-468.

2. METHODOLOGY

2.1 GENERALLY ABOUT THE METHODOLOGY

The aim of the thesis is to clarify *the Norwegian regulation of prosumers*. As the relevant terms and figures applicable in the thesis are defined in both EU/ EEA law and Norwegian law, this thesis will use both national and supranational sources of law to clarify the extent of the rules that apply to prosumers. The EU/ EEA rules will also be applied in order to investigate whether there are any differences between the rules of national and supranational law respectively in the regulation of prosumers.

The methodological starting point is that the Norwegian legal system is built upon the dualism principle.⁴¹ This means that the national legal system and the international legal system are seen as two separate legal systems operating in different fields. This can be viewed in contrast to the monism principle that sees the national and international legal systems as parts of a bigger, united system. The consequence of having a dualistic legal system is that the rules of international law cannot be applied directly, but have to be implemented into national law before they can be applied.

The legislation process of the EEA cooperation is performed through a framework with a two-pillar structure. The first pillar is made up of the Member States of the European Free Trade Association (EFTA) and the second pillar of the EU. Those two pillars have representatives that meet in the EEA institutions where the law-making progress happens.⁴² This is where the EU law integrates into the EEA. Later, this becomes Norwegian law through incorporation or transformation. Because of this, it is only the implemented EU/ EEA rules that can be applied in Norwegian law.

The current Norwegian regulation on electricity is to a large extent built upon the EU's TEP from 2009⁴³ and previous electricity packages. The main parts of the TEP package were incorporated into Norwegian law in 2019.⁴⁴ In Norwegian legislation, the production of

⁴¹ Arnesen and Stenvik (2015) p. 52.

⁴² See more about this at EFTA, EEA Institutions (website).

⁴³ Innst. 175 L (2017-2018), p. 1.

⁴⁴ See Prop. 4 S (2017-2018) p. 29.

electricity is primarily regulated in the Energy Act and the regulations related to it.⁴⁵

As the new rules contained in the CEP are marked as ‘EEA relevant’, the content of those rules is highly relevant for the future regulation of active customers.

The EU’s legislative competences can be split into three.⁴⁶ The first is the exclusive competence.⁴⁷ The second is the shared competence.⁴⁸ The third is the supporting competence.⁴⁹ The energy area is placed in the category of shared competence⁵⁰, meaning that the EU and the Member States share the competence within this area. That means that both the EU and the Member States are able to legislate and adopt legally binding acts and that Member States exercise their own competence where the EU does not.⁵¹ The EEA-agreement is the framework for the Norwegian and EU energy cooperation.⁵²

The EEA-agreement enlarges one part of the EU – the internal market – to the Member States of the EFTA, hereunder Norway. The EEA-agreement is dynamic and develops continuously corresponding to the EU-agreement.⁵³

Each part of the thesis will start by introducing the EU/ EEA regulation of the TEP. Thereafter the thesis will investigate the current Norwegian regulation of the respective theme. These two steps are *de lege lata* considerations. Third, the thesis will look at the EU/ EEA regulation of the CEP. Regarding this the author will use a comparative method, contemplating the (possible) future Norwegian regulation of the themes based on the rules contained in the CEP. This will be a *de lege ferenda* consideration.

2.2 THE INTERPRETATION PROCESS

When interpreting national law that derives from EU/ EEA-law a two-staged process has to be followed.⁵⁴ The first step is the interpretation of the EU/EEA law. The second step is the

⁴⁵ It follows from the Energy Act Section 1-1 that the act applies to the ‘generation, conversion, transmission, trading and distribution of energy.’.

⁴⁶ Stemsrud (2015) pp. 20-21.

⁴⁷ See TFEU Article 3.

⁴⁸ See TFEU Article 4.

⁴⁹ See TFEU Article 6.

⁵⁰ See TFEU Article 4 (2) letter i and TFEU Article 194 (1)

⁵¹ European Union, Division of competences within the European Union.

⁵² See the EEA-agreement Article 24, Attachment IV contains the particular rules for energy.

⁵³ Stemsrud (2015) p. 5.

interpretation of the Norwegian law in light of the EU/ EEA law. In order to find the currently applicable law, it is important to do these two steps in this specific order.⁵⁵

2.2.1 EU AND EEA LEGAL METHOD

The first step of the interpretation process is to identify and interpret the supranational (EU/EEA) law to find the EU-/EEA-rule. This interpretation must be done in accordance with the method used by the Member States' courts when interpreting EU/EEA law.⁵⁶

The sources of the EU law can be divided in two ways. The first division is between primary law and secondary law.⁵⁷ Primary law is the treaties. Secondary law is the principles and objectives of the treaties, as they are regulated in regulations, directives, decisions, recommendations and opinions. The second division is between hard law and soft law. Hard law means that the law has a binding force and consists of regulations, directives and decisions.⁵⁸ Soft law means that the law does not have binding force and consists of recommendations and opinions.⁵⁹

The starting point of the interpretation is always the wording. Further, the legal practitioner has to look into the objective purpose of the law, as it can be derived from its preamble, system and context. Then the preparatory work will be considered. Generally, preparatory work plays a minor role in the interpretation of the agreements. But as for the interpretation of secondary legislation, they are of higher importance.⁶⁰ If there are any relevant judgements, they are of significant importance. As for other types of legal practices, like the practice of other EU organs, their importance varies.⁶¹

In the judgement CILFIT⁶² the Court of Justice of the European Union (hereafter the CJEU) placed the following three principles for the Member States national courts to follow for their legal application when applying EU-rules.⁶³ The first principle is the harmonisation of all

⁵⁴ Arnesen and Stenvik (2015) p. 18.

⁵⁵ Arnesen and Stenvik (2015) p. 71 and pp. 72-73.

⁵⁶ Arnesen and Stenvik (2015) p. 56.

⁵⁷ The European Union, types of EU law (website).

⁵⁸ TFEU Article 288.

⁵⁹ TFEU Article 288.

⁶⁰ Arnesen and Stenvik (2015) p. 37.

⁶¹ Arnesen and Stenvik (2015) p. 93.

⁶² Judgement of the Court of 6 October 1982. Case 283/81.

⁶³ Stemsrud (2015) p. 106.

authentic translations. The second principle is the EU-autonomy, meaning that the EU has its own neutral meta-language, which implies that the conceptual meaning of the terms in EU-law *might* differ from the conceptual meaning of the same term in national law. This signifies that the terms must be read and understood in light of the EU's premises, and *not* in light of the Member States' national tradition or history. The third principle is that the sources of law must be interpreted in light of their object and purpose. As the CJEU has explained: 'Every provision of the Community must be placed in its context and interpreted in the light of the provisions of Community law as a whole, regard being had to the objectives thereof and its state of evolution at the date on which the provision in question is to be applied'.⁶⁴

Additional principles to be applied in the interpretation are⁶⁵: the principle of effectiveness; the principle of EU presumption; the principle of homogeneity; and the principle of the Member States' liability. The first principle is that national law shall be interpreted in a way that makes the EU/ EEA-law function effectively in national law.⁶⁶ The second principle is that national law, as far as possible, shall be presumed to be in accordance with the EU/EEA-rules. The third principle has the following three consequences:⁶⁷ first, the EEA-rules shall be interpreted in the same way in the entire EEA-area; second, the EEA-rules shall be interpreted in the same way as the corresponding EU-rules; third, the EEA-rules shall be applied and enforced in the same way as the corresponding EU-rules. The fourth principle is that the Member States can be held financially responsible for breaches of EU/ EEA law – for instance, if the law is not implemented rightfully. All of the abovementioned principles can be seen as manifestations of the overarching principle of effectiveness.

2.2.2 NORWEGIAN LEGAL METHOD

The second step in the interpretation process is to identify and interpret Norwegian national law in light of the EU/EEA-rule in order to find the national rule to be applied. This must be done following the Norwegian judicial method and the Norwegian rules of principles of interpretation. At this step the legal practitioner will have to coordinate the EU/EEA-rule and the national rule in order to find the final governing law. If the rules cannot be coordinated, a

⁶⁴ CILFIT (1982), paragraph 20, p. 3430.

⁶⁵ Arnesen and Stenvik (2015) P. 58.

⁶⁶ Ibid pp. 57-59.

⁶⁷ Sejersted, Arnesen, Rognstad and Kolstad (2018) p. 255.

conflict has emerged. In that case, the conflict has to be solved by using that are to be applied in case of conflict.

