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ELECTRICITY PROVISION AS A EUROPEAN SERVICE OF GENERAL ECONOMIC INTEREST – A CONCEPTUAL DEBATE

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Abstract. Today the universal and secure supply of energy is facing profound changes and challenges in European regions. Recent updates on energy policies in the EU propel the decentralization of energy generation driven by citizens' engagement, fueling scientific debates on how inclusive these new frameworks really are. We look back at all four legislative 'Energy packages' of the EU (1996, 2003, 2009, 2019) with a focus on the Clean Energy Package 2019. Did the changes towards completing a common internal market for energy and reacting to the climate crisis affect standards of SGI provision, such as availability, accessibility, affordability, quality and variety?

Keywords: decentralization, energy policy, European Union, liberalization, participation, services of general economic interest.

Introduction

From our first cup of coffee in the morning to scrolling on our smart phones before bedtime – almost everything we do is – literally – powered by electricity. Today, for citizens of the European Union (EU), electricity supply is rarely a matter of concern in terms of general availability or the reliability of the system. A report on behalf of the European Commission's Directorate-General for Energy, based on data provided by member states, concludes that electricity consumers in the EU experience only up to two unplanned supply interruptions in a year, each lasting up to two hours (EC, 2018). So, in general, consumers don't have to take heed about their steady supply at sufficient quality to pursue their daily routines. It is usually when people are confronted with their electricity bill that they become aware of the amount of electricity they have consumed in the past month or year. However, there is a certain detachment from electricity as a good that is measured in kilowatt-hours, as people are usually not thinking about the energy, they are about to use when they flip a switch, but the service they are in need of, such as heating or lighting (Kalt, Wiedenhofer, Görg & Haberl, 2019). In our daily interactions we are mostly oblivious about what is happening behind that switch or the electricity meter.

And for a long time, the overarching premise of electricity supply to household consumers was to be reliable and cheap. Even though a lot has changed in the last 25 years, most notably

the opening of electricity markets to pursue a common internal market for energy in the EU, these goals are still relevant (EP, 2020). Since then, electric energy as a commodity is traded on markets and subject to competition. However, the supply of electric energy is deemed an essential service, therefore it is classified as a Service of General Interest (henceforth SGI) and subject to Public Service Obligations (CEC, 2003).

Today the universal and secure supply of energy is facing profound changes and challenges. Different drivers, most importantly the climate crisis and our attempts to combat it, technological progress such as digitalization as well as transforming sociopolitical and economic landscapes, are forcing us to look closely at the way we produce and consume energy and adapt accordingly. In 2019 the European Commission presented the European Green Deal addressing these challenges, promising a roadmap with concrete actions and most notably – that no one will be left behind (EC, 2019).

Recent updates on energy policies in the EU propel the decentralization of energy generation driven by citizens' engagement, fueling scientific debates on how inclusive these new frameworks really are (Hanke & Lowitzsch, 2020; Berka & Dreyfus, 2021). Current research also discusses the impact of community-driven energy projects in mitigating energy injustices (Hanke, Guyet & Feenstra, 2021).

Heffron (2022) analyzes the term energy justice and summarizes seven applied principles to put energy justice into practice, namely availability, affordability, due process, transparency and accountability, sustainability, intra- and intergenerational equity, and responsibility. In their critical review Droubi, Heffron and McCauley (2022) close in on another concept, energy democracy, and raise the question on whether it can in turn deliver on energy justice.

Citizen participation in the energy transition increasingly revolves around people not only engaging individually (e.g. as prosumers) but collectively (Horstink, Wittmayer & Ng, 2021). The term community is often used in this context. However, in the academic world there is still a lack of clarity on the terminology used and the objectives pursued by community-based energy systems (Bauwens et al., 2022).

Another field of research is debating whether a fundamental change in our energy system's business models is necessary to accelerate decarbonization and increase energy efficiency (Hall, Brown, Davis, Ehrtmann & Holstenkamp, 2016). This could mean a shift from paying for the commodity per energy unit (e.g. for electricity per kilowatt-hours consumed) towards paying for services provided, such as illumination or space heating (Brown, Hall, Martiskainen & Davis, 2022).

In this article we will take a look at the development of electricity markets and the supply in the last 25 years; if the changes to complete a common internal market for energy and to react to the climate crisis have affected standards of SGI provision, such as availability, accessibility, affordability, quality and variety.

Theory

SGI is a normative concept used in EU policy making, going back to as early as the Treaty of Rome 1957 (EEC, 1957). From a legal-normative perspective SGIs are economic or non-economic services that are of general interest and should meet certain standards or codes. To secure their provision to European citizens and businesses under these conditions, they are not yielded to unregulated market forces alone (Humer, 2014). Given the fact that the single competitive market is one of the overall goals the EU is trying to achieve (EC, 2021b), it is remarkable that SGIs have been acknowledged as such since the very beginning of the EU integration process in the 1950s. Since

the 1990s the concept has however attracted more attention, partly due to the progress made towards the completion of the European single market by liberalizing certain sectors, but also later in the context of social and territorial cohesion and consequently the harmonization of standards of provision throughout the EU (Bauby, Hall, Thiry & Sak, 2004).

It is worth mentioning that there is an ongoing debate around the terminology and definitions used in this context (Bjørnsen, Foss & Johansen, 2015). The European Commission offered some guidance in its Communication on 'A Quality Framework for Services of General Interest in Europe' but recognized at the same time that some aspects can still not be clearly defined, partly due to the inherently dynamic nature of these concepts (CEC, 2011). However, in this article we will use the Communication as one terminological reference point. Electricity supply is often cited amongst the classic examples of Services of General Economic Interest (SGEI). About that the Communication states (CEC, 2011):

> *SGEI are economic activities which deliver outcomes in the overall public good that would not be supplied (or would be supplied under different conditions in terms of quality, safety, affordability, equal treatment or universal access) by the market without public intervention.*

Electricity supply is considered an economic activity, so it does tick that box. It is essential to our daily lives; this ticks another box. Whether it would be supplied under different conditions without public intervention was and is up for debate, however in the case of electricity (and natural gas), the various debates often circle around the opposite of public intervention: the liberalization and thus opening of their markets to competition (e.g. Torriti, 2010; Tulloch, Diaz-Rainey & Premachandra, 2018). The transmission and distribution part of electricity however still remains regulated.

