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Thesis

Energy Justice and Re-Balancing the Energy Policy Trilemma in the EU

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Abstract

The emergent nature of the climate crisis, and the central role that the energy transition plays in mitigating and adapting to it, gives rise to broad, human-centric questions of justice. The aim of this paper is to explore the ways that a justice perspective can re-balance the energy policy trilemma faced in the European Union and to illustrate this using the example of solar energy and its potential to enhance energy (in)justices in the Bloc. My hypothesis is that a justice perspective with a focus on energy poverty and sustainability can re-balance the current wide gap in the energy trilemma facing the European policy objectives. Despite the assumption that low carbon energy systems may lead to greater energy justice, as illustrated through the example of solar energy, this may not be true. I conclude that while there is some potential in energy justice re-balancing the energy trilemma in the EU, several ‘invisible’ injustices are arising in the energy transition. The paper is separated in 5 chapters: 1) introduction; 2) a review of the energy justice literature and the establishment of an analytical framework in relation to energy poverty in the EU; 3) EU policies from a justice perspective and the energy trilemma; 4) the EU energy mix and the case-study of solar energy and (in)justices; and finally, 5) concluding remarks and recommendations.

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Research Questions and Methodology

Research Questions

1. To what extent can a justice perspective re-balance the energy policy trilemma faced in the European Union?
 - a. What is the role of the deployment of low carbon technologies in enhancing energy justice in the European Union?

Aim

The aim of this paper is to explore the ways that a justice perspective can re-balance the energy policy trilemma faced in the European Union and to illustrate this using the example of solar energy and its potential enhance energy (in)justices in the Bloc.

Hypothesis

The current policy bias on energy security leads to my hypothesis that a justice perspective with a focus on energy poverty and sustainability can rebalance the current wide gap in the energy trilemma facing the European policy objectives. This can come to help rebalance and ‘secure’ energy security. I seek to explore this by answering the second sub question that arises from this research, which questions the role of the deployment of low carbon technologies in enhancing energy justice in the European Union, and by extension the extent to which this may lead to the rebalancing of the energy trilemma in the Bloc.

Methodology

Methodologically, this paper was carried out using a combination of qualitative and quantitative research. I collected existing materials, sourced from Eurostat, governmental and independent agencies across the EU. The collection of these materials was identified through connected

searches across various relevant databases undertaken in Google Scholar and JSTOR with terms such as “energy justice”, “energy justice AND Europe”, “energy justice AND energy trilemma”, “energy poverty AND energy justice” etc. The criteria used to collect this data included data range and representative year due to the fluctuating nature of energy prices, and access, and the progress made with regards to this in recent years. Further, the research was limited to papers published since 2014 to maintain their relevance in the applicability of energy policies, except for key contributions informing the theoretical framework of the analysis.

Furthermore, I made use of qualitative research methods, predominantly, the collection and assessment of existing texts and materials. These span in range and include policy guidelines, EU directives and regulations, recommendations by independent and government agencies, and academic works from accredited professionals who dedicate their research to energy justice. Academic papers were selected based on criteria that include: their citations and individual authors or groups’ contributions in the field. The combination of qualitative and quantitative methodologies enables me to look at the issue of energy justice in relation to policymaking from an interdisciplinary perspective. Qualitative research standalone would be insufficient in considering the practical dimensions of a justice perspective in policy making, while quantitative research would not be adequate in encapsulating the people-centric approach of policymaking, as well as the theoretical discrepancies in the area.

Several schools of thought arise that can be identified throughout my research: a) policy studies and governance; b) policy studies, governance and social equity; and c) energy justice and social equity.¹

A notable contribution has been made by authors such as: Sovacool, Dworkin, Jenkins, McCauley and Heffron in energy justice and the energy trilemma. Further, significant contributions have been made by authors such as Bouzarovski in assessing energy poverty policies in relation to energy justice with a focus in the EU. Organisations and agencies heavily writing on the issues touched on throughout this research are the EC, Eurostat, the IEA, the UN and OECD.

¹ A Chapman et al “Investigating Ties Between Energy Policy and Social Equity Research: A Citation Network Analysis” Soc. Sci. (2019), 8, 135

Chapter 1 - Introduction

The existential threat posed by climate change as a result of the rise of CO₂ emissions has been recently put at the epicentre of political discussions in the 21st century. Special focus is paid to the role of energy in mitigating and adapting to climate change, as the majority of CO₂ emissions come from the fossil-fuel-based energy industry currently in place. The European Union (hereinafter, EU) aims to become the first carbon-neutral continent by 2050. This objective is the heart of the European Green Deal and the EU's commitment to the Paris Agreement signed in 2015. Reflecting the need for the so-called green energy transition, a heavy focus on decarbonising energy systems through low-carbon energy systems has dominated the European policy agenda. In addition to accelerating the efforts of decarbonising the European energy systems, the concept has also been weaponised in recent events, leading to the increasing trend of securitisation in the field, all the while, high energy prices plague European households. In broad terms, this creates a policy trilemma for the Bloc. Energy policy has been based on looking at energy as a private good with strong public goods characteristics, but not a strategic good.² Insofar as this is the case, a persistent conundrum is created, one that is difficult to balance due to the several competing interests present.

A new wave of energy research has focused on energy justice, democracy, and the alleviation of energy poverty. The concept of energy justice was only recently coined less than a decade ago by McCauley, and a new research cluster has since developed in an attempt to incorporate a human element to energy-related decision-making.

This research aims to discuss the ways that the energy trilemma may be re-balanced from an energy justice perspective. Chapter 2 examines the meaning of energy justice by reviewing the relevant literature, to determine the appropriate analytical framework that will be used thereafter. Further, Chapter 2 seeks to define the meaning of energy poverty and its relationship with energy justice in the context of energy policy. Chapter 3 lays out and assesses the European Energy Strategy, and the consequent Energy Trilemma as relating to the energy justice framework set out in Chapter 2. Finally, Chapter 4 considers the role of solar energy as an illustrative example of low-carbon

² S.S Andersen, A. Goldthau and N. Sitter *Energy Union Europe's New Liberal Mercantilism?* International Political Economy Series Palgrave Macmillan 2017

energy in relation to the energy trilemma from a justice perspective. I conclude that energy justice may be a recourse to re-balancing the energy trilemma in theory, nevertheless, practice shows that the energy justice perspective moving away from the energy security bias with a focus on energy poverty and sustainability may lead to new, deeper injustices and may even further energy poverty through the exclusion of vulnerable groups. Therefore, an approach may be taken to resolve the energy trilemma from an energy justice perspective, however, energy injustices may still prevail, leading to new, contemporary inequalities in low-carbon energy systems.