As the Norwegian legislation of the provisions contained in the Third Energy Package serve to fulfil Norway's obligations under the EEA-agreement, the provisions have to be interpreted in accordance with the EU/ EEA-rules, as stated in the first voting judge's statement in Rt. 2006 s. 71.⁶⁸

At this point the ordinary Norwegian judicial method is to be applied. The common Norwegian method, as it is expressed by Eckhoff⁶⁹, divides the sources of law into seven different types: acts, preparatory works, judgements, legal practices of the authorities, legal practices of privates, conceptions of justice (mainly as they are expressed in legal literature) and considerations of reasonableness.

Despite the fact that the Norwegian legal method is to be applied, there are some special considerations that have to be kept in mind when interpreting national law that originates from EU-/EEA-law. First it is important to notice that statements in the preparatory works should be applied carefully if they do not reflect the *current* EU/EEA law.⁷⁰ The same applies to previous national judgements/ precedents. Second, it is not just Norwegian judgements that are relevant. Case law from the CJEU and the EFTA-court are also of great importance.⁷¹

2.3 ADDITIONAL INFORMATION ABOUT THE METHODOLOGY

As the entire thesis is written in English, it has been necessary to translate the Norwegian sources of law. The Royal Ministry of Petroleum and Energy has published an unofficial translation of the Energy Act for information only.⁷² This translation will be applied in the thesis. Regarding other Norwegian sources of law there are no published translations. Consequently, the author has carried out the translations of other Norwegian sources of law.

⁶⁸ Arnesen and Stenvik (2015) p. 67.

⁶⁹ Eckhoff and Arnesen (2001) p. 23.

⁷⁰ Arnesen and Stenvik (2015) p. 112.

⁷¹ See the EEA-agreement Article 6 and the ODA-agreement Article 3.

⁷² Royal Ministry of Petroleum and Energy, Acts relating to the energy and water resources sector in Norway (unofficial translation).

3. DEFINING AND ANALYSING THE CONCEPT OF PROSUMERS

The main distinctive feature of prosumers is the combination of both producing and consuming energy, but the concept of prosumers can be defined and explained in several ways. Thus, the problem for discussion is whether the *definitions* of customers that produce (parts of) their own energy in Norwegian and EU/ EEA law differ. And if this question is answered in the affirmative, what are the differences?

3.1 PROSUMERS IN THE TEP AND NORWAY

In the E-Directive 2009, the concept ‘producer’ is defined as ‘a natural or legal person generating electricity’⁷³ and the concept ‘final customer’ as ‘a customer purchasing electricity for his own use’.⁷⁴ Thus, the two aspects of the concept are separately defined, with the result that the TEP does not contain a specific word for a coupling of those terms.

In comparison, Norway adopted a definition of prosumers in 2017. In Norwegian law, the term ‘plus customers’ is used for final customers that produce their own electricity. A ‘plus customer’ is defined as follows: ‘a final customer with consumption and generation behind access point, with input power to the access point that at no time exceeds 100 kW. A plus customer cannot have a concession duty construction behind his access point or trade behind access point that demands trade concession’.⁷⁵

This definition marks the distinctive quality of the concept of plus customers; namely that they both produce *and* consume electricity. However, as this definition states that the final customers ‘input power to the access point (...) at no time [must] exceed(s) 100 kW’, the definition also creates a division line between ordinary larger producers of energy and plus customers as smaller distributed generators. Hence, the Norwegian regulation is very specific, as it both defines the concept and contains the concept’s precise limitations.

⁷³ See Article 2 (2).

⁷⁴ See Article 2 (9).

⁷⁵ See the Control Regulation Article 1-3 (4).

Because of the limitation on 100 kW, the plus customer will, if he by mistake feeds in more than 100 kW, no longer be characterized as a 'plus customer'. If that happens, the customer will have to follow the same rules as ordinary producers of electricity.

The reason for the borderline at 100 kW is to mark the distinction between smaller generators, often households, that do not need to hold a trade licence and large professional generators of energy that needs to hold a trade licence. Plus customers are exempted from most of the obligations that apply to larger generators.⁷⁶

Prosumers that generate energy close to the limit of 100 kW must therefore choose if they want to produce more energy and follow the ordinary generation rules, or limit their production so they can follow the rules for plus customers. In the latter case, the plus customer can install equipment that hinders more electricity than the maximum amount of 100 kW to be fed into the grid.⁷⁷

3.2 PROSUMERS IN THE CEP

In the CEP the term 'active customer' is defined as 'a final customer, or a group of jointly acting final customers, who consume or store electricity generated within its premises located within confined boundaries, or, where permitted by a Member State, within other premises, or who sells self-generated electricity or participates in flexibility or energy efficiency schemes, provided that those activities do not constitute its primary commercial or professional activity'.⁷⁸ In other words: an active customer is a customer that in some way or another participates actively in the electricity market. This is active customers generally, and includes prosumers specifically.

As a 'final customer' is defined as a 'final customer who purchases electricity for own use'⁷⁹, the term 'active customer' now includes both producing and consuming electricity (both purchased and self-generated). Thus, progress has been made from the TEP to the CEP, as the CEP now includes a definition of the prosumer concept.

⁷⁶ As balance responsibility and the obligation to pay the fixed level tariff, see point 5.

⁷⁷ Recommended solution at Agder Energi's website.

⁷⁸ See the E-Directive 2019 Article 2 (8).

⁷⁹ See the E-Directive 2019 Article 2 (3).

The CEP definition differentiates from the definition in Norwegian law, as the first is a wide definition that covers different forms of active participation in the energy market. The latter is a more specific definition, especially relevant for self-generating electricity, which also provides the specific information on the limits of the prosumer arrangement.

As the Norwegian definition of the concept both contains an explanation of the fundamental characteristics of prosumers in the first part and a limitation in the second part, at least the first part of the definition will be considered in accordance with the CEP's definition. The question is whether it will be considered in accordance with that definition to limit the concept of 'prosumers' to licence rules and a specific effect and quantity of energy fed into the grid.

The definition contained in the CEP is reserved for customers that *do not* have those activities as their 'primary commercial or professional activity'. What constitutes as a 'primary commercial or professional activity' is not clarified in the directive. Hence, it is up to the Member States to define this in detail. The Norwegian rules on prosumers mark the distinction of having production of electricity seeing as the primary commercial or professional activity as a specified quantity and effect of 100 kW, and on the possibility to hold licences. Thus the Norwegian definition of prosumers similarly to the CEP marks the difference between professional producers and prosumers. Because of this, the Norwegian definition is presumed to be in accordance with the definition in the CEP.

3.3 HOW LOGIC IS THE WORD 'PLUS CUSTOMER'?

The analysis of the concept of prosumers shows that there are differences in the definitions of prosumers in EU/ EEA law and Norwegian law respectively, but those differences do not have a significant practical impact. The meaning of the three terms mentioned above is the same.

Still, it can be questioned how logic the word used in the Norwegian law is. The confusion arises, as the Norwegian word for powerhouses is 'plus houses'.⁸⁰ Plus houses are houses designed to produce more energy than they consume during their lifecycle.⁸¹ This indicates that plus customers are customers that produce more energy than they use. This does not align

⁸⁰ See the experiences of prosumers communicated in the study by Winther, Westskog and Sæle (2018) p. 90.

⁸¹ ZERO (2009) p. 6.

well with the fact that most prosumers in Norway by and large do *not* produce more energy than they consume, in fact quite the opposite, as they also have to import energy from the grid. Thus, the word ‘plus customer’ is not self-explanatory and gives associations to a phenomenon that does not align well with reality (at least not reality as we know it now).

So what are the alternatives? In other areas than the legislative, a popular word to name the concept is ‘prosumer’. This term originates from the book ‘The Third Wave’ by Alvin Toffler. In this book Toffler defines prosumption as the combination of production and consumption, where the distinction between these two functions are blurred. Since the books publication, the term has been popularized and is used in both academic and everyday language to describe the phenomenon.

A better word could therefore with advantage have been used in the Norwegian legislation. A suggestion is the word ‘prosument’, as this word aligns well with the English word ‘prosumer’ and is therefore familiar to many and a word that can be easily used in everyday language. This is also the word used by Norwegian researchers.⁸²

The conclusion is that the word ‘plus customer’ is not that logical. Thus, in the following parts of the thesis, the word ‘prosumer’ will be used.

⁸² See as an example CenSES (website).

4. RIGHTS AS A SYSTEM USER

In order to meet the growing energy demand in a sustainable way, we must make some changes in our energy use and production. This is where prosumers can contribute by providing renewable energy supply, distributed locally, hence increasing energy production and at the same time reducing energy losses. This means that it is desirable to attract more customers to become prosumers.