In this article we will thus distinguish between **electricity as a commodity** supplied to users (by undertakings who sell electricity on the market to consumers) and **electricity supply** as the service of operating the networks to physically transport the electricity from the generation plant to the users (by transmission and distribution system operators). This distinction is also reflected on the electricity bill, where a consumer is billed for the electricity consumed and for the network costs. A third group of costs are the taxes and levies a Member State may impose on electricity consumption. The Communication by the European Commission (2011) refers to energy in general, addressing electricity and natural gas at the same time, but does not differentiate between electricity (or natural gas) as a commodity and electricity (or natural gas) supply as the distribution service. Why this is remarkable and important to keep in mind will be discussed later in this chapter.

As standards of provision, we will use the categories identified by Humer (2014):

- **Availability:** This standard refers to a service's presence and reliability. Users can count on its continuous existence in the long-term (e.g., to secure their livelihoods, businesses, etc.). Service interruptions can pose a threat.
- **Accessibility:** Technical or physical access must be enabled to make use of an available service.
- **Affordability:** The service should be affordable to most users; they either should be able to shoulder the costs themselves – without limiting other aspects of life – or be offered assistance to do so.
- **Quality:** A service should be provided at a certain quality or under certain conditions.
- **Variety/Choice:** Users should, if possible, have choices to cater the service to their individual circumstances or needs.

At this point it is important to elaborate on the fact that the electricity sector in the EU has undergone substantial changes in the past decades. In pursuing its goal of creating a European single market, the Union launched the creation of an internal market in energy about 25 years ago,

by introducing the First Energy Package (EP, 2020). Since the early 2000s electricity as a commodity on the one hand is generated and traded subject to competition rules. The distribution of electricity (via transmission and distribution networks[1]) on the other hand is subject to regulation. This means that monopolistic infrastructure providers had to cut ties with their integrated generation and supply branches and are now operating networks under a framework imposed by national laws, supervised by independent regulatory authorities. They monitor market activities of generators and suppliers and regulate transmission and distribution service operations (Meeus, Noucier, Reif & Schittekatte, 2020).

Now for a long time this reorganization of the European energy market was carried out under the presumption of easily controllable centralized large capacity electricity generation plants powered by fossil fuels providing the main load (Goldthau, 2014). However, in an attempt to combat climate change the EU is enforcing key targets on reducing greenhouse gas emissions and increasing the share of renewable energy in the overall energy mix. Hence, according to the EU's 2030 climate and energy framework greenhouse gas emissions must decrease by 40% compared to 1990 baseline levels. The share of renewable energy consumed in the EU is set to make up at least 27% by 2030. Energy efficiency must be improved by at least 27%, compared to projections of future energy demand, until then (CEC, 2014). In 2021 the European Commission even announced that these targets will be updated by July of the same year, proposing a reduction in greenhouse gas emissions by at least 55% (EC, 2021a).

Increasing the share of renewable energy sources also means a bigger share of smaller, decentralized and more volatile generation units in the European electricity supply system. Figuratively speaking, in the completion of the internal European energy market the tables have turned.

Methodology

This work firstly aims to give an overview of the incremental development of the EU internal electricity market for final consumers, driven by four successive legislative packages (the First, Second, Third and Clean Energy Package). It highlights major milestones for European citizens as electricity consumers in the past 25 years as laid down in the respectively effective versions of the Directive on the common rules for the internal market of electricity (Directive 96/92/EC, 2003/54/EC, 2009/72/EC and (EU)2019/944). Each Directive presented instructions and guidelines to get closer to completion of the internal market in energy. The most recent package, the Clean Energy Package, includes the recast Renewable Energy Directive (EU) 2018/2001 and is also part of the analysis, as it contains relevant provisions for electricity consumers. Figure 1. Overview of Energy Packages in chronological order (left to right) shows all Energy Packages in chronological order and lists Directives and Regulations per Package. The Directives marked in bold are analyzed in this article, as they represent the framework the European electricity system has been built on step by step since the early days of liberalization. Emphasis will be put on their impact on consumers as actors in the electricity market and in electricity supply. We look at all four legislative packages, but put a special focus on the most recent, the Clean Energy Package.

[1] Transmission networks transfer high-voltage electric power, whereas distribution networks carry medium-to-low voltage electric power to the final consumer.

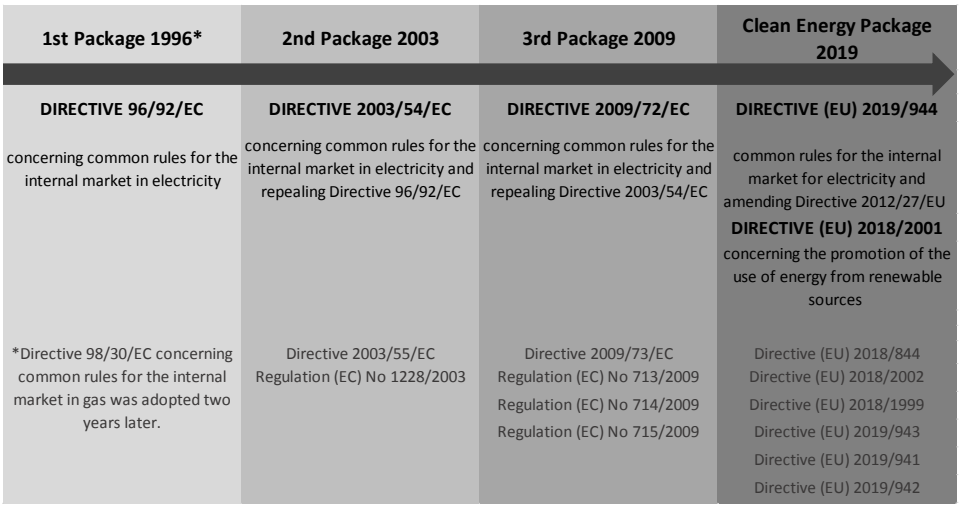

Figure 1. Overview of Energy Packages in chronological order (left to right)
Source: author's own elaboration.