Chapter 2- Energy Justice and Energy Poverty

It may seem peculiar to combine the words (and disciplines) of ‘energy’ and ‘justice’ in the same phrase. The philosophical underpinnings of the concept of energy justice seemingly come in direct contradiction with a system defined by hard politics, geopolitical tropes of ‘power’ and globalised infrastructure. However, given the existential threats to our (social) livelihoods posed by climate change, the apex of pollution and energy insecurity, several ethical conundrums are created. Energy justice is a newfound, interdisciplinary concept that was first coined in the context of policy-making by McCauley et al in 2013 in the social science research agenda³ which seeks to apply justice-principles to energy policy⁴, the political economy of energy⁵, climate change and the energy trilemma.⁶ This becomes a significant tool as the public’s understanding of accountability in relation to energy problems, and their perception of justice can come to define⁷ investment decisions alongside behaviour and trust in institutional regulation of the energy sector.⁸ Some have argued that energy justice highlights cosmopolitanism and incorporates a futuristic perspective.⁹

This chapter will consider the following. Section 1 begins with an overview of the literature on the characteristic elements of energy justice. This is distinguished from its justice counterparts, and I argue that it emerged from environmental justice, but is distinct from the concept. Further, I will set out the philosophical underpinnings of energy justice based on the differing schools of thought, presenting the literature and some of the most cited academics in the field, namely: Sovacool, McCauley, Heffron and Jenkins. Lastly, Section 1 will conclude with the creation of an energy

³ K. Jenkins et al “Energy Justice: A Conceptual Review” *Energy Research & Social Science* 11 (2016) 174-182

⁴ D McCauley, R. Heffron, S. Hannes, K. Jenkins “Advancing Energy Justice: The Triumvirate of Tenets” *International Energy Law Review* 32(3) (2013) 107-110

⁵ K. Jenkins, R.J Heffron, D. McCauley “The Political Economy of Energy Justice in Canada, the UK and Australia: A Nuclear Energy Perspective” in T. Van de Graff, B.K Sovacool, A. Ghosh, F. Kern, M.T Klare (Eds) *Palgrave Handbook of International Political Economy of Energy*, Palgrave Macmillan, 2016

⁶ R.J Heffron, D. McCauley, B.K Sovacool “Resolving Society’s Energy Trilemma Through the Energy Justice Metric” *Energy Policy* 87 (2015) 168-176

⁷ B.K Sovacool and M.H Dworkin “Energy Justice: Conceptual Insights and Practical Applications” *Applied Energy* 142 (2015) 435-444

⁸ M. Greenberg “Energy Policy and Research: The Underappreciation of Trust” *Energy Res Soc Sci* (2014) 152-160

⁹ R.J Heffron, D. McCauley and B.J Sovacool “Resolving Society’s Energy Trilemma Through the Energy Justice Metric” *Energy Policy* 87 (2015) 168-176

justice framework. This will assess the literature on the definition of energy justice and conclude on the appropriate framework for this research, based on the widely used definitions adopted by academics.

Section 2 will set out the definition of energy poverty and its relation to energy justice. I will elaborate energy poverty in the EU and the indicators used to assess it. Further, I will discuss the contributing factors leading to energy poverty in relation to energy injustices. The relationship between energy justice and energy poverty is imperative in the assessment of the EU's energy trilemma, as consumer vulnerability has been a defining element of the EU's modernised energy policy, which has come in tension with other energy objectives. Furthermore, policies tackling energy poverty, what I call consumer-centric approaches, are closely related to tackling energy injustices according to the literature, creating an essential analytical framework for the rest of this research.

Section 1 - Energy Justice

Energy justice has been defined in different ways, all incorporating normative and procedural aspects. McCauley defines energy justice in simple terms as “the application of rights (both social and environmental) at each component part of the energy system.”¹⁰ Jenkins et al have limited the philosophical groundings of energy justice to three elements: distributional, procedural and recognition-based tenets¹¹ reflecting Fuller and Bulkeley's focus on distributional and procedural justice considerations.¹² On the other hand, Sovacool and Dworkin define energy justice as “*a global energy system that **fairly disseminates** both the benefits and costs of energy services, and one that has **representative and impartial energy decision-making.***”¹³ The first element of this definition substantiates the concept of *fairness* and *justice* - both normative terms - while the second relies on a politically procedural element of decision-making, indicating the terms of

¹⁰ D. McCauley *Rebalancing the Trilemma of Security, Poverty and Climate Change* Palgrave Macmillan (2018)

¹¹ Ibid K Jenkins et al (2016)

¹² S. Fukker, H. Bulkeley “Changing Countries, Changing Climates: Achieving Thermal Comfort Through Adaptation in Everyday Activities” *Area* 45 (1) (2013) 63-69

¹³ Ibid Sovacool and Dworkin (2015)

energy justice and democracy resemble each other. Sovacool and Dworkin's approach departs, to an extent, from that used by Jenkins et al, as they frame energy justice as a conceptual and analytical tool, providing a comprehensive account of the philosophical approaches. These philosophical underpinnings are not ignored by Jenkins and McCauley in their definition. Instead, McCauley and Jenkins adopt a simplified and practicable definition of energy justice.

Nevertheless, some key characteristics and assumptions can be derived from this brief overview of the literature. First, all views on energy justice are founded on some basic, rights-centred and ethics-oriented assumptions which have come to define the modern use of the term. Second, normative and procedural characteristics define energy justice, which sets the concept apart from its justice counterparts.