However, to change behavioural patterns can be tough and that is why it is key to understand prosumers' energy behaviour profiles, their organization activities and motivations when managing prosumers.⁸³

What influence the transformation from passive customers to prosumers are new technologies (as smart meters, smart grids, smart appliances and energy displays), implementation of cost-efficient energy-saving measures, financial support (as government incentive schemes to encourage participation in the energy system) and influence (as a strong public stance to improve to reduce the negative environmental effects of the energy use).⁸⁴ What is important is that these factors must be used in order to make it easy and attractive to become a prosumer.

As system users, prosumers have rights and obligations according to the energy legislation.⁸⁵ They can also have additional rights or obligations according to their contracts with the power company and/ or network company.

4.1 APPLICABLE CONNECTION RULES

In order for the prosumer to be able to feed electricity and/ or extract electricity from the grid, the prosumer must be connected to the network. In most cases, the prosumer will already be a customer connected to the network. However, if the prosumer is not already connected, the question is what right do they have to become connected?

⁸³ Espe, Potdar and Chang (2018) – but they write about energy communities here. My point is slightly different, as I think of how to manage and motivate prosumers in general.

⁸⁴ Espe, Potdar and Chang (2018) p. 34.

⁸⁵ See for example the explicit statement of the Commission in COM (2016) 861, final 2, pp. 4-5.

4.1.1. TEP

According to the 2009 E-Directive Article 3 (3) first sentence, Member States shall impose on distribution companies an obligation to *connect* customers to their network under terms, conditions and tariffs set in accordance with the procedure laid down in Article 37 (6). This article gives *customers* the right to be connected to the network. The DSOs can in some circumstances demand a tariff for connection to the network, and this will be investigated further below.⁸⁶

For production Member States' obligation to ensure TPA to the distribution systems must in line with the E-Directive 2009 Article 32 (1) be 'based on published tariffs, applicable to all eligible customers and applied objectively and without discrimination between system users'. Also, those tariffs have to be approved and published prior to their entry into force.⁸⁷ The DSO can only refuse access where it lacks the necessary capacity.⁸⁸ Also, the E-Directive Article 16 (2) has rules on guaranteed or priority access to the network.⁸⁹

The TEP thus gives prosumer a right to be connected to the network, both as a customer and as a producer.

4.1.2 NORWAY

The Norwegian connection rules are given in the Energy Act Chapter 3. Section 3-3 regulates mandatory delivery, Section 3-4 regulates mandatory connection for customers that use electricity and Section 3-4a regulates mandatory connection for customers that feed electricity into the grid. The Energy Act Section 3-4a first paragraph states that 'everyone who has a licence for network installations, have a duty to connect new installations for generation of electrical energy and if necessary, to invest in new network installations'. An interpretation based on the wording indicates that all new installations of a generation of electricity have a right to be connected to the network, as long as they fulfil the connectional obligations.

⁸⁶ See point 5.1.

⁸⁷ E-Directive 2009 Article 32 first paragraph.

⁸⁸ E-Directive 2009 Article 32 second paragraph.

⁸⁹ See point 4.2.1.1

However, an exemption is given in the second section, where it states that the ministry can give exemptions from the duty to connect and invest in new network installations if the measure is considered to be irrational for society.

As recent amending legislations have been made because of the political focus on the promotion of renewable energy, like the distributed generation of solar and wind power, it is clear that investments in distributed generation by prosumers will be considered rational for society.⁹⁰ This understanding is strengthened by the legislator's argument that energy produced from RES needs to be easily connected to the distribution networks.⁹¹

In addition, when the TEP was incorporated into Norwegian Law, the Ministry expressed that the connection duties in the Energy Act chapter 3 apply to all customers, including prosumers who feed-in/ deliver surplus power to the network.⁹² This means that a prosumer has a legal right to be connected to the network, presupposed that he fulfils all the technical preconditions and pays the tariffs. The technical requirements and the tariffs are reviewed below.⁹³ At this point, it is important to take notice of the fact that the connection duty does not necessarily mean that the network company has to cover the expenses of the connection.⁹⁴ This will be discussed in more detail below.⁹⁵

The conclusion is that the Norwegian regulation gives all customers a right to be connected to the distribution system, presupposed that they fulfil all the technical preconditions and pay the necessary tariffs – and that the connection is considered rational for society.

This is in accordance with the TEP. The rules on priority or guaranteed access to the grid for electricity produced from RES as regulated in the TEP are fulfilled in Norwegian law as the Energy Act Section 3-4a gives all producers right to be connected to the network, presupposed that they fulfil the requirements mentioned above.

4.1.3 CEP

⁹⁰ Ot.prp. nr. 62 (2008-2009) p. 32

⁹¹ Ibid.

⁹² See Prop 5 L (2017-2018) p. 34.

⁹³ See points 5.1, 5.2 and 5.3.

⁹⁴ The Energy Act Section 3-4a must be seen in relation to the Control Regulation Articles 17-4 and 17-5.

⁹⁵ See point 5.1.

According to the E-Directive 2019 Article 6 (2), the DSO can only refuse access where it lacks the necessary capacity. Consequently, this section fully corresponds to the E-directive 2009 Article 32, and will in reality not result in any changes.

In conclusion, prosumers have a legal right to be connected to the network and there will not be any major changes in the applicable connection rules if the CEP becomes Norwegian law. Still, Norway has to make sure that increased attention is given to decentralised, renewable energy generation.

4.2 APPLICABLE GENERATION RULES

Prosumers both have to follow the ordinary rules for customers and the specific rules for prosumers.

The problem that is up for discussion is if the contents of the generation rules are applicable to prosumers and whether this current legal position will change with the new rules contained in the CEP.

The subject of generation has several subtopics, but in the following authorisation rules, trade and remunerations will be considered.

4.2.1 AUTHORISATION RULES

As underlined before, the network system must be constantly balanced. It is therefore necessary for those responsible for maintaining this balance, to keep track of who generates electricity, how much they generate etc. The starting point is therefore that all generators of energy need an authorisation that gives them the right to produce energy. This is a system that is necessary for the authorities to control the electricity network. The authorisation system gives those responsible for maintaining the balance the tools needed to keep a record of who is generating electricity at all times. The question is if prosumers have to hold an authorisation?

4.2.1.1 TEP

The E-Directive 2009 Chapter III is about generation. In line with Article 7 (1), Member States shall adopt an authorisation procedure. Member States have to lay down the criteria for

granting authorisations for the construction of generating capacity in their territory.⁹⁶ This selection procedure must be based upon objective, transparent and non-discriminatory criteria. When Member States are determining the specific criteria for the procedure, they have to consider several points as listed in the second paragraph a-k.

Whenever an undertaking meets the set criteria, it must be allowed to build and operate generation capacity.⁹⁷ The aim of using an authorisation procedure like this is to protect against discrimination. The principle of non-discrimination is an important principle of the EU that applies to all levels and areas.

Some of these criteria are land use and siting⁹⁸, the nature of the primary sources⁹⁹, the contribution of the generating capacity to meeting the overall Community targets for renewable energy¹⁰⁰ and the contribution of generating capacity in reducing emissions.¹⁰¹ These criteria are in favour of prosumers as decentralised, renewable energy generators.

Also, Member States shall in line with the E-Directive 2009 Article 7 (3) ensure that they have ‘specific authorisation procedures exist for small decentralised and/ or distributed generation, which consider their limited size and potential impact’.

Specific authorisation procedures to promote decentralised, renewable energy are an important contributor to decentralised, distributed generation and one of the necessary changes of adapting the economy and the public sector to renewable energy.¹⁰²

This is important, as authorisation procedures with criteria aiming for smaller distribution generations allow new market entrants to build and operate smaller electricity plants.¹⁰³ Prosumers are an important part of this group of smaller electricity plants.

Article 7 (3) reflects the legislator’s concern that small distribution generation must be promoted whenever possible. The reasoning behind this is that such plants often use RES and thus are positive in terms of greenhouse gas emissions.¹⁰⁴

⁹⁶ See the second paragraph.

⁹⁷ Jones (2010), p. 16.

⁹⁸ (d).

⁹⁹ (g).

¹⁰⁰ (j).

¹⁰¹ (k).

¹⁰² Lowe, P. (2010) p. 18.

¹⁰³ Jones (2010) p. 17.

¹⁰⁴ Jones (2010) p. 23.