The article secondly uses a theoretical-conceptual framework (see Figure 1. Overview of Energy Packages in chronological order (left to right)) to link these policy milestones to the standards of provision of SGEI. With the help of the framework an analysis on the impact of the transition of the electricity supply system on these standards over time is conducted. The structure of the theoretical-conceptual framework was adapted from Humer (2014), see Figure 2. It puts the standards of provision of electricity supply as SGIs in its center and adds layers of determinants and drivers.

The framework introduces determinants such as SGI organization and SGI demand. SGI organization refers to the **providers** of the service and how the provision is organized. In the case of electricity, generation, trade, and sale is subject to market competition. Supply or distribution on the other hand are regulated. For both, provision can be managed privately, publicly, or in a combination of both.

According to Humer (2014) SGI demand, the counterpart to SGI organization or providers, is **users**. Their individual and collective demand respectively impact the provision of electricity as a commodity and its supply on different levels. Users can be households or businesses; they can also be households and/or businesses acting collectively, forming a new type of actors.

The two brackets in Figure 2 indicate the **spatial and temporal dimensions** as determinants of electricity supply as SGI. These aspects largely capture the policy framework the EU established over the course of the last 25 years – the four Energy Packages. Policy thus forms the backdrop of our structure.

External drivers, such as social values and lifestyles (society), macro- and microeconomic trends (economy), changes in demographic patters (demography) or environmental concerns (environment/climate change), may shape and steer SGI provision. This work will at this point in time only touch upon drivers related to decarbonization and climate change concerns (dashed line), as these play a major role in the energy transition/CO_2 emissions and are thus reflected in the policy framework.

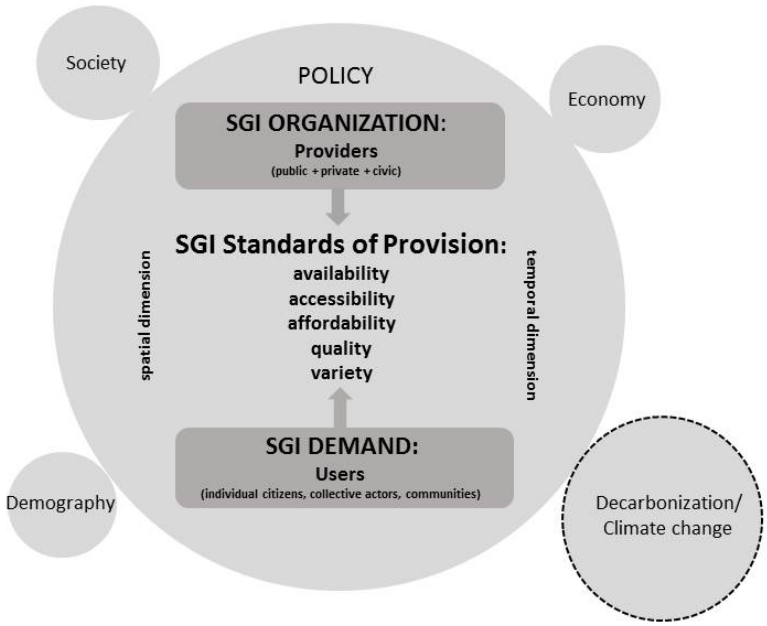

Figure 2. Conceptual-analytical framework to analyze Standards of Provision for electricity supply as SGI
Source: author's own elaboration, modified after Humer (2014).

The policy analysis of the four Energy Packages and the analysis based on the theoretical-conceptual framework will be guided by the following questions:

1. How did these incremental changes in the energy sector, guided by the four Energy Packages, modify electricity supply as a SGEI for household consumers?
2. What standards of provision of SGEI are particularly concerned with this development?

Results

Since the 1990s the evolution of electricity markets in the EU was driven by four legislative packages with a goal to create an internal market. In this chapter we will look at those packages in detail, with a focus on those markets that are relevant for final consumers only[2]. We will highlight milestones of the liberalization and harmonization processes from the household consumers' perspective.

The First Package[3]

Directive 96/92/EC is a sectoral answer to the creation and completion of the overall internal market in the EU as already laid down in the Treaty of Rome in 1957. A competitive electricity market was considered an important building block in achieving this goal (EP, 2020). The Directive

[2] Electricity supply to final customers does involve in fact a sequence of different markets. There are wholesale markets where **electricity as a commodity** is traded (including forward, day-ahead, and intraday markets). There is also the **electricity supply** side with markets for transmission capacity which are intertwined with commodity markets for the short term, however not for the longer term. Then there are markets for balancing or reserves services and finally markets for corrections (Meeus et al., 2020).

[3] Containing Directive 96/92/EC concerning common rules for the internal energy market in electricity.

acknowledges in its preamble that the internal market in electricity cannot be established overnight but should evolve gradually and under the pretense of increasing efficiency (in production, transmission and distribution), while still safeguarding security of supply, a competitive European economy, and respecting environmental concerns. It also states that with regard to consumer protection, Member States may choose to impose public service obligations.

The First Package lays down the general rules for the electricity sector. They touch upon issues such as the construction and integration of new generation capacities and the organization of transmission system operation. It specifies that Member States may mandate that distribution service operators are obliged to supply customers in any given area and may regulate tariffs for supply to ensure equal treatment. Generally, according to Directive 96/92/EC, distribution system operators shall not discriminate between system users. However, at this point in time, access to the distribution system remained still a little more restrictive than we know it today. The Directive for instance stipulated that eligible customers may negotiate access to the system based on indicative prices published by the system operator while Member States may regulate these access procedures. In Directive 96/92/EC first steps into unbundling activities subject to competition, such as supply and generation, from activities were competition is not possible, such as distribution, were also set in motion. This took the form of separating accounts. However, there still was no obligation to create individual legal entities for supply and distribution, or to separate the ownership of assets.[4]

Second Energy Package[5]

In 2003 a new Directive entered into force, building upon the experiences made during the implementation of its predecessor. It aimed at speeding up the liberalization process to further the internal energy market. It identified barriers in issues of network access and tariffing that were still to tackle. As result it explicitly demanded non-discriminatory, transparent and fair-priced access to networks and tariffs, regulated by one or more national regulatory authorities. They were assigned competencies to fix and approve either the methodologies to calculate transmission and distribution tariffs or set the tariffs themselves. Directive 2003/54/EC mandated an obligation for distribution service operators to connect customers to their network. It furthermore imposed legal unbundling of vertically integrated undertakings, i.e. separate legal entities have to be established for competitive activities (electricity generation and supply) and non-competitive activities (electricity distribution).