Emergence of energy justice and distinctions from environmental justice

The concept of energy justice derives from the study of making energy policy more just, primarily in the context of energy poverty.¹⁴ The definition provided by Sovacool and Dworkin is reflecting that of environmental justice, focusing on procedural fairness, defined as “fair treatment and meaningful involvement of all people [. . .] in the development, implementation, and enforcement of environmental laws.”¹⁵ Environmental justice aimed to act where “people of colour and lower socio-economic status are disproportionately affected by pollution, the siting of toxic waste dumps, and other Locally Unwanted Land Uses.”¹⁶ Some key questions emerge when conceptualising energy justice, namely, whether the concept is too substantially similar to environmental and climate justice, and whether the energy-only approach is reductionary.¹⁸ Some scholars have defined energy justice as a “new front-line in environmental justice research and activism”¹⁹ which

¹⁴ K. Szulecki “Conceptualising Energy Democracy” *Environmental Politics* Vol 27 No. 1 (2018) 21-41

¹⁵ William M. Bowen and Michael V. Wells “The Politics and Reality of Environmental Justice: A History and Considerations for Public Administrators and Policymakers” *Public Administration Review* Vol 62 Issue 6 (2002) 688-698

¹⁶ N. Kibert “Green Justice: A Holistic Approach to Environmental Injustice” *Journal of Land Use and Environmental Law* 17 (2001) 169-182

¹⁷ D. Schlosberg “Theorising Environmental Justice: The Expanding Sphere of a Discourse” *Environmental Politics* 22 (2013) 37-55

¹⁸ K. Jenkins “Setting Energy Justice Apart from The Crowd: Lessons from Environmental and Climate Justice” *Energy Research and Social Science* 39 (2018) 117-121

¹⁹ J. Sze et al “Environmental Justice at the Crossroads” *Socio. Compass* 2 (4) (2008) 508-580

comes to complement environmental and climate justice. However, several distinctions between energy justice and environmental justice can be made according to McCauley, while Jenkins sets energy justice apart in the crowd. I will analyse both in turn.

McCauley argues that first, energy justice does not find its origins from an anti-establishment social movement as environmental justice has. Energy justice is rooted in energy systems of production and consumption with the aim of providing individuals across all regions with affordable and sustainable energy which necessitates a nuanced understanding of social justice in the energy system.²⁰ McCauley argues that energy justice offers a unique opportunity to engage with energy-specific questions which allows for new interdisciplinary discourse.²¹

Additionally, Jenkins outlines the failures faced by environmental justice - such as its limitation to a grassroots movement - which have manifested as the increasing need for focused justice models, including that centred around energy justice.²² This makes its smaller scope (in comparison to environmental justice) a more “strategically impactful tool.”²³ In further contrast to environmental justice, energy justice is a conceptual tool analysing distinct justice concerns, and an analytical tool for energy researchers who seek to understand how values are embedded in energy systems.²⁴ Therefore, the smaller scope of energy justice poses analytical and decision-making benefits for decision-makers, distinguishing it from environmental justice. While amplifying the utility that a justice approach may provide in the context of policy making and assessment thereof.

What justice?

The concept of justice has puzzled academics, historians, philosophers, politicians and lay people alike as one of the most historical moral concepts stretching before Plato’s time and running as a modern enigma today. Our understanding of justice varies depending on our belief systems. For the ancient Greeks, justice was living a virtuous life; for Christians it was living under the Golden

²⁰ Ibid McCauley et al (2013)

²¹ Ibid McCauley (2018)

²² Ibid Jenkins (2018)

²³ Ibid Jenkins (2018)

²⁴ Ibid Sovacool and Dworkin (2015)

Rule; for European philosophers in the 18th and 19th century, justice derived from natural law.²⁵ It is outside the scope of this essay to get lost in the labyrinth of relevant justice debates. Instead, I will briefly ask which school of justice thought energy justice is premised on.

Sovacool and Dworkin have argued that all schools of thought reflect a recurring theme: justice is less important for what it is than for what it does and its effect on decision-making.²⁶ The pair identify eight concepts that are of importance in the energy discourse²⁷:

- I. Virtue as related to energy efficiency in supply, distribution and end-use.
- II. Utility as related to energy externalities.
- III. Human rights as related to social conflict and breaches of human rights in pursuit of energy fuels and technology.
- IV. Procedural justice in relation to energy and due process.
- V. Welfare and happiness in relation to energy poverty and the access to electricity and technology.
- VI. Freedom from energy subsidies that involve an involuntary wealth transfer to recipients.
- VII. Posterity in relation to energy sources and the exhaustion of depletable reserves.
- VIII. fairness, responsibility and capacity in relation to climate change and the negative impacts if that is not mitigated through energy.

On the other hand, McCauley identifies the philosophical debate between liberalism and libertarianism as going to the crux of energy justice. The former is associated with Rawls' "A Theory of Justice" while the latter is associated with Nozick's "Anarchy, State and Utopia." Liberalism, according to McCauley, is based on the principle of liberty and the result of basic freedoms encouraging redistributions of inequalities. On the other hand, libertarianism agrees with the first principle but sees justice as punitive and less redistributive, while it minimises the state's role.²⁸ Another layer of analysis can be added when contrasting liberalism and communitarianism which is associated with Walzer's "Sphere of Justice" who regards a set of expectations within which all human interactions take place as embedded in all community cultures. McCauley identifies two developments in thinking in this field: 1) the rise of cosmopolitanism and 2) the

²⁵ Ibid Sovacool and Dworkin (2015)

²⁶ Ibid Sovacool and Dworkin (2015)

²⁷ Table 1 in Ibid Sovacool and Dworkin (2015)

²⁸ Ibid McCauley book

move from redistribution to recognition. The former refers to the notion that we are all world citizens - a concept that is directly applicable not only to the energy trilemma as a general conundrum, but to the energy trilemma in Europe as the Bloc aims to create a Single Energy Community founded on solidarity and co-operation under the deployment of renewable energy sources. The latter has been suggested by Nancy Fraser who has challenged justice researchers to explore the process of recognition in addition to the principles of redistribution.²⁹

This presents several philosophical debates underlying the definition of energy justice. Sovacool and Dworkin's comprehensive philosophical evaluations have been accepted in the literature by Jenkins and McCauley, as well as other academics. Their framework provides a useful decision-making tool when understanding philosophical debates in the context of energy policies. It can be said that the pair provide a broader set of philosophical understandings that come to define energy justice. In contrast, McCauley's work illustrates the modern philosophical underpinnings of energy justice in a modern, long-term looking era, while directly tying them to the energy trilemma - the context and focus of his research.