Further, and in line with Recital 31, '[a]uthorisation procedures should not lead to an administrative burden disproportionate to the size and potential impact of electricity producers. Unduly lengthy authorisation procedures may constitute a barrier to access for new market entrants'.

Because of the difference in size and impact of the electricity generating installations, Member States must have 'simplified and less burdensome authorisation procedures' for smaller, decentralised generation.¹⁰⁵

In addition, the RES-Directive 2009 Article 16 (2) states that Member States shall ensure that TSOs and DSOs within their territories 'guarantee' the transmission and distribution of electricity produced from RES. Member States can also give 'priority access' to such production.

Guaranteed access aims at ensuring that all electricity obtains access to the grid, leading to the maximum possible use of electricity from RES. The stricter rule of priority access aims to ensure that the produced electricity will be sold and transmitted at all times, whenever the source becomes available.¹⁰⁶

The rules on guaranteed or priority access give producers of electricity from RES, hereunder prosumers, an advantage compared to producers of electricity using other sources of energy than RES.

However, the RES-Directive 2009 acknowledges that in some circumstances it is not possible to ensure distribution of electricity produced from RES at all times without affecting the safety of the network. Thus, this is the only acceptable exception for guaranteed/ priority access.¹⁰⁷ But even in such circumstances, the directive goes as far as to say that it may be appropriate to give financial compensation to generators producing electricity from RES.¹⁰⁸

As a result of these specific authorisation procedures, the authorisation rules in the TEP set prosumers in a position that makes it easier for them to get the necessary authorisations.¹⁰⁹

4.2.1.2 Norway

¹⁰⁵ RES-Directive 2009 Article 13 (1) f.

¹⁰⁶ RES-Directive 2009 Recital 60.

¹⁰⁷ RES-Directive 2009 Recital 61.

¹⁰⁸ RES-Directive 2009 Recital 62.

¹⁰⁹ For more in the topic of preferential treatment of RES, see Mäntysaari, Petri (2015) pp.445-458

In Norway, the main rules for building and operating electricity installations are given in the Energy Act chapter 3. According to Section 3-1 first paragraph first sentence ‘[i]nstallations for the generation, conversion and distribution of high voltage electrical energy, may not be built or operated without a licence.’ Further rules for applications are given in the Energy Act chapter 2.

An interpretation in accordance with the ordinary meaning of the words in Section 3-1 first paragraph gives the impression that all electricity constructions need concessions. Still, the second paragraph lays down a possible exception to the rule. According to this paragraph, ‘[t]he Ministry specifies how high the voltage for an electrical installation shall be in order for this provision [first paragraph] to be applicable’.

In addition, the Ministry can by regulation assess exceptions from the concession obligation or set more detailed limitations for constructions that do not need concessions.¹¹⁰ This is done in the Energy Regulation. According to the Energy Regulation Article 3-1 first paragraph, ‘electricity constructions with voltage less than 1000V AC and 1500V DC do not need concessions. An ordinary residential house has 230 V. Thus, presumably a prosumer will not exceed the given levels of 1000 V AC and 1500 V DC.’

Also, as a prosumer in line with the Control Regulation Article 1-3 (14) under any circumstance ‘*cannot have a concession duty construction behind his access point*’, the ordinary licencing rules are not applicable to them.

The conclusion is that prosumers based on the TEP and Norwegian legislation do not need ordinary concessions for generation of electricity. Instead, they can follow a simplified and streamlined authorisation procedure for decentralised, renewable electricity.

4.2.1.3 CEP

The next question is if this differs from the legal position in the CEP.

The E-Directive 2019 Article 8 regulates the authorisation procedure for new capacity. This article does mostly comply with the previous Article 7 in the E-Directive 2009. What is new is the added relevant criteria in second paragraph letter l: ‘the alternatives to the construction of new generating capacity, such as demand response solutions and energy storage’. This

¹¹⁰ Energy Act Section 3-1 second paragraph second sentence.

principle must be considered on the question of authorisation for generating capacity. This does in practice mean that alternatives leading to energy efficiency instead of increased generation are just as relevant. Alternatives such as these are therefore competing with new generating capacity as solutions of equal worth when it comes to meeting the energy demand.

In fact, those alternatives might even be favourable due to the fact that the energy efficiency principle is an important principle of the EU's Energy Policy.¹¹¹ This principle considers energy efficiency as being the first and best option for any energy problem, meaning that other tools should not be used unless using energy efficiency mechanisms cannot solve the problem.¹¹² This indicates that if already existing alternatives, like demand response and energy storage can solve the problem of energy demand, authorisations may not be given to the construction of new generating capacity.

Further, energy efficiency leads to energy saving. The empowering of customers represents some of the biggest possibilities for energy savings.¹¹³ As stated by the Commission: energy efficiency is the most universally available source of energy. It is in fact the cheapest and cleanest source of energy since it does not need to be produced or used.¹¹⁴ Energy saving through energy efficiency is consequently often referred to as the best way to deal with the impact of energy use on climate change, as well as increasing security of supply and reducing energy poverty.¹¹⁵ By 'the best way' the Commission means the most cost-effective and fastest way.

Thus, an alternative might be to combine prosumers decentralised renewable generation with their participation in demand response programmes.

Specific authorisation procedures for small decentralised and/ or distributed generation is regulated in the E-Directive 2019 Article 8 (3). This paragraph fully corresponds to the similar article in TEP and should not lead to any changes.

In conclusion, it is unlikely that the authorisation rules will change drastically with the CEP. What is important is that DSOs have to integrate new electricity generation, especially from

¹¹¹ See also the E-Regulation 2019 Recital 7.

¹¹² Pellerin-Carlin (2017), pp. 82-83.

¹¹³ Energy saving is defined in the EED 2012 Article 2 (5) as 'an amount of saved energy determined by measuring and/ or estimating consumption before and after implementation of an energy efficiency improvement measure, whilst ensuring normalisation for external conditions that affect energy consumption'.

¹¹⁴ COM (2016) 860 final, document 1, p. 4.

¹¹⁵ COM (2011) 370 final p. 1.

RES, in a cost-efficient way.¹¹⁶ To reach this goal, the DSOs should be enabled and provided with incentives to use services from distributed energy resources ‘in order to efficiently operate their networks and to avoid costly network operations’.¹¹⁷ These objectives have to be implemented in the Member States network development plans. Further, Norway must in line with the CEP consider alternatives to the authorisation of new generating capacity, like demand response and energy storage. This is a positive change for active customers generally.

4.3 CONTRACTUAL RULES AND THEIR SIGNIFICANCE FOR THE TRADE OF SELF-GENERATED ELECTRICITY

In addition to purchasing energy, prosumers produce energy themselves. If they do not instantly use that energy and do not have adequate storage capacities, they may want to sell it to others instead of it going to waste. This is a highly relevant problem, seeing as there today is a lack of affordable storage equipment.¹¹⁸ This question is also important because prosumers that trade electricity to others, can offer flexibility to the system. Because of this, the question is if prosumers can trade electricity? And if so, to whom and at what conditions?

4.3.1 PURCHASE OF ELECTRICITY

From the TEP, it follows from the E-Directive 2009 Article 33 (1) letter c that the Member States shall ensure that eligible customers comprise all customers from 1 July 2007. An ‘eligible customer’ is defined as ‘a customer who is free to purchase electricity from the supplier of his choice within the meaning of Article 33’.¹¹⁹ This means that an eligible customer can make a contract with a power company of his own choice.

According to the E-Directive Article 41 (3), large non-household customers shall have the right to contract simultaneously with several suppliers. As prosumers are small customers, this right does not apply to them.

Thus, prosumers are by the TEP given the right to choose the power company he or she wants, but not to have several contracts simultaneously with different suppliers.

¹¹⁶ E-Directive 2019 Recital 61.

¹¹⁷ Ibid.

¹¹⁸ This is despite the fact that prices for storage equipment have decreased by 80 % since 2010. Suno, 2018 (website).

¹¹⁹ See the E-Directive 2009 Article 2 (12).

Similarly, in Norway, the final customer has a right to choose a power supplier of his own choice, and can later decide to switch power supplier.¹²⁰

When a final customer decides to switch power company, the digital process happens quickly thanks to Elhub. Elhub is the central IT-system for electricity in Norway and has two main functions: first, to distribute values of measurement¹²¹ to all relevant power companies, third parties and final customers and measure the basis for calculation of the balance settlement; second, to process market processes in the market, e.g. final customers switching power companies.¹²² Elhub is established and administered by Elhub AS, a wholly-owned subsidiary of Statnett.¹²³

In relation to the Settlement Regulation of the rules on Elhub, the Norwegian Directorate of Waterfall and Energy (NVE). published a report in 2016¹²⁴. Where it is written that: ‘by the time of introduction of Elhub, there shall be only one electrical supplier connected to each access point’. Elhub came into operation on 20 February 2019 and prosumers can therefore now only have a contract with one power company.