The Second Package also introduced a big change for consumers by allowing them to choose their electricity supplier freely. Furthermore, Directive 2003/54/EC stipulated that Member States should ensure that household customers as well as small enterprises have a right to be supplied with electricity of a specified quality at clearly comparable, transparent and reasonable prices. Member States may also choose to install a supplier of last resort to guarantee universal service.

Another milestone in the Second Package was that it specifically addressed vulnerable customers, however without actually defining what a vulnerable customer is. It demanded that Member States take measures to protect them to avoid disconnection. These measures may be sector-specific (e.g. reducing the electricity costs directly) or more general (e.g. within

[4] Unbundling of vertically integrated undertakings may range from the most basic form of account unbundling, to functional unbundling (typically done by internal reorganization such as assigning tasks to different divisions), to legal unbundling (by establishing a separate legal entity) and full ownership unbundling (no shared assets) (FSR, 2021, July 21).

[5] Containing Directive 2003/54/EC on concerning common rules for the internal market in electricity and repealing Directive 96/92/EC.

the established social security system). In this context it also demanded transparency regarding contractual terms and conditions, general information, and dispute settlement mechanisms.

The Directive somehow reluctantly mentions first steps into streamlining labelling of energy sources contributing to the supplier's fuel mix and information on the environmental impact of electricity supply (i.e. CO_2 emissions and radioactive waste), by stating that the Commission '(…) has indicated its intention to take initiatives' (cf. (25) in the preamble of Directive 2003/54/EC). This is relevant in terms of customer information in order to help them make decisions in the liberalized electricity market.

Annex A to the Directive is a section dedicated exclusively to consumer protection measures. Something that was not covered at all in the First Energy Package. It manifests the right of consumers to a contract with their electricity service provider that contains minimum terms and conditions. It also grants that consumers are free to withdraw from contracts if these conditions change and of course that they must be notified about changes in due time. Consumers shall be offered a wide choice and payment methods and may not be charged for changing their supplier.

Third Energy Package[6]

In its preamble Directive 2009/72/EC highlights that the completion of the internal energy market seems to be within reach, but a few obstacles remain. It acknowledges that provisions that mandate non-discriminatory access to networks or that promote the sale of electricity on truly equal terms still need some adjustment.

The Third Energy Package really strengthens consumers' protection measures in the electricity market. It also heralds the era of digitalization of the distribution system. To modernize distribution networks and to foster the uptake of decentralized generation and energy efficiency, Member States should consider the introduction of smart grids. Based on the outcome of a cost-benefit-analysis Member States should therefore install intelligent metering systems. Where they are installed, Member States should make sure that these new metering systems are empowering consumers to actively participate in the electricity supply market. This opened new possibilities in terms of consumption control for consumers. To facilitate consumers in taking charge of their electricity consumption and manage costs the Directive explicitly addresses transparency. Consumers shall have access to consumption data frequently and should know precisely what they are paying for in terms of electricity prices and services costs.

At this time the concept of energy poverty made its way into the European political discourse (Bartl, 2009; Bouzarovski, Petrova & Sarlamanov, 2012). In its preamble Directive 2009/72/EC states that 'energy poverty is a growing problem in the Community' (cf. (53)). Hence it mandates Member States to define the term vulnerable customers in reference to energy poverty, even mentioning to not allow for disconnection of electricity if a customer is affected by energy poverty. Being vulnerable should also not impede a customer's right to switch supplier. Members States are furthermore to address measures for vulnerable customers in their national energy action plans (e.g. specific benefits in the social security system, support for energy efficiency improvements). It is worth mentioning that to this day, there is no European definition for energy poverty. Some Member States use indicators such as the spending of a disproportionate share of the household income on electricity and heating, in comparison to other expenses, to quantify the number of households affected (EC, 2022).

[6] Containing Directive 2009/72/EC concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC.

The right to switch supplier was also already granted to customers, but the Third Energy Package specifies that the switching process should be easy and not take longer than three weeks. A new paragraph was added on the provision of single points of contact for consumers. These can be part of a general consumer information service or stand-alone institutions. The single point of contact shall inform consumers about their rights in the energy market and how they can initiate dispute settlement procedures. Member States shall also make sure that independent consumer body is installed that can deal with out-of-court dispute settlement, e.g. an energy ombudsman. The European Commission tasks itself with creating a publicly available and user-friendly energy consumer checklist.

A big section of the Directive is dedicated to further the establishment of one independent regulatory authority in each Member State. They are tasked with several duties most notably promoting competition and regulating network tariffs and access. Unbundling rules were also broadened, now also laying the foundations for ownership unbundling.

Annex 1 to the Directive elaborates further on consumer protection measures already set up in ANNEX A of Directive 2003/54/EC. This section goes into greater detail on contractual information, billing, the choice of payment methods, complaint handling of the service provider but also out-of-court dispute settlement procedures.

Clean Energy Package[7]

The Clean Energy Package gives credit to the fact that the energy system must undergo extensive changes to accomplish decarbonization in time to mitigate climate change. So while the Third Energy Package strengthened the position of customers mainly in terms of consumer protection measures such as transparency of terms and conditions and billing, as well as addressing energy poverty, the Clean Energy Package is assigning an active role to consumers in electricity markets and supply to attain the Union's renewable energy targets. Directive (EU) 2019/944 introduces the term 'active consumers' and attributes an important role in the transition of the energy system to them. They are no longer only on the receiving end, enjoying universal service and choice of supplier, they are now also a contributing player in the transition towards a low carbon EU by generating their own renewable electricity, offering their flexibility to shift their loads (i.e. consuming or producing at times, that are more favorable to the distribution system's stability and security) and managing their consumption efficiently.