Energy Justice Analytical Framework

Building on the previous sub-section, and to conclude on which analytical framework of energy justice will be appropriate for potentially re-balancing the energy policy trilemma, I will look at three differing approaches suggested in the literature by Sovacool and Dworkin, Jenkins and McCauley.

Energy Justice Metric

In their paper, Sovacool and Dworkin put forward the suggestion that research can be taken a step forward through the development of the Energy Justice Metric - an endeavour Raphael Heffron and his colleague took upon themselves to complete in 2015. In simple terms, they define energy justice as a "conceptual framework that seeks to identify when and where injustices occur and how

²⁹ N. Fraser *Scales of Justice* Cambridge Polity Press 2008

best law and policy can respond.”³⁰ Their paper purports to quantitatively analyse energy justice through the Energy Justice Metric (EJM) which aims to influence what new energy infrastructure is built and, consequently, that society can choose this infrastructure based on a set of criteria allocating and distributing the costs and benefits in a *just and equitable* method.³¹ The parameters of the EJM are illustrated in Table 1 derived directly from Heffron et al’s paper. The calculation of the EJM can produce any of three results: a) there will be an individual country EJM; b) there will be an EJM for each type of energy infrastructure; c) the cost of energy justice can be weighed and factored into the economic cost calculations that compare the price for building different energy infrastructure.³² The aim of this is to evaluate how far away countries are from the ideal application of energy justice - and by extension the extent to which they can solve the energy trilemma. The benefits of this metric lie in the potential to indicate which institutions or nations can create more energy just regimes, which is a unique tool in objectively assessing the ways that energy justice can be met.³³ Nevertheless, given the complex and interdisciplinary nature of the

³⁰ Ibid Heffron et al 2015

³¹ Ibid

³² Ibid

³³ Ibid Sovacool

energy trilemma as seen from the European strategic prism, this tool would be insufficient in our analysis of resolving the trilemma in the Bloc.

Table 1
The parameters of the Energy Justice Metric.

Parameters of the Energy Justice Metric	
Economics	<ul style="list-style-type: none"> ● Cost-Benefit Analysis for New Energy Infrastructure (X1) ● Cost of Subsidies for Energy Source Extraction, Development and Operation (X2) ● Cost of Energy to Disposable Income Ratio (X3) ● Benefit from Employment Creation in the Short to Long-term for Energy infrastructure Development (X4)
Politics	<ul style="list-style-type: none"> ● Cost of Fluctuation and Instability in Energy Supplies (Y1) ● Cost (Benefit) of Import/Export of Energy Supplies (Y2)
Environment	<ul style="list-style-type: none"> ● Cost (Benefit) to (from) Public Health Service from Energy Sources (Z1) ● Cost of the effect of Environmental Pollutants from Energy Sources (Z2) ● Cost of CO2 Tax (Z3) ● Cost of Accidents (in. Fatal Accidents) to Workforce and Public (Z4) ● Cost of Loss of Amenity to Local Communities Direct and Indirect from Energy Sources (Z5)

*Note: To properly value future generations, all costs inherent in the energy justice metric are undiscounted.

Figure 1 - The parameters of the EJM, from R.J Heffron, D. McCauley, B.K Sovacool "Resolving Society's Energy Trilemma Through the Energy Justice Metric" *Energy Policy* 87 (2015) p172

Sovacool and Dworkin

The concept of energy justice for the pair connects energy policy and technology with the abovementioned philosophical concepts which represent a combination of classical and modern theories. In their comprehensive conceptualisation of energy justice, Sovacool and Dworkin argue that a justice perspective can be directly applied to decisions. According to them decision-making is not always transparent, nor straightforward, which is why they developed an *energy justice decision-making framework* which argues that energy decisions should promote:

- I. availability;
- II. affordability;
- III. due process;
- IV. good governance;

- V. sustainability;
- VI. intergenerational equity;
- VII. intragenerational equity; and
- VIII. responsibility.

According to this, availability and affordability are the least contentious principles of the eight as they represent some of the most basic elements of justice in relation to energy, for example, availability of energy and the affordability of energy services meaning the protection of consumers. Intergenerational equity in this context refers to distributive justice between present and future generations which holds that future people have a right to enjoy a good life - representing the crux of sustainability. On the other hand, intragenerational equity refers to the principle that present people have the same right to access energy services fairly which finds its roots in distributive justice and incorporates one's right to a certain set of minimal energy services that ensure a minimum level of wellbeing. They label their analysis as a synthetic notion of justice which is necessary as energy injustices are interrelated.³⁴

Jenkins et al and McCauley

In conceptualising energy justice, Jenkins et al and McCauley in their respective works limit Sovacool and Dworkin's account of philosophical approaches to energy justice by focusing on a) distributional, b) procedural and c) recognition-based tenets. It must be noted that McCauley worked with Jenkins and colleagues in Jenkins work cited in this section. This means that a portion of the research is shared between the two works, especially in relation to the formulation of this analytical framework. The pair agree and applaud Sovacool, and Dworkin's work set out throughout this section, yet choose to simplify it to relate it to practicable energy policy considerations. Therefore, we now turn to look at all three before seeing the ways that these form the energy justice critique in relation to energy systems based on Jenkins et al's work and with some reference to McCauley's broader comments.

³⁴ Ibid Sovacool

Distributional Justice

Distributional justice acknowledges the physically unequal allocation of environmental externalities as well as the uneven distribution of associated responsibilities³⁵ while calling for the even distribution of benefits and costs on all members of society.³⁶ From the perspective of the consumer, fuel poverty has revealed the uneven spread of burdens with regards to affordable and accessible energy services, in which regard, energy justice concerns both physical access to electricity and heating but also questions of individual freedoms - such as choice. This is illustrated through the energy transition in Germany - the so-called *Energiewende*. The strategic shift in Germany sees an increasingly decentralised production and the replacement of large-scale nuclear power plants and fossil electricity as the new German strategy.³⁷ According to this, the *Energiewende* has the potential to distribute injustices in terms of benefits, as the risks of a nuclear incident in the area are limited, and nuclear capacity is being replaced with renewable sources, contributing to a more *just distribution of risks from electricity generation*, affecting larger portions of the German population when compared to a centralised solution.³⁸