This means that prosumers have the legal right to choose *one* power company, and can choose the *one* power company he or she wants. At the same time, they can have very limited options due to the fact that prosumers alternatives are limited to power companies willing to buy their generated surplus power. This can limit the right to be an eligible customer.

However, this can perhaps be remedied by the fact that one of the aims of the legislation is to lay the groundwork for final customers to easily switch power suppliers if they so choose.¹²⁵

In comparison, the CEP takes the ‘free choice of supplier’ a step further. According to the E-Directive 2019 Article 4, Member States shall ensure that all customers are free to purchase electricity from a supplier of their own choice, and customers should also be free ‘to have more than one electricity supply contract at the same time, provided that the required connection and metering points are established’. This means that customers can choose to have several contracts with different suppliers.

¹²⁰ The Settlement Regulation Section 2-2 first paragraph.

¹²¹ The Norwegian word is ‘måleverdier’.

¹²² Elhub, hva og hvorfor (website).

¹²³ Statnett, om Elhub (website).

¹²⁴ NVE, Rapport 47/2016, point 3.6.6.

¹²⁵ See Section 1-1 (1).

This will change the current legal position of customers in Norwegian rule. The prosumers will no longer be forced to make a contract with a specific company that is willing to buy their surplus power. The prosumers will be able to choose to have contracts with *both* suppliers that are willing to buy their surplus power (for feed-in) and suppliers that are not (for outtake).

4.3.2 TRADE OF ELECTRICITY

As noted above, today's prosumers are theoretically eligible customers that in practice can have limited options. The right to sell electricity is also limited due to the Member States having established special regimes protecting household consumers, for instance by demanding that persons that supply electricity to consumers hold a supply licence. In practice, this can lead to prosumers operating in a less liberalized market, without the possibility of buying and selling electricity.¹²⁶

Prosumers' sale of surplus electricity is not regulated in the TEP. This implies that the Member States can regulate this area themselves.¹²⁷

In Norway, due to the rules on Elhub, Norwegian prosumers today need to have a delivery contract with an electricity firm that is also willing to buy the electricity they produce, as the prosumer needs to have a specific contract with a power company that regulates both outtake and feed-in. Thus, in case the prosumers produce more electricity than they use themselves, the energy will automatically be sold back to the energy firm according to their contract. And as noted above, they can only have a contract with *one* power company and are thus not allowed to sell surplus electricity to several.

A natural extension from this is that prosumers cannot sell their self-generated energy to whomever they want themselves. As prosumers that produce their own energy cannot sell it to others themselves, they do not engage in the 'trade' of energy.

The conclusion is that prosumers in some way can trade electricity by making a contract with a specific power company. Still, their actual possibilities for trading electricity are limited.

The next question is if this legal position will change with the new rules of the CEP.

¹²⁶ Roggenkamp et. al. (2015) p. 30.

¹²⁷ See TFEU Article 194 that explicitly states that energy is a 'shared competence' between the EU and the Member States.

As of today, the EU has noted that legal and commercial barriers for the trade of self-generated energy and flexibility exist.¹²⁸ Examples of existing barriers are disproportionate fees for internally consumed electricity and obligations to feed self-generated electricity to the energy system and administrative burdens, such as the need for consumers who self-generate electricity and sell it to the system to comply with the general requirements for suppliers. This is about to change with the CEP.

According to the E-Directive 2019 Article 15 (2) letter b Member States must ensure that active customers are ‘entitled to sell self-generated electricity, including through power purchase agreements’.

This right is also underlined in the E-Directive 2019 Recital 39 first sentence that states that ‘all customer groups (industrial, commercial and households) should have access to the electricity markets to trade their flexibility and self-generated electricity’. Further, Recital 42 first sentence clarifies that consumers should be able ‘to consume, to store and to sell self-generated electricity to the market’.

As shown above, prosumers’ possibilities of trading their surplus electricity are limited as of today. Still, and as mentioned above, the CEP takes the ‘free choice of supplier’ a step further, as customers according to the E-Directive 2019 Article 4 are allowed to have several contracts with different suppliers simultaneously.

If the CEP becomes Norwegian law, this will change the current legal positions of Norwegian customers, hereunder prosumers. Prosumers will no longer be forced to make a contract with a specific company that is willing to buy their surplus power. The prosumers can choose to have contracts with *both* companies that are willing to buy their surplus power (for feed-in) and companies that are not (for outtake).

In conclusion, the prosumers’ contractual rights towards the power companies will change with the new rules in the CEP.

4.3.3 REMUNERATIONS DUE TO TRADING

A key incentive for producers is to make a profit of their investment in production. The economy is in many cases the key driver for progress and innovation. The desire to make

¹²⁸ See the E-Directive 2019 recital 42.

money is also considered a key driver for some prosumers.¹²⁹ A natural question to pose is what types of remunerations a prosumer can receive for his effort put into producing surplus renewable energy that can be fed into the grid and used by other customers of the power company.

Remunerations for prosumers are not regulated in the TEP. As energy is a shared competence between the EU and the Member States,¹³⁰ this implies that the Member States are able to regulate this themselves.

In Norway, remunerations were regulated by NVE in 2010. Then NVE proposed a pricing model that was adopted by most DSOs. Under this model, self-consumption was free and surplus energy could be sold to the network company. For the electricity that was fed into the grid, the prosumer received the spot price and an additional payment for the value of the reduced grid loss. Prosumers did not have to pay a grid fee.¹³¹ The model implied that self-consumption was a better economic choice than feeding the electricity into the grid. This model was in operation between 2010 and 2019.

In February 2019, Elhub was introduced in Norway. From that time, network companies were no longer allowed to buy surplus energy and it was only the power companies that were allowed to buy the generated surplus energy. This meant that prosumers had to make a contract directly with power companies willing to buy their surplus electricity. However, power companies were still able to choose whether or not they wanted to do so.

Today it is the contract between the prosumer and the power company that gives instructions on the amount of money the prosumers receive in exchange for their generated surplus energy. In Norway, the normal payment received is 4 øre/ kWh from the network company¹³² and 100 øre/ kWh from the power company.¹³³

Similarly to the TEP, the CEP does not regulate remunerations. This means that the Member States still have the possibility to regulate this themselves. This creates a responsibility, and

¹²⁹ See Espe, Potdar and Chang (2018) p. 4 who divides prosumers into three categories: the "Engineer" (key drivers technologies and innovation), the "Green User" (key drivers to contribute to an environmentally and sustainable solution) and the "Value Seeker" (key drivers economic benefits and product performance, quality and security).

¹³⁰ See TFEU Article 194.

¹³¹ Inderberg, Tews and Turner (2018) p. 265.

¹³² See for instance Agder Energi, *Plusskunde* (website).

¹³³ See for instance LOS, LOS Solstrøm (website).

an opportunity, for the Member States to make the prosumer arrangement attractive. By increasing the remuneration received, it can be more attractive to become a prosumer.

In conclusion, if the prosumer produces more energy than he or she instantly use and do not have adequate storage capacity, the electricity will be sold to the power company according to the prosumer's contract. The prosumer will then receive remuneration in the form of payment for the surplus electricity produced. However, as the system is today, selling energy to the power company is not an action that generates much profit. This means that prosumers having economy as their key driver are not stimulated to become active prosumers under the current arrangement.