Directive (EU) 2019/944 on the common rules for the internal market in electricity is setting the framework for the energy system to accommodate these changes and give consumers the necessary tools to act, e.g. smart metering systems to obtain frequent information on consumption data (in real-time or near-real time) as well as access to historical consumption data.

Directive (EU) 2019/944 mentions community energy initiatives (Article 43) and describes them as an '(…) effective and cost-efficient way to meet citizens' needs and expectations regarding energy sources, services and local participation. Community energy offers an inclusive option for all consumers to have a direct stake in producing, consuming or sharing energy.'

It furthermore states that the focus of community energy initiatives is not put on profit-making, but on providing affordable (renewable) energy as well as energy efficiency services to its members. It specifically addresses energy poverty in this context.

[7] Containing Directive (EU) 2019/944 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast); containing Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources (recast).

The Directive goes on and introduces citizens energy communities as a new type of market player. The community can take on any form of legal entity. However, it specifically excludes large-scale commercial undertakings or undertakings with a primary activity in the energy sector from taking decision-making stakes in the community. Citizens energy communities should be able to participate in energy market or supply activities on a level playing field with other market actors. They are subject to regulatory obligations but should not be burdened disproportionally in comparison to other players.

A citizen energy community can produce, store, sell or share with their members or to a market. There is no geographical limitation, i.e. a member or shareholder does not have to be connected directly to a generation plant operated by the community. The concept is only addressing electricity but is technology neutral, meaning that in theory it is not limited to renewable energy, it could be powered by fossil fuels… The citizen energy community can also operate a distribution network, however in this case, it must be treated as such and comply with all the rules and regulations. The rights and obligations put on consumers in the energy market do also apply to the members of citizens energy communities (such as the freedom of contract, the right to switch supplier, the responsibilities of the distribution service operator, etc.).

The Clean Energy Package also contains Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources. The Directive calls for a definition of 'renewables self-consumers' and of 'jointly acting renewables self-consumers', again emphasizing these new roles for consumers. It furthermore contains another type of community energy initiative, renewable energy communities. They set themselves apart from citizen energy communities in a few aspects, one of them being that their shareholders or members must be in the proximity of the renewable energy projects run by the community. This acknowledges for the fact that the self-generated electricity should also be consumed locally (potentially relieving transmission networks).

In a more classical sense concerning the consumer-supplier-relationship the Clean Energy Package strengthens consumers' positions in the retail market by speeding up the supplier switching process to 24 hours and by extending and detailing obligatory billing and contractual information.

It also demands additional information in terms of the disclosure of primary energy sources the electricity was generated from. Electricity suppliers now not only have to declare the overall company mix, (e.g. the percentages of natural gas, coal, oil, hydropower, biomass, photovoltaics, …). but also provide the product mix for each of their offers to their customers.

Additionally the Clean Energy Package stipulates that electricity suppliers should offer so-called dynamic price contracts (e.g. typically characterized by hourly or daily varying prices per kilowatt-hour tied to day-ahead spot market prices).

Connecting the 'Packages' to the standards of SGI provision

The following sub-chapter will summarize milestones in the four legislative packages for final consumers organized by their relevance to the standards of provision of SGI. For easier reference an overview in form of a matrix is provided (Figure 3. Standard of provision matrix showcasing milestones along the four legislative energy packages).

	1st Package DIRECTIVE 96/92/EC	2nd Package DIRECTIVE 2003/54/EC	3rd Package DIRECTIVE 2009/72/EC	(4th) Clean Energy Package DIRECTIVE (EU) 2019/944 DIRECTIVE (EU) 2018/2001
Availability		The Directive establishes universal service (i.e. the right to be supplied with electricity), Member States may appoint a supplier of last resort to ensure universal service, they may take measures to protect final customers in remote areas		Consumers shall be able to not only consume and store their self-generated electricity, but also sell it to the market - in order to do that, there needs to be a market available; they should furthermore be able to provide flexibility to the system - this again might depend on whether there is a market for flexibility or not,
				
Accessibility (to the grid, to electricity markets)	Access to the grid is subject to negotiations with the respective system operator, system operators in turn must publish an indicative range of prices for access to facilitate negotiations. (Member States may also choose a regulated access based on published tariffs)	Member States shall impose on distribution companies an obligation to connect customers to the grid (subject to terms and conditions that are approved or fixed by the regulatory authority)		All customers should be granted access to electricity markets to trade their flexibility and self-generated electricity; Directive (EU) 2019/944) recognizes community energy initatives as providers of affordable (renewable energy) to members and shareholders;
				
Affordability	Increased efficiency in production and competition will decrease electricity costs for consumers, in case the opening of markets proves to be detrimental to consumers (or the environment) consumer protection measures in the context of public service obligations should be applied	Household customers have the right to be supplied with electricity at reasonable, comparable and transaprent prices, Member States shall protect vulnerable customers and help avoid disconnection	The Directive explicitely acknowledges energy poverty as growing problem, Member States shall take measures that prevent people from disconnection, it alsow acknowlegedes that frequent information on energy costs and consumption data will be an incentive for consumers to save energy and costs (introducing smart metering!)	Member States shall define the “concept” of vulnerable customer (in relation to energy poverty and the prohibition of disconnection of such customers in critical times); the Directive demands that barriers to self-generation of electricity (e.g disproportionate fees for internally consumed electricity) or storing and selling self-generated electrictity to the market shall be removed, while it should be ensured self-generators still contribute adequately to the system costs; vulnerable customers should be able to participate in community energy initiatives
				