Recognition Justice

According to McCauley, recognition justice - or post-distributional justice - enables decision-makers to ask who to focus on when we think of energy victims.³⁹ Fraser identifies three categories of this cited in both Jenkins et al and McCauley's work alike: a) cultural domination; b) non-recognition; and c) disrespect. The flaws of an approach of non-recognition are illustrated by Jenkins et al in the example of the Isle of Lewis where the Scottish government declined permission for a 181 turbine project on the island; the project would have delivered £6 million annually in financial benefits over the course of 20 years of which £2 million would have been accrued directly to local residents.⁴⁰ The opposition raised cultural concerns reflected in historical resistance, unjust patterns of land ownership and the potential of a skewed distribution of benefits

³⁵ G. Walker "Beyond Distribution and Proximity: Exploring the Multiple Spatialities of Environmental Justice" *Antipode* 41(4) (2009) 614-636

³⁶ *Ibid* G. Walker (2009)

³⁷ *Ibid* Jenkins et al (2016)

³⁸ *Ibid* Jenkins et al (2016)

³⁹ B.R Jones, B.K. Sovacool, and R.V. Sidortsov "Making the ethical and philosophical case for "energy justice" *Environmental Ethics* 37 (2015) 145-168 in McCauley (2018)

⁴⁰ S. Carrell "£500m project offers jobs and income, but will it devastate the environment?" *The Guardian* 04 February 2008

by large energy corporations. These arguments included expressions of identity and attachment to the land in contrast to the “barren wasteland” envisaged by developers.⁴¹ Alternatively, future developments of renewable energy capacity in the island were carried out by a group of local community members who established the Urras Energy Society in the island.⁴²

Procedural justice

Lastly, procedural justice concerns the access to decision-making processes that govern the above-mentioned distributions.⁴³ According to Jenkins this includes three mechanisms of inclusion aimed at achieving just outcomes through local knowledge, greater information disclosure and better institutional representation to demonstrate the evaluative and normative reach of energy justice.⁴⁴ This final section ties energy justice to its newest cousin, energy democracy - which meets energy justice at the point of *procedural* justice through political institutions. Energy democracy has been insufficiently and sporadically defined. The point of departure between the two, is what Szulecki suggests being a procedural element in contrast to the moral implications of energy policymaking.⁴⁵ Arguably, this element of energy justice as an analytical framework unites distributional and recognition-based justice under the prism of policy-based solutions.⁴⁶

Analytical framework

McCauley and Jenkins’ works set out the foundations for a framework to certain research questions that must be asked by energy decision-makers.⁴⁷ Some indicative questions are the locality of inequalities resulting from energy systems and those attached to low-carbon and high-carbon energy sources alike.⁴⁸ Further, the issue of availability asks how we can think of these inequalities in terms of scarcity and patterns of consumption. Recognition-based justice complements this with

⁴¹ J. Murphy et al “Understanding Transition-Periphery Dynamics: Renewable Energy in the Highlands and Islands of Scotland” *Environ. Plann. A* 45 (2013) 691-709

⁴² *Ibid* Jenkins et al (2016)

⁴³ *Ibid* Jenkins et al (2016)

⁴⁴ *Ibid* Jenkins et al (2016)

⁴⁵ *Ibid* Szulecki

⁴⁶ *Ibid* McCauley (2018)

⁴⁷ *Ibid* McCauley (2018)

⁴⁸ O. Kayir “Violations of Water Rights, Socio-Ecological Destruction and Injustice in Turkey by Hydro-Electric Power Plants” *Transactions on Ecology and the Environment* (200) 147-158

an assessment of privilege within societies in relation to low-carbon energy sources⁴⁹ by focusing on which parts of a nation state benefit from access to sufficient energy and access to safe electricity consumption. Third, procedural justice concerns establish that effective processes are necessary to satisfy consumers which, according to McCauley, should be representative of those people who need access to the resources.⁵⁰ Last, sustainability-concerns emphasise the need for long-termism in decision-making.

Section 2 - Energy Poverty in the European Union

The ‘right to energy’ was initially coined at the founding of the United Nations, yet it has not developed as a legal right in itself. Instead, advocacy for universal access to energy has been entrenched in the UN Sustainable Development Goals (SDGs): SDG7 “affordable and clean energy” aims to secure access to reliable, sustainable, affordable and modern energy for all. This has also found its way in the European Union (EU), Recital 59 of EU Electricity Directive 2019/944, which noted that “energy services are fundamental to safeguarding the well-being of the Union citizens.”⁵¹ The concept of the right to energy implies that access to energy and energy services, as well as the affordability therein must be protected to resolve the issue of energy poverty. This has not always been accepted: a government minister in the UK famously claimed that “people do not talk of ‘clothes poverty’ or ‘food poverty’ and I do not think it is useful to talk of ‘fuel poverty’ either.”⁵² It, therefore, has often been dismissed as a socio-economic phenomenon. Despite this, the term and the issue, have been, hesitantly, incorporated in energy policy in recent years.

This section will define energy poverty and its relationship with energy justice. Following this, I will explore energy poverty in the European Union and some challenges that this may create in

⁴⁹ P. Munro et al “Energy Justice for All? Rethinking Sustainable Development Goal 7 Through Struggles over Traditional Energy Practices in Sierra Leone” *Energy Policy* 105 (2017) 635-641

⁵⁰ Ibid McCauley

⁵¹ Electricity Directive 2019/944

⁵² Campbell 1993 in S. Bouzarovski *Energy Poverty: (Dis)Assembling Europe’s Infrastructural Divide* Palgrave MacMillan 2018 Chapter 2

relation to the EU's Strategic Objective 1 relating to consumer protection and access to clean energy.