5. OBLIGATIONS AS A SYSTEM USER

All users of electricity in one way or another have obligations as a system user. Most of these obligations are performed in the form of payments, called tariffs. In the area of electricity, there are two possible types of payments that must be considered. The first type of payment is a one-time payment called ‘connection charge’ which must be paid in order to be connected to the network.¹³⁴ The second type of payment is running grid tariffs for the use of the distribution network.¹³⁵

A tariff is a tax or duty levied on goods or services for imports or exports. Tariffs can be changed according to the needs of the market. It is the regulatory authorities that are responsible for fixing or approving the tariffs or the methodologies used to calculate the tariffs for: connection and access to national networks; the provision of balancing services; and access to cross-border infrastructures.¹³⁶

The transportation of electricity differs from the transportation of other commodities, as electricity does not really ‘travel’ from A to B. The transportation of electricity is more a matter of keeping the grid in a perpetuated balance. This means that any feed-in of electricity must be perfectly balanced by the exact same outtake of electricity somewhere else.¹³⁷ In addition, electricity is an energy carrier that cannot be easily stored (at least not in an economically viable way, as of today). Thus, the electricity system needs to be perfectly balanced at all times. This task is performed by the TSO and the DSOs.¹³⁸ In Norway, the TSO is Statnett, a Norwegian publicly owned enterprise responsible for owning, operating and constructing the stem of the national power grid¹³⁹. The DSOs are the network companies. However, as a general rule, all system users have a balance responsibility.¹⁴⁰

The production of energy from RES has obvious advantages. But as most sources of renewable energy cannot be controlled, this energy production also leads to some balancing challenges. This can be shown by the Norwegian cost of balancing, which amounted to 441

¹³⁴ Point 5.1.

¹³⁵ Point 5.2.

¹³⁶ E-Directive 2009 Article 37 (6).

¹³⁷ Roggenkamp et al. (2015), point 10.0.

¹³⁸ See point 5.2.

¹³⁹ Statnett, om statnett (website).

¹⁴⁰ See Statnett, balanseansvarlig (website).

MNOK in 2018.¹⁴¹ As prosumers in Norway do not pay additional tariffs for the imbalance caused in the distribution network, the question of balance responsibility will not be covered in more detail in the thesis. This responsibility might change with the CEP, but will not be covered further here.

What is positive is that flexible and reactive consumers align well with the variability of renewable energy. Through distributed renewable energy generation and demand response programmes¹⁴² active customers can offer opportunities for this type of production to be integrated into the grid.

5.1 CONNECTION CHARGE

It is the responsibility of the DSO to secure a well-functioning distribution network. This means that the DSO is responsible for it to be safe to feed more electricity into the network before they let a prosumer do so. Because of this, it can be necessary to expand the grid capacity before more users are connected to the distribution network. To expand the network costs money. Thus, the question is if prosumers have to pay a connection charge to cover some of these expenses.¹⁴³ A connection charge¹⁴⁴ is a one-time payment that is paid *before* the connection.

5.1.1 TEP

According to the E-Directive 2009 Recital 32 further steps should be taken in order to ensure transparent and non-discriminatory tariffs for access to networks. Tariffs should be applicable to all system users on a non-discriminatory basis. In other words, tariffs can be set as a condition for access to the network, but it is a prerequisite that tariffs that have to be applied on a non-discriminatory basis, are published in advance and reflect actual costs.

¹⁴¹ Statnett, Systemrapport 2018 p. 51.

¹⁴² Demand response is regulated in the E-Directive 2010 Articles 15 (2) letter c and 17.

¹⁴³ Installation costs for the generating installation comes in addition to this cost. This installation costs have to be covered by the prosumer. However, the prosumer can apply for financial support by Enova, a governmental organisation owned by the Norwegian Ministry of Climate and Environment, see Enova.no.

¹⁴⁴ In Norway this is called 'anleggsbidrag'.

It is important to emphasize that this article does not require the same tariff to be applied to all users. Tariffs can be differentiated according to other criteria, based on for example how much energy is produced, at what time of the day and the duration of the contract.¹⁴⁵ The only prerequisite here is that the tariffs or the tariff methodologies are approved before they are used in a contract.¹⁴⁶

The E-Directive 2009 Article 32 (1) states that TPA must be allowed based on published tariffs, applied objectively and without discrimination.

Further, Article 37 (6) regulates the regulatory authority duty to fix and approve the methodologies used to calculate or establish the terms and conditions for a) connection and access to national networks; b) balancing services and; c) access to cross-border infrastructures. Concerning a) connection to the network, those tariffs or methodologies shall allow the necessary investments in the networks to be carried out in a manner allowing those investments to ensure the viability of the networks.

Further, the E-Regulation 2009 Article 14 nr. 1 states that charges applied by network operators for access to networks ‘shall be transparent, take into account the need for network security and reflect actual costs incurred insofar as they correspond to those of an efficient and structurally comparable network operator and are applied in a non-discriminatory manner.’

In addition, the RES-Directive 2009 Article 16 (3) requires DSOs to make their standard rules for ‘bearing and sharing of costs of technical adaptations, such as grid connections (...), which are necessary in order to integrate new producers feeding electricity produced from renewable energy sources into the interconnected grid’ public. Those rules must take account of all the costs *and* benefits associated with the connection of those producers. This means that the benefits prosumers bring must be taken into account when the tariffs for connection are calculated.

Further, it follows from Article 16 (5) that DSOs shall provide any new producer of energy from RES wishing to be connected to the distribution network with all the necessary and

¹⁴⁵ Jones (2010) p. 45.

¹⁴⁶ E-Directive 2009 Article 32 (2).

comprehensive information. Also, the physical connection of new generators producing electricity from RES should be allowed as soon as possible.¹⁴⁷

This implies that network companies are allowed to set conditions, hereunder tariffs, for connection to the network, as long as conditions and tariffs are published in advance and reflect actual costs.

5.1.2 NORWAY

The Norwegian rules regarding the measurement of the connection charge are given in the Control Regulation chapter 16. In Norway the regulatory authority is NVE.

The starting point is that the prosumer arrangement does not lead to any changes in rights and obligations relating to the quality of delivery and electric pressure, the network company's duty to connect, the network company's duty to deliver, connection charges, etc.

Still, it follows from Article 16-1 that the network company shall determine and demand a connection charge from the customer when the customer a) gets connected to the network; b) increases his capacity or c) receives better quality.

The rules for the estimation of the connection charge are given in Articles 16-5 to 16-11. In line with Article 16-6, it is only the costs for installations used by the prosumer that should be calculated.

In conclusion, the prosumer could have to pay a connection charge, limited to the network company's cost of installation.

5.1.3 CEP

The E-directive 2019 Article 6 (1) puts an obligation on the Member States to ensure TPA to the distribution systems, based on 'published tariffs, applicable to all customers and applied objectively and without discrimination between system users'. Further, the Member States must ensure that those tariffs are following Article 59 and published prior to being utilized.

According to the E-Directive 2019 Article 27 (1) second sentence, Member States shall impose on DSOs 'an obligation to connect customers to their network under terms, conditions

¹⁴⁷ RES-Directive 2009 recital 61.

and tariffs set in accordance with the procedure laid down in Article 59 (7)'. However, Member States are not prevented from strengthening the market position of household customers. That means that they can decide to connect customers on better conditions.

Article 59 regulates the duties and powers of the regulatory authorities. According to (7) letter a, the regulatory authorities shall, in all other cases than where ACER is competent, be responsible for fixing or approving national methodologies and terms and conditions for 'connection and access to national networks, including (...) distribution tariffs or their methodologies'. Further: 'those methodologies shall allow the necessary investments in the network to be carried out in a manner allowing those investments to ensure the viability of the networks'.

This regulation corresponds to the regulation in the TEP. It is very unlikely that any changes will occur with the CEP compared to the TEP in regards to connection rules. This means that the network companies still will be able to demand prosumers to pay a connection charge if they fall under the set conditions.

5.2 GRID TARIFFS

Operating and maintaining electricity grids is expensive. It is the balance responsible, the TSO and the DSOs, who perform this task for the transmission network and the distribution system respectively.

For distribution networks, all network users must pay running tariffs for the use of the network to make this organization function. For ordinary Norwegian customers, this payment for the use of the distribution network for *outtake* is provided by paying a network tariff, as part of the ordinary electricity bill from the power company. This payment is then carried on to the DSO. Because the extra feed-in of energy to the grid puts a strain on the network system, the question is whether the prosumer is obligated to pay an *additional* tariff for their *input* of electricity?

5.2.1 TEP

In line with the TEP, tariffs must be non-discriminatory, transparent and cost-reflective, see the E-Directive 2009 Recitals 32 and 36. The regulatory authority shall have the authority to

fix and approve tariffs or methodologies for *access* to the network.¹⁴⁸ Tariffs or methodologies shall also ‘allow the necessary investments in the networks to be carried out in a manner allowing those investments to ensure the viability of the networks’. The methodologies shall be proportionate and applied in a non-discriminatory manner.^{149 150}

According to Annex I to the E-Directive 2009 nr. 1 letter a fourth indent, customers must be granted up-to-date information on ‘all applicable tariffs and maintenance charges’ that may be obtained. Also, nr. 1 letter c gives customers the right to ‘receive transparent information on applicable prices and tariffs and on standard terms and conditions, in respect of access and use of electricity services’.