Quality (of supply, of service)		Household customers hold the right to be supplied with electricity of a specified quality, they also hold the right to a contract with their electricity service provider that specifies the service quality offered	The Directive adds that the quality of service is a central responsibility of electricity undertakings, the introduction of intelligent metering systems (subject to a positive economic assessment in the Member States) will support the overall quality of supply	Members of community energy initiatives (citizens energy communities or renwable energy communities)should still be granted all rights and obligations as already established in the 2nd and 3rd Package (including freedom of contract, right to switch supplier, all responsiblities of DSOs, rules on network charges, etc.)
	⟺	↑	↑	↑ →
Variety		Customers can choose their supplier freely, they are offered a variety and payment methods	Custmomers are granted the right to an easy switch of supplier within three weeks, they receive information on the fuel mix of the supplier and environmental impact of the fuel mix together with their electricity bill and on the suppliers website - they can base their decisions on information on electricity price, but also on what kind of energy sources they would like to support	Complete switching process within 24 hours, inform customer about benefits of switching + provide weblink to price comparison tool on their electricity bill, offer dynamic price contracts, provide information on supplier mix as well as product mix with billing information, adopt a new role in the electrcity supply system by becoming active consumers (producing your own electricity, offering your flexibility, engaging in new and innovative business models, joining a citizen's energy community or a renwable energy community)
	⟺	↑	↑	↑

Figure 3. Standard of provision matrix showcasing milestones along the four legislative energy packages

The pictograms in the matrix indicate whether a standard has improved or is evolving with an unclear outcome.

←	The standard has improved (compared to the previous package)
→	The standard is evolving – it is not yet clear whether it will improve
⟺	The standard was not addressed in the Package
☑	The standard has not changed

Source: author's own elaboration.

The following paragraphs discuss the legislative packages along the five standards of provision of SGI.

Availability

Universal service is first mentioned in the Second Energy Package and is defined as the right to be supplied with electricity, also covering remote areas where it might be technically and economically challenging to do so. The Third Energy Package is building up on this provision. So, in these two legislative packages a consumer is still largely perceived as just that – someone who **consumes** electricity from the grid individually.

However, the Clean Energy Package broadens this perspective giving consumers more diverse options to supply themselves, to produce themselves or collectively and to partake in different kinds of markets. For them to do so however, markets to sell their own electricity or flexibility must exist. As these markets are subject to competition their existence is also linked to a certain demand. Though one could argue that member States may choose to incentivize the establishment to a certain extent.

With regard to the universal service to be supplied, the standard of provision is undoubtedly fulfilled. Taking into consideration these new roles possibilities for consumers to participate and engage, there is still room for improvement left.

Accessibility

Package one, two and three addressed accessibility in a technical sense – as access to the grid. The First package dove in a little reluctantly rendering access to the grid a subject to negotiations. The Second Package imposed an obligation for distribution system operators to connect household customers to their grid. The Clean Energy Package stipulates that consumers must be granted access to electricity markets to sell their self-generated electricity as well as flexibility markets to partake in other activities such as aggregation or demand response. Accessibility thus does not only cover physical or technical but also legal or administrative barriers to markets (if they exist for final consumers on a household level).

Affordability

One of the main goals of the creation of the internal energy market in the EU was to decrease electricity prices for final customers through competition in the electricity market. The Second Package stipulated that every household customer holds a right to reasonable, comparable, and transparent electricity prices, it also asks for protection of vulnerable customers. The Third Package builds up on this and identifies energy poverty as a distinct problem in the EU. As means to mitigate energy poverty Member States should take measures to prevent disconnection. The Third Energy Package also introduces smart metering and presents frequent information on consumption and costs as a means to reduce energy demand and thus costs. The Clean Energy Package focuses strongly on self-generation and community energy initiatives. Final consumers should be given the right and the options to act on their (or a community's) behalf and by calling the shots themselves they might be able to save money along the way. The Clean Energy Package even acknowledges that participation for vulnerable customers should be enabled and encouraged, however it does not specify in what way.

Affordability has been addressed in all four legislative packages generally, as of Package 3 and 4 more specifically and in different contexts. However, it does lack clarity or concrete measures.

The Clean Energy Package introduces new ways of participation that are supposed to be inclusive. Partly because these new forms should enable people to take charge of their electricity supply and costs in a changing energy system.

Quality

In the context of electricity supply the standard of quality may address the technical quality of supply (being supplied day and night at a certain frequency, this is usually in the responsibility of the distribution and transmission service operator) or quality of service (being supplied under conditions agreed upon contractually or mandated by law, e.g. concerning complaint handling, dispute settlement or billing information). The Second Package established final consumers' basic rights to quality of supply and service, but not in detail. The Third Energy Package strengthened these provisions and elaborated more on requirements for quality of service. The introduction of smart metering (subject to a cost-benefit-analysis in the Member States) was justified by its contribution to the quality of supply.

The Clean Energy Package establishes new entities and roles for final consumers in the electricity market and supply. It emphasizes that members of energy communities (citizens and renewable) still hold the right to switch supplier and must be able to terminate their contract with the community. If energy communities are operating a distribution network, they must comply with the same rules and regulations other distribution service operators do (thus guaranteeing quality of supply).

However, the Clean Energy Package prescribes a rather loose framework for the inner works of energy communities. It doesn't go into detail about contractual terms and conditions between its members (or the members and the community), such as requirements for billing information or dispute settlement mechanisms. Technical quality of supply still lies with the distribution system operator and will be less of an issue (unless an energy community also operates a network).

When it comes to quality, especially quality of service, these new ways of collective self-generation and participation push some responsibility away from formerly legally established practices (i.e. in the classic consumer-supplier-distribution service operator triangle) onto self-organized groups of individuals. Whether or not this may be to the disadvantage of certain consumers is unclear. In some scenarios consumers will only cover a part of their electricity demand from self-generated electricity or an energy community and will maintain a contractual relationship with a commercial supplier for the rest who will then bear responsibilities in regards to SGI provision.

Variety

Variety is one of the standards that has grown significantly since the beginning of the liberalization and harmonization processes, given the fact that electricity as a commodity is a very homogenous good. I would argue the Second Package made the biggest impact when final customers could choose their electricity supplier freely. The Third Package forced Member States to shorten the switching process itself to three weeks. It called for a disclosure of energy sources in a supplier's energy mix – giving consumers more information to choose a supplier accordingly.

The Clean Energy Package takes it even further, calling for an even easier switching process and shortening it to 24 hours as well as adding the disclosure of energy sources per product and supplier. It also demands that suppliers offer dynamic price offers linked to spot market prices.