Defining Energy Poverty

Modi et al have defined energy poverty as “the inability to cook with modern cooking fuels, and the lack of the bare minimum of electric lighting to read or for other household and productive activities after sunset.”⁵³ Practical Action has defined as the concept as “the lack of adequate modern energy for basic needs of cooking, warmth and lighting, and essential energy services for schools, health centres and income generation.”⁵⁴ According to the UN Policy Brief on SDG7, energy poverty is a concept incorporating fuel poverty (in developed countries) and the lack of energy access for the developing world.⁵⁵ In the literature, energy poverty is defined as: “a) lack of access to electricity networks; or b) dependence on burning solid biomass, such as wood, straw and dung, in inefficient and polluting stoves to meet household needs.”⁵⁶ Other definitions consider energy poverty to refer to households spending 10-30% of their household income on energy services.⁵⁷

Energy poverty and energy justice

⁵³ V. Jodi, S. MaDade, D. Lallement, J. Saghir “Energy Services for the Millenium Development Goals, Energy Sector Management Assistance Programme, United Nations Development Programme, UN Millenium Project, World Bank (2015)

⁵⁴ P. Action, E. Poverty “The Hidden Energy Crisis” Practical Action Publishing, Rugby (2009) UK

⁵⁵ United Nations Development Programme “Policy Brief 8: Interlinkages Among Energy, Poverty and Inequalities (2018)

⁵⁶ K. Laldjebaev, B.K Sovacool, K.S Kassam “Energy Security, Poverty and Sovereignty - Interlinkages and compelling Implications” International Energy and Poverty, Chapter 7 (2016) Routledge, in United Nations Development Programme “Policy Brief 8: Interlinkages Among Energy, Poverty and Inequalities (2018)

⁵⁷ S. Fankhauser, S. Tepic “Can Poor Consumers Pay for Energy and Water? An Affordability Analysis for Transition Countries” Energy Policy 35 (2) (2007)

Energy poverty is a key dimension of the broader energy justice discourse. Walker and Day have argued that energy poverty is “fundamentally a complex problem of distributive injustice” suggesting that this is underpinned by other injustices in recognition and procedural justice.⁵⁸

Framing the right to energy as a basic right, directly addresses the issue of energy justice. This being said, the EU’s attempts to highlight the fundamental nature of energy to the wellbeing of EU citizens cuts to the heart of energy justice concerns. In relation to the right to energy, according to Shyu, Sovacool and Dworkin’s philosophical premises defining energy justice provide a comprehensive conceptual framework which generates the implications to uphold a right to energy in policymaking.⁵⁹

The literature has pointed out several ways that injustices are caused throughout nations and regions as a result of energy poverty. These predominantly focus on socio-demographic factors. For instance, Petrova and Simcock contend that energy poverty is experienced differently among genders in terms of household practices and resisting energy poverty as well as the emotional labour of responding to energy poverty.⁶⁰ Their research highlights the ways that gendered vulnerabilities surface due to household strategies aimed at confronting domestic energy poverty.⁶¹ Furthermore, injustices can be evidenced in impacts of energy poverty on human health and wellbeing. Thomson et al have highlighted the impacts of energy poverty on respiratory systems as well the poor emotional wellbeing of consumers living in energy poverty. The uneven distribution of energy poverty patterns along “different axes of inequality - such as gender or social class”⁶² have been outlined by Oliveras et al in relation to Southern European countries.

⁵⁸ G. Walker and R. Day “Fuel poverty as injustice: integrating distribution, recognition and procedure in the struggle for affordable warmth” *Energy Policy* 49 (2012) 69-75

⁵⁹ C.W Shyu “A framework for right to energy to meet UN SDG 7: policy implications to meet basic human energy needs, eradicate energy poverty, enhance energy justice and uphold energy democracy” *Energy Research & Social Science* 79 (2021) 102199

⁶⁰ S. Petrova, N. Simcock “Energy Poverty in Europe: A Multidimensional Approach” *PSL Q. Review* (2017), 70

⁶¹ S. Bouzarovski, H. Thomson and M. Cornelis “Confronting energy poverty in Europe: a research and policy agenda” *Energies* (2021), 14, 858

⁶² *Ibid* Bouzarovski, Thomson and Cornelis

In recent years, the scientific consensus has shifted its attention to the poverty-alleviation potential of micro-generation and renewable energy investment as an alternative to top-down power grid expansion.⁶³ This concept has direct distributional and fiscal implications in addressing energy consumption - elements defining energy justice, and hence, alleviating energy poverty through this prism. Energy injustices have predominantly been studied at a distributional level in relation to differences between socio-economic groups. The remaining two definitive characteristics of energy justice as identified in the literature, are rarely touched on through illustrative examples. For instance, socio-spatial aspects of energy poverty have been argued to lead to injustices, with the area of urban-rural divide being contested in the literature. On one hand, Bouzarovski and Thomson⁶⁴, echoing Scarpellini et al, have found significant urban energy poverty levels in cities in Central and Eastern European countries, with energy poverty being less acute in rural households.⁶⁵ On the other hand, Katsoulakos and Kaliampakos have established the vulnerabilities in mountainous rural Greece contradicting this.⁶⁶ As previously mentioned, the relationship between energy poverty and socio-spatial considerations is a potential area for energy justice research, as it is, to an extent, under-researched. The present arguments on the urban-rural justice dichotomy form an interesting observation, and a further challenge for the EU's energy policies. The varying spatial landscapes across the EU, combined with the varying socio-economic conditions across Member States come to directly challenge the efficacy of an unharmonised policy landscape, while creating wider justice considerations that may come to challenge the European plans of wider integration and the creation of a harmonised European Energy Community where inter-state inequalities are not addressed.

Energy Poverty in the EU

Before considering this further, it is significant to establish how energy poverty is measured in the EU and the relationship of such indicators to energy justice. Energy poverty in the EU is estimated

⁶³ S. Bouzarovski *Energy Poverty: (Dis)Assembling Europe's Infrastructural Divide* Palgrave MacMillan 2018 Chapter 2

⁶⁴ S. Bouzarovski, H. Thomson "Geographies of Injustice: The Socio-Spatial Determinants of Energy Poverty in Poland, Czechia and Hungary" *Post-Communist Econ.* (2017), 29, 27-50

⁶⁵ S. Scarpellini, M. Alexia Sanz Hernandez, J.M. Moneva, P. Portillo-Tarragona, M.E.L Rodriguez "Measurement of Spatial Socioeconomic Impact of Energy Poverty" *Energy Policy* 2019, 124, 320-331

⁶⁶ N.M Katsoulakos, D.C Kaliampakos "The Energy Identity of Mountainous Areas: The Example of Greece" *J. Mt. Sci.* (2018), 15, 1429-1445

using several indicators. According to the Commission, and the Energy Poverty Observatory (EPOV), there are four primary indicators for energy poverty: a) arrears on utility bills; b) low absolute energy expenditure; c) high share of energy expenditure in income; d) inability to keep warm adequately.⁶⁷ The former two are consensual-based indicators carried out by the EU-SILC, and the latter two indicators are expenditure-based provided by HBS. However, at a national level, energy poverty measurements differ widely. For instance, in Greece there is no official method to identify energy poverty; instead, the Hellenic Statistical Authority provides data on consumers' inability to keep their homes adequately warm,⁶⁸ limiting the extent of the data available at a European level.