Thus, Member States are allowed to tariff their customers, but customers have the right to up-to-date information on all applicable tariffs and maintenance charges.

5.2.2 NORWAY

NVE sets an income border¹⁵¹ for each network company. This is because the network companies as DSOs have monopolies within their areas. The authorities, here NVE, must therefore control them. The DSOs can then impose tariffs on their customers. After that is done, NVE controls that the tariff is within the given limit (as set in the income border).¹⁵² The tariff is then charged by the power companies through the electricity bill. The Norwegian electricity bill is set together by (a minimum of) two parts: the distribution network tariff and the actual amount of electricity consumed.

Norwegian tariffs for use and production of electricity are regulated in the Control Regulation part V. Chapter 13 provides general rules, chapter 14 provides rules on energy usage and chapter 15 provides rules on feed-in of energy.

Section 13-1 states the essential principles for the development of tariffs. The most important point for the thesis is that tariffs shall be non-discriminative¹⁵³, performed in a way that to the highest possible degree gives the right signals for effective use and improvement of the

¹⁴⁸ See the E-Directive 2009 Article 37 (6) letter a first sentence.

¹⁴⁹ See the E-Directive 2009 Article 37 (1).

¹⁵⁰ These requirements are also confirmed in the E-Regulation 2009 Article 14.

¹⁵¹ In Norway called ‘inntektsramme’.

¹⁵² NVE, *Nettleie* (website).

¹⁵³ Letter c.

network¹⁵⁴ and that tariffs shall be determined independently of contracts for outtake and feed in.¹⁵⁵

Section 13-2 letter a and b states that tariffs for the usage of the distribution network and feed-in of power shall be calculated by adding levels of tariffs that vary according to the customer's usage or feed-in of energy and other levels of tariffs. Thus, the starting point is that all users of the network have to pay 'other tariffs' and tariffs for outtake or feed-in of power. The tariff for use shall be made up of an energy part and a capacity part.

More detailed rules for the levels of tariffs that vary according to the customer's use of energy are given in the Control Regulation Section 14-2. The design of the tariff is dependent on whether the prosumer has a settlement based on effect¹⁵⁶ or not. If they do not have a calculation of effect, they will be charged a tariff consisting of a fixed level and an energy part'.¹⁵⁷ On the opposite, if they *do* have settlement based on effect, they will be charged a tariff consisting of the fixed part, the energy part and the effect part'.¹⁵⁸

In other words, prosumers have to pay for the use of the distribution network and for the actual electricity consumed.

Further, prosumers are in a special situation as they both use energy from the grid *and* feeds in energy to the grid themselves. The question is therefore if they must pay an additional tariff for the *input* of electricity?

Levels of tariffs that vary according to the prosumer's feed-in of energy are regulated in the Control Regulation Sections 15-1 and 15-2. According to section 15-1, feed-in of electricity from power installations with installed effect less than 1 MW shall pay an energy part in line with marginal cost in their own and the overlaying networks. 1 MW is equal to 1000 kW. As the installed capacity of PV systems is typically 3-4 kW¹⁵⁹, this section applies to prosumers.

About the *fixed* level¹⁶⁰, the Control Regulation Section 15-2 third paragraph explicitly clarifies that prosumers shall *not* be tariffed a fixed level for feed-in of electricity. This is a natural consequence of the fact that prosumers already pay tariffs for their usage of electricity.

¹⁵⁴ Letter d.

¹⁵⁵ Letter e.

¹⁵⁶ In Norway called 'effektavregning'.

¹⁵⁷ First paragraph, letter a and b.

¹⁵⁸ Second paragraph.

¹⁵⁹ T. Winther et al. (2018) p. 89.

¹⁶⁰ The Norwegian word is 'nettleie'.

If they were to also pay the fixed level for feed-in they would have to pay the same tariff twice.

The conclusion on the Norwegian rule is that prosumers can be charged a running grid tariff for the use of the network – both for usage and for feed-in of energy. On the contrary, they cannot be charged a fixed level for both usage and feed-in. For the fixed level, they can only be charged for the usage.

5.2.3 CEP

The next question is if this differs from the new rules of the CEP.

According to the E-Directive 2019 Article 15 (2) letter e Member States shall ensure that active customers are ‘subject to cost-reflective, transparent and non-discriminatory network charges that account separately for the electricity fed into the grid and the electricity consumed from the grid’. This shall be done in accordance with the E-Directive 2018 Article 59 (9) and the E-Regulation 2019 Article 18. The aim is to ensure that active customers contribute in a fair and balanced way to cover an adequate part of the overall costs of the system.

According to the E-Directive 2019 Recital 81, regulatory authorities should be able to fix or approve tariffs on the basis of proposals from the TSO or the DSO. When regulatory authorities are working on this, they should ensure that distribution tariffs are not discriminatory and cost-reflective, and they should ‘take account of the long-term, marginal, avoided network costs from distributed generation and demand-side management measures’. This section corresponds to the previous articles.

In conclusion, this will presumably not lead to any changes in Norwegian law.

5.3 TECHNICAL REQUIREMENTS

The DSO is responsible for ensuring a safe network system. In order to enable feed-in of surplus power into the distribution grid, prosumers need to be connected to the network. The question is therefore what technical requirements the prosumers have to comply with in order to be connected to the distribution network and who is responsible for ensuring that prosumers follow these requirements.

According to the E-Directive 2009 Article 5, Member States shall ensure ‘that technical safety criteria are defined and that rules establishing the minimum technical design and operational requirements for the connection to the system of generating installations, distribution system, directly connected customers’ equipment, interconnector circuits and direct lines are developed and made public’. It is important that those technical requirements are objective, non-discriminatory and ensure the interoperability of the system.

The TEP does not contain any obligations to obtain a smart meter. This can be contrasted to Norwegian law, where all prosumers need to have hourly registration systems of feed-in and outtake of electricity.¹⁶¹

All Norwegian electricity customers now have smart meters.¹⁶² Smart meters have register frequencies of a maximum of 60 minutes, and they can be adjusted to register frequencies of a minimum of 15 minutes.¹⁶³ Because smart meters provide an opportunity for hourly registration, all Norwegian electricity customers meet the technical requirements given in the Settlement Regulation Article 3-3 seventh paragraph first sentence.

Also, electricity generators have some responsibilities according to requirements set by NVE. Under the current legislation, prosumers are exempted from most of these requirements. However, it is the responsibility of the prosumer to comply with the technical safety requirements for the installation of the electricity generation equipment. This is mostly solved by using third-party installers; electricians, to ensure that this obligation is met.¹⁶⁴ In addition, there can be other technical requirements set by the DSO, like voltage change due to PV installation, maximum disconnection time irregular voltage etc.¹⁶⁵

Thus, the main current technical requirements in Norwegian law are the requirement for safe installation and the requirement of hourly registration of feed-in and outtake of electricity. Besides, prosumers must comply with other technical rules set by the applicable DSO.

The next question is how this is regulated in the CEP.

¹⁶¹ The Settlement Regulation Article 3-3 seventh paragraph first sentence.

¹⁶² The final date for roll-out of smart meters in Norway was 1st January 2019, see the Settlement Regulation Article 4-5 first sentence.

¹⁶³ See the Settlement Regulation Article 4-2 first paragraph letter a.

¹⁶⁴ Inderberg, Tews and Turner (2018) p. 266.

¹⁶⁵ See more about this in the report by CenSES (2018) p. 15.

In the E-Directive 2019 Article 15 (1) it is stated that the Member States shall ensure that active customers do not become subject to disproportionate or discriminatory technical requirements.

Further, according to Article 19 (2), the Member States shall ensure the deployment of smart metering systems that assist the active participation of customers in the electricity market. In (3) it is stated that the Member States ‘shall adopt and publish the minimum functional and technical requirements for the smart metering systems to be deployed in their territories’. As a starting point, this must be done in accordance with Article 20 and Annex II.¹⁶⁶

Article 20 regulates the functionalities of smart metering systems. The most important provisions for prosumers are letter a, d and e. According to letter a, the smart metering system ‘shall accurately measure actual electricity consumption and shall be capable of providing to final customers information on actual time of use’. Also, final customers that request data on feed-in and consumption of electricity have a right to have this made available to them.¹⁶⁷

Annex II also regulates smart metering systems. In this case, more information about the cost-benefit analysis is expressed.¹⁶⁸

However, these provisions only apply to future installations and to installations that replace old smart meters.¹⁶⁹ If smart metering systems have already been installed they may remain in operation over their lifetime. However, in the case that those smart metering systems do not meet the requirements, they shall not remain in operation after July 5th 2031.¹⁷⁰

These provisions differentiate from the TEP. But seeing as Norway already operates with the use of smart meters, Norway has already fulfilled this obligation. Thus, these provisions will most likely not lead to any changes in Norwegian law regarding technical requirements.