However, in terms of variety the Clean Energy Package also introduces new ways of participation, e.g. citizens energy communities and renewable energy communities. Individual self-generation has already existed for a while, but these new entities allow for collective self-generation and supply. There is now a variety in ways to become more active.

Conceptual-analytical analysis of (changing) standards of electricity supply

The conceptual-analytical framework presented in chapter two will be used for the analysis of selected standards of SGI provision.

Drivers

Environmental concerns and climate change are huge drivers of the energy transition towards a decarbonized energy supply. Electricity supply (as in transmission and distribution) is potentially more difficult with a growing number of volatile (e.g. wind or solar power) energy sources contributing to the energy mix. This could have an impact on **quality** in terms of security of supply. New technologies and appliances (such as storing facilities) might help to counteract. In any way these costs will have to be borne by all consumers. The Clean Energy Package calls for everyone to become active and participate. It introduces new ways for those who do not have the capital to invest or who simply do not own a rooftop for self-generation. Not only because everybody must pitch in to reach those climate and energy targets, but also to manage their own costs that might increase in the conventional supply system, also due to these new decentralized generation entities. **Affordability** could be critically impacted by the changing energy system, for instance due to rising costs of transmission and distribution network operation to ensure security of supply. Introducing more renewable energy into the overall mix and increased electrification of different sectors, such as the mobility sector, will demand investments to enable these developments. Self-organized electricity generation is potentially shifting responsibility towards private individuals who are not subject to Public Service Obligations, this might affect **quality** of service standards.

SGI organization

The Clean Energy Package almost ceremoniously hands over the torch to consumers. They shall be able to participate in different markets, self-generate their electricity, be part of energy communities that share, sell and store electricity. This is a big step away from the conventional customer-supplier-distribution service operator relationship and potentially has a big impact on standards of SGI provision, most notably on **availability, quality and affordability**. Partly these new forms of participation are regulated in the Clean Energy Package, some aspects of energy supply (e.g. distribution services) will still be in the responsibility of regulated market actors, but other aspects are now handled by new market actors and individuals guided by civil law (and not sector-specific legislation). Public Service Obligations put on licensed suppliers and distribution service operators do not apply on privately (as in not commercially) organized generation and supply entities.

SGI demand

In the Clean Energy Package consumers are now given new tools to act collectively, i.e. share amongst them, group their flexibility, offer to different markets. This is a stark change to the individual consumption of electricity per household. And while it is not new to collectively invest in a renewable energy project, the Clean Energy Package also allows for community initiatives that

run much more supplier-like entities and group their individual small-scale generation capacities to share or sell amongst them. Now a group of people may also collectively demand **access** to the grid, or to the flexibility market.

Spatial and temporal dimensions

The shift from centralized electricity generation plants towards decentralized generation based on renewable energy is now accelerating. Consumers are encouraged to self-generate or participate in self-generation projects. Renewable energy communities explicitly demand proximity of their members and shareholders to the generation sites to keep supply and demand locally (and potentially ease the strain on transmission and distribution networks). In a technical sense **access** to the grid and **quality** of supply could be challenged by more and more individuals and communities asking for grid connection for their renewable energy projects, also in remote areas. However, **variety** might increase with new options for consumers to engage, get active and may even become more self-sufficient.

Conclusion and Outlook

The incremental changes in the energy sector, guided by the four Energy Packages, affected electricity supply as a SGEI for household consumers substantially. From a final consumer's perspective, the First Packages changed things more preparatory in the background (e.g. introducing unbundling rules and paving the way for the liberalization of the electricity market). In the context of electricity supply as a SGEI the standards of provision where not affected fundamentally yet. The whole purpose of creating a common internal market in energy however was of course to guarantee secure and affordable electricity supply driven by competition. It was the Second and Third Package that unleashed bigger changes in relation to the standards of provision. Especially the Third Package took on a more consumer-centric view, strengthening their position in the energy market concerning accessibility, affordability, quality, and variety of SGI provision.

The most recent Package most notably introduced new ways for consumers to engage and actively support the decarbonization of the energy supply system by becoming key players in the energy supply chain themselves. This adds a new dimension to the already established standards of provision. Final consumers are now given more options to leave the traditional paths of electricity generation and supply and self-generate individually or collectively, as well as share, sell and distribute electricity. They can offer flexibility and are encouraged to participate in innovative business models. By doing so they potentially leave the established legal framework and standards of SGI provision do not or not fully apply anymore. This might affect all standards of SGI provision in different ways:

Availability for instance does not only concern electrification in a technical sense anymore (which was already established in most EU Member States early on), it is also the availability of different markets (e.g. for selling self-generated electricity, balancing or flexibility).

Accessibility to the electricity grid in a technical sense is challenged by more and more renewable energy generation plants from individual households or collective generation projects. It also addresses administrative, legal, and organizational barriers to access markets in order to engage and participate on the final consumer level.

In the light of the Clean Energy Package affordability is also a multi-faceted issue. These new ways to engage and participate are proposed in the Directives as gateways for consumers to man-

age their cost and consumption and maybe even counteract rising electricity prices due to the overall transition towards a decarbonized energy system. Whether or not this will be implemented as intended by the European Commission into national legislation is up to the Member States.

Quality of supply and service is affected as well by the fact that the Clean Energy Package offers new ways to leave the traditional generation, supply, and distribution regimen, away from commercial electricity suppliers. Distribution services will however always be subject to rules and regulations set up in the respective Directive.

There has never been more choice or options in the electricity market for household consumers. Variety is one of the standards that profited extensively from the Clean Energy Package. Consumers now not only can choose their supplier and product based on information on the fuel mix, they can now also choose to be an active actor in the energy market.

References

Bartl, M. (2009). The Affordability of Energy: How Much Protection for the Vulnerable Consumers? *Journal of Consumer Policy*, *33*(3), 225-245. https://doi.org/10.1007/s10603-009-9122-9

Bauby, P., Hall, D., Thiry, B., & Sak, B. (2004). *Contribution of Services of General Interest to Economic, Social and Territorial Cohesion. Final Overall Report*. DG Regio, CIRIEC, Liege.