Arrears in Utility Bills

In 2020, 6.5 percent of households had been unable to pay utility bills on time due to financial difficulties. This varies depending on the country. For instance, in 2020, the percentage of Greeks who were unable to pay their utility bills came in second place - at 28.2 percent of the population, more than quadruple that of the European average.⁶⁹ In fact, Greece held the first place of utility bill arrears in the years 2015 and 2016, with a consistent average of 42 percent at the time (Figure 2).

⁶⁷ European Commission "Energy Poverty Advisory Hub: Indicators" https://energy-poverty.ec.europa.eu/energy-poverty-observatory/indicators_en

⁶⁸ | Antepara et al "Improving energy poverty measurement in Southern European Regions through equalisation of modelled energy costs" Sustainability 2020, 12 5521

⁶⁹ Eurostat "Arrears on Utility Bills" EU-SILC Survey https://ec.europa.eu/eurostat/databrowser/view/ILC_MDES07_custom_2128102/default/bar?lang=en

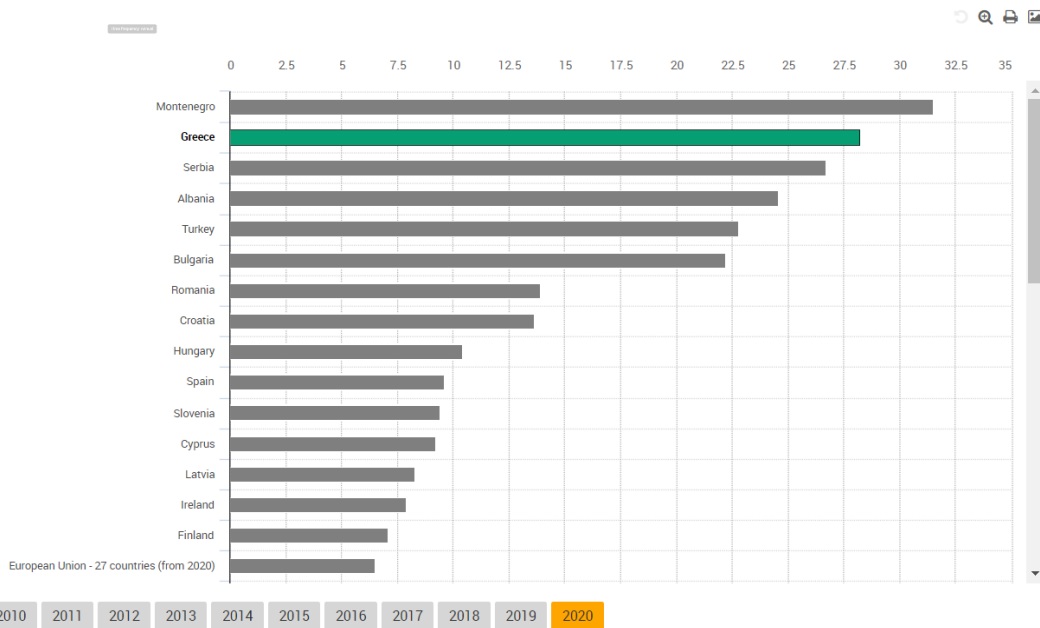


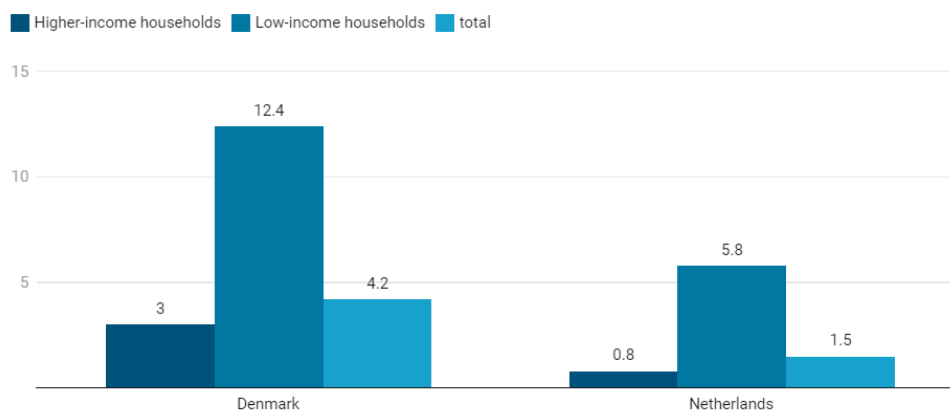
Figure 2 - Eurostat “Arrears on Utility Bills” EU-SILC Survey https://ec.europa.eu/eurostat/databrowser/view/ILC_MDES07__custom_2128102/default/bar?lang=en

At national levels, data indicates a wider gap being created between higher- and low-income households. This can be seen in Denmark and the Netherlands where low-income households are nearly four times more likely to fall back on their utility bills in comparison to their higher-income counterparts, and three times more likely in comparison to the national averages in Denmark (Figure 3).⁷⁰ This is indicative of the national inequalities created between socio-economic groups around the access to affordable energy.

⁷⁰ Zuzana Nazaruk and Malene Pedersen “Why energy poverty is rising among low-income households in the EU” March 1, 2022, in euronews.com

Arrears on utility bills in Denmark and the Netherlands, 2020

Percentage of total households disaggregated by income situation in relation to the risk of poverty threshold



The risk of poverty threshold is set at 60 % of the national median equivalised disposable income after social transfers. Low income households are defined as below 60 % of the threshold. Higher-income are defined here as above 60 % of the threshold.