¹⁶⁶ Article 19 (2) second sentence.

¹⁶⁷ Article 20 letter e.

¹⁶⁸ E-Directive 2019 Annex II. A cost-benefit analysis is an economic assessment of ‘all of the long-term costs and benefits to the market and the individual consumer or which form of smart metering is economically reasonable and cost-effective and which time frame is feasible for their distribution’, see (2).

¹⁶⁹ See Article 19 (6) first sentence.

¹⁷⁰ See Article 19 (6) last sentence.

6. CONCLUSION

The study has been centred on the analysis of the concept of prosumers, its legal development through the different legislation and what is the content and scope of the rules both in the EU, the EEA and Norway. The study has shown that this is a topic in which plenty of progress and regulation has taken place, being one of the central points of the CEP.¹⁷¹ These rules are likely to lead to some adjustments in the EEA and Norwegian legislation once the latest EU rules are finally incorporated in the EEA pillar. However, as this thesis has analysed and discussed, the extent of the novelties needed in Norway is perhaps not as wide, even lacking these new prosumer oriented rules.

The number of prosumers in Norway almost doubled between 2016 and 2018. Norway went from having 1325 prosumers in 2016 to having 2204 prosumers in 2018.¹⁷² This development of prosumerism has come to fruition thanks to a well-functioning legal framework, new technologies, the digital revolution and the general evolution from passive customers to active prosumers.¹⁷³

By mapping the prosumers' development and framework conditions in the TEP, the Norwegian current legislation and the CEP, this study has explored that:

First, that the TEP did not contain a specific definition of prosumers. This has changed with the CEP, which contains a definition for 'active customers' that include prosumers. Norway adopted a definition of 'plus customers' already in 2017. This Norwegian definition will most likely be considered to be in line with the CEP. Still, there is room for improvement on the Norwegian definition, as the Norwegian definition gives associations to powerhouses, which does not align well with the current status of prosumers. The Norwegian word 'prosumment' is thus suggested as a better word for prosumers in Norway.

Second, the applicable connection rules in the TEP and the current Norwegian rules ensure access for prosumers to the distribution network. In addition, the generation rules give rights to the prosumers. Also, according to the applicable authorisation rules for generation in the TEP, Norwegian current rules and the CEP, prosumers do not need ordinary concessions for

¹⁷¹ Anchustegui and Formosa (2020).

¹⁷² EnergiNorge (2019) website.

¹⁷³ EESC TEN/583 (2016) point 1.4.

generation of electricity. Instead, they can follow a simplified and streamlined authorisation procedure. This is not considered to change with the CEP. Further, the TEP and the Norwegian current rules ensure that prosumers today are eligible customers free to switch power suppliers. However, in practise their possibilities are limited due to the fact that the power companies can decide whether or not they want to buy energy from prosumers. In my opinion, this is negative for prosumers as they can be forced to make a contract less favourable than ordinary customers can. It can also limit competition between power companies, which again can lead to unfavourable conditions for prosumers. This legal position will probably change with the CEP, as the CEP allows prosumers to contract with several energy suppliers simultaneously. Finally, remunerations due to trading are not regulated in the TEP or the CEP. This, however, is regulated in Norwegian contracts. The ordinary remuneration is 4 øre/ kWh from the network company and 100 øre/ kWh from the power company. This scheme does not give economic incentives for prosumers. Here there is room for improvement.

Third, the TEP, the Norwegian rules and the CEP demands prosumers to pay a connection charge to the network company if certain conditions are fulfilled. Prosumers are also obligated to pay grid tariffs, but are exempted from paying tariffs for balancing of the distribution network. Further, in the TEP there was no technical requirement to obtain a smart meter. This can be contrasted to the CEP, which contains an obligation to obtain a smart meter or at least a cost-benefit analysis on this. However, Norway already complies with this obligation, as smart meters were fully obtained in Norway by 1st January 2019.

This shows that Norway is in many ways at the forefront when it comes to encouraging prosumers. However, further development is possible. But how? What influences the decision of passive customers to become active prosumers can mainly be divided into three categories: technological, social and financial.¹⁷⁴

On the technological part, Norway is missing smart grids. Also, better storage solutions for electricity, smart appliances that communicate with the distribution grid and energy displays are needed.

On the social part, there is a need for more information about prosumerism. This has to date not received the attention it deserves. Due to the fact that the number of citizens in Norway is expected to increase and as electricity users become more ‘power-hungry’, this will probably

¹⁷⁴ Espe, Potdar and Chang (2018) p. 12.

lead to a concurrently increased electricity need. This can partly be met by prosumers generating distributed electricity from RES and partly by energy efficiency. A combination of these two functions is key.

On the financial part, today's scheme does not give economic incentives for prosumers. Under this scheme, it is most financially feasible to self-consume self-generated energy. However, seeing as there are not as of yet any viable and financially profitable storage solutions, it can be hard for household prosumers to use all the self-generated electricity themselves. A possible solution could be government incentive schemes leading to a higher remuneration of prosumers feed-in of surplus energy, making prosumerism more financially attractive. This, however, would require complying with the State aid rules.

Also, enabling prosumer communities are key. Prosumer communities are more effective, more sustainable and give more economic incentives – as prosumers acting together through the community invest together, thus sharing the cost of buying and installing the generation equipment. Prosumer communities also strengthen the position of prosumers towards large energy producers significantly, compared to prosumers acting alone.¹⁷⁵ It is therefore not surprising that citizen energy communities are highlighted in the CEP.¹⁷⁶ However, in Norway there has been little focus on this opportunity.¹⁷⁷ Here it can be important to remember that: '[i]n a world of digital opportunities *social capital* becomes just as important as financial capital, *access* becomes more important than ownership, and 'exchange value' on capitalist markets is increasingly replaced by '*sharing value*' in the cooperative community.¹⁷⁸ Thus, the arrangement of prosumer communities in Norway has room for improvement.

This means that it is not enough to look at traditional solutions for energy production. Norwegian authorities must dare to think 'outside the box'. If we are going to meet the Norwegian goals on energy and climate¹⁷⁹ and at the same time empower Norwegian electricity customers, prosumerism has to be encouraged. Also, it is important that energy efficiency is mainstreamed in all relevant policy areas in order to change the current behavioural patterns. This change must occur on the entire energy chain from production, via

¹⁷⁵ EESC TEN/583 (2016) point 6.5.

¹⁷⁶ See for instance E-Directive 2019 Article 16 and recital 43.

¹⁷⁷ In 2019 there was only identified 30 local energy communities in Norway, see THEMA/Multikonsult (2018) p. 8.

¹⁷⁸ EESC TEN/583 (2016) point 3.6.

¹⁷⁹ The Norwegian climate goal of 2030 is 50 to 55 % cuts in greenhouse gas emissions (compared to 1990 levels), see the Ministry of Climate and Environment (2020) website.

transmission and distribution, to final consumption.¹⁸⁰ As a country with clear ambitions to be a leading country on climate and sustainable development, we cannot lean on the fact that nearly all consumed electricity in Norway is produced from RES.¹⁸¹ We must strive to be even better. A way to become even better is to lay down the right conditions for prosumers, and especially prosumer communities, to become even more attractive. Here law has an important role to play.

¹⁸⁰ Delvaux (2013), pp. 34-35.

¹⁸¹ In 2018 98 % of electricity produced in Norway were renewable, see NVE, Nasjonal varedeklarasjon 2018 (website).

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Act no. 109 of 27 November 1992: Act relating to the Norwegian implementation of the main part of the European Economic Area cooperation agreement (EEA) etc. (hereafter the EEA Act)

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Regulation No. 302 of 11 March 1999: Regulation governing financial and technical reporting, income caps for network operations and transmission tariffs (hereafter the Control Regulation)

Regulation No. 1414 of 24 October 2019: Regulation governing net regulation and the energy market (hereafter NEM)

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ANNEX - EU/ EEA-LAW

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Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC (hereafter the E-Directive 2003)

Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (hereafter the Renewable Directive 2009)

Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC (hereafter the E-Directive 2009)

Regulation (EC) No 714/2009 of the European Parliament 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 (hereafter the E-Regulation 2009)

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