Bauwens, T., Schraven, D., Drewing, E., Radtke, J., Hostenkamp, L., Gotchev, B., & Yildiz, Ö. (2022). Conceptualizing community in energy systems: A systematic review of 183 definitions. *Renewable and Sustainable Energy Reviews*, *156*, 111999. https://doi.org/10.1016/j.rser.2021.111999

Berka, A., & Dreyfus, M. (2021). Decentralisation and inclusivity in the energy sector: Preconditions, impacts and avenues for further research. *Renewable and Sustainable Energy Reviews*, *138*, 110663. https://doi.org/10.1016/j.rser.2020.110663

Bjørnsen, H. M., Foss, O., & Johansen, S. (2015). The concept and definition of SGI. In H., Fassmann, H., A., Humer, E. M., da Costa & D., Rauhut (Eds.). *Services of General Interest and Territorial Cohesion. European Perspectives and National Insights* (pp. 73-90). Vienna: Vienna University Press.

Bouzarovski, S., Petrova, S., & Sarlamanov, R. (2012). Energy poverty policies in the EU: A critical perspective. *Energy Policy*, *49*, 76-82. https://doi.org/10.1016/j.enpol.2012.01.033

Brown, D., Hall, S., Martiskainen, M., & Davis, M. E. (2022). Conceptualising domestic energy service business models: A typology and policy recommendations. *Energy Policy*, *161*, 112704. https://doi.org/10.1016/j.enpol.2021.112704

CEC (2003). *Green Paper on Services of General Interest*. COM(2003) 270 final.

CEC (2011). *A Quality Framework for Services of General Interest in Europe*. COM(2011) 900 final.

CEC (2014). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions A policy framework for climate and energy in the period from 2020 to 2030.* COM(2014)015 final.

Droubi, S., Heffron, R. J., & McCauley, D. (2022). A critical review of energy democracy: A failure to deliver justice? *Energy Research & Social Science*, *86*, 102444. https://doi.org/10.1016/j.erss.2021.102444

EC (2018). *Study on the quality of electricity market data of transmission system operators, electricity supply disruptions, and their impact on the European electricity markets. Final Report*. European Commission.

EC (2019). *The European Green Deal sets out how to make Europe the first climate-neutral continent by 2050, boosting the economy, improving people's health and quality of life, caring for nature, and leaving no one behind*. European Commission. Retrieved from https://ec.europa.eu/commission/presscorner/detail/en/ip_19_6691

EC (2021a). *2030 climate & energy framework*. European Commission. Retrieved from https://ec.europa.eu/clima/policies/strategies/2030_en

EC (2021b). *The European Single Market. European Commission*. Retrieved from https://ec.europa.eu/growth/single-market_en

EC (2022). *Energy poverty*. European Commission. Retrieved from https://ec.europa.eu/energy/eu-

buildings-factsheets-topics-tree/energy-poverty_en
EEC (1957). *Treaty establishing the European Economic Community (Treaty of Rome)*. European Economic Community.
EP (2020). *Fact Sheets on the European Union. Internal Energy Market*. European Parliament. Retrieved from https://www.europarl.europa.eu/factsheets/en/sheet/45/internal-energy-market
FSR (2021, July 21). *Unbundling in the European electricity and gas sectors*. Florence School of Regulation. Retrieved from https://fsr.eui.eu/unbundling-in-the-european-electricity-and-gas-sectors/#:~:text=In%20the%20regulation%20of%20network,distribution%20%E2%80%93%20for%20in%20the%20EU%2C
Goldthau, A. (2014). Rethinking the governance of energy infrastructure: scale, decentralization and polycentrism. *Energy Research & Social Sciences*, *1*, 134-140. https://doi.org/10.1016/j.erss.2014.02.009
Hall, S., Brown, D., Davis, M., Ehrtmann, M., & Holstenkamp, L. (2020). *Business Models for Prosumers in Europe*. Deliverable 4.1. Horizon 2020 PROSEU project (H2020-LCE-2017).
Hanke, F., & Lowitzsch, J. (2020). Empowering vulnerable consumers to join renewable energy Communities – towards an inclusive design of the clean energy package. *Energies*, *13*(7), 1615. https://doi.org/10.3390/en13071615
Hanke, F., Guyet, R., & Feenstra, M. (2021). Do renewable energy communities deliver energy justice? Exploring insights from 71 European cases. *Energy Research & Social Science*, *80*, 102244. https://doi.org/10.1016/j.erss.2021.102244
Heffron, R. J. (2022). Applying energy justice into the energy transition. *Renewable and Sustainable Energy Reviews*, *156*, 111936. https://doi.org/10.1016/j.rser.2021.111936
Horstink, L., Wittmayer, J. M., & Ng, K. (2021). Pluralising the European energy landscape: Collective renewable energy prosumers and the EU's clean energy vision. *Energy Policy*, *153*, 112262. https://doi.org/10.1016/j.enpol.2021.112262
Humer, A. (2014). *Services of General Interest in der EU – räumliche und raumpolitische Dimensionen*. Vienna: InPlanning. https://doi.org/10.17418/PHD.2016.9789491937231
Kalt, G., Wiedenhofer, D., Görg, C., & Haberl, H. (2019). Conceptualizing energy services: A review of energy and well-being along the Energy Service Cascade. *Energy Research and Social Science*, *53*, 47-58. https://doi.org/10.1016/j.erss.2019.02.026
Meeus, L., Noucier, A., Reif, V., & Schittekatte, T. (2020). *The Evolution of Electricity Markets in Europe*. Cheltenham: Edward Elgar Publishing. https://doi.org/10.4337/9781789905472
Torriti, J. (2010). Impact Assessment and the Liberalization of EU Energy Markets: Evidence-Based Policy-Making or Policy-Based Evidence-Making? *Journal of Common Market Studies*, *48*(4), 1065-1081. https://doi.org/10.1111/j.1468-5965.2010.02089.x
Tulloch, D. J., Diaz-Rainey, I., & Premachandra, I. M. (2018). The impact of regulatory change on EU energy utility returns: The three liberalization packages. *Applied Economics*, *50*(9), 957-972. https://doi.org/10.1080/00036846.2017.1346366