Chart: Malene Nørby Pedersen • Source: Eurostat • Created with Datawrapper

Figure 3 - Arrears on utility bills in Denmark and the Netherlands, 2020 Malene Nørby Pedersen Eurostat

Energy expenditure M/2

The low absolute energy expenditure indicator represents the share of households whose absolute energy expenditure is below half of the national median. This indicator can be abnormally low either due to high energy efficiency or due to the under-consumption of energy.⁷¹ Some country-specific results yield high levels of energy poverty, which can be a real issue, or it may be analysed by alternative explanations for the low values of energy expenditure. For instance, in some countries, energy costs are included in rents, while energy efficiency in inhabited buildings may also bring down the statistics. Further, in some countries such as Germany, the government pays part of the energy expenditure for low-income households, leading to skewed statistics. This is due to the methodology incorporating the consensual report of energy expenditure per participatory household.⁷²

Share of energy expenditure in income 2M

This indicator captures the strain that energy bills put on households relative to their disposable income, using the national median as a reference point. The premise of this indicator was Brenda Boardman's research in the UK which defined energy poverty as the situation where a household

⁷¹ J. Thema and F. Vondung "EPOV Indicator Dashboard: Methodology Guidebook" EU Energy Poverty Observatory (May 2020)

⁷² Ibid Thema and Vondung

spends more than 10% of its income on energy.⁷³ A criticism that may be put forth regarding this indicator is that the original approach was based on data derived from 1988. The modern energy landscape differs completely from that of the late 1980s, let alone in the time of the current energy crisis. Furthermore, according to this, low-income households that may be captured by the M/2 indicator, may not be caught by this indicator as they spend disproportionately less on energy bills. On the other hand, high-income households may be defined as ‘energy poor’ where their energy consumption is higher than the average.

Inability to keep warm

This indicator covers the share of the population that cannot keep their home adequately warm, based on their answer to the (indicatively worded) question: “*can your household afford to keep its home adequately warm?*” Unlike the other indicators, this envisages a subjective requirement, founded on consent-based methodologies. This has been an indicator commonly used to understand energy poverty amongst populations and is the key energy-poverty indicator for defining energy poverty data in Greece, as mentioned above. However, it is arguable that this indicator, standalone, is insufficient in defining energy poverty, revealing the dangers of its sole use as a measurement indicator for several countries. In 2015 - the year used throughout this illustrative example, due to the availability of data, which is not representative of the current state of energy poverty across Europe - in Greece, 29.2% of the population was unable to keep their home adequately warm (Figure 4). In the same year, 42% of the population fell back on paying their utility bills, a fact not envisaged by the subjective question (Figure 5). This data is balanced by the 2M and M2 indicators which showed that 16.3% of the population paid a high share of their income to energy bills, and 12.8% used too little energy – respectively (Figures 6 & 7).

⁷³ Z. Kakalejckikova et al “Community Tailored Actions for Energy Poverty Mitigation” April 2021

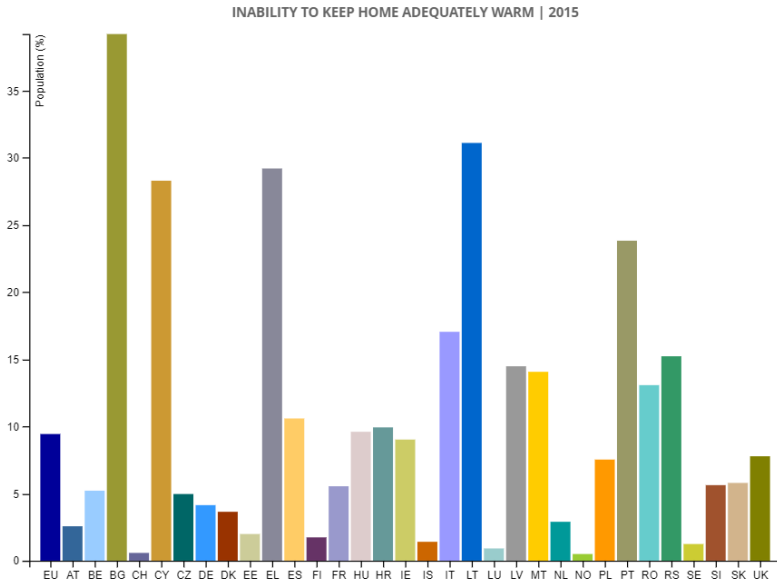


Figure 4 - Inability to keep home adequately warm for EU Member States (2015) from European Commission “Energy Poverty Advisory Hub: Indicators” https://energy-poverty.ec.europa.eu/energy-poverty-observatory/indicators_en

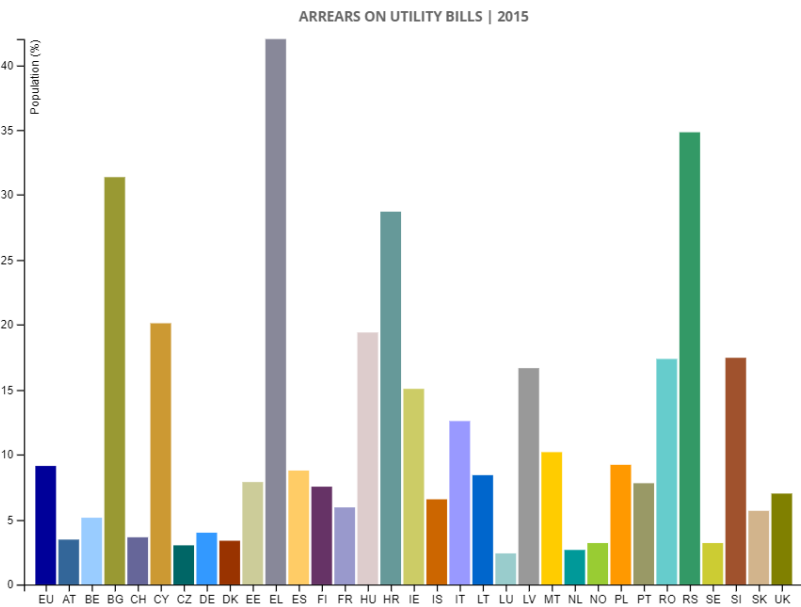


Figure 5 - Arrears on utility bills EU Member States (2015) from European Commission “Energy Poverty Advisory Hub: Indicators” https://energy-poverty.ec.europa.eu/energy-poverty-observatory/indicators_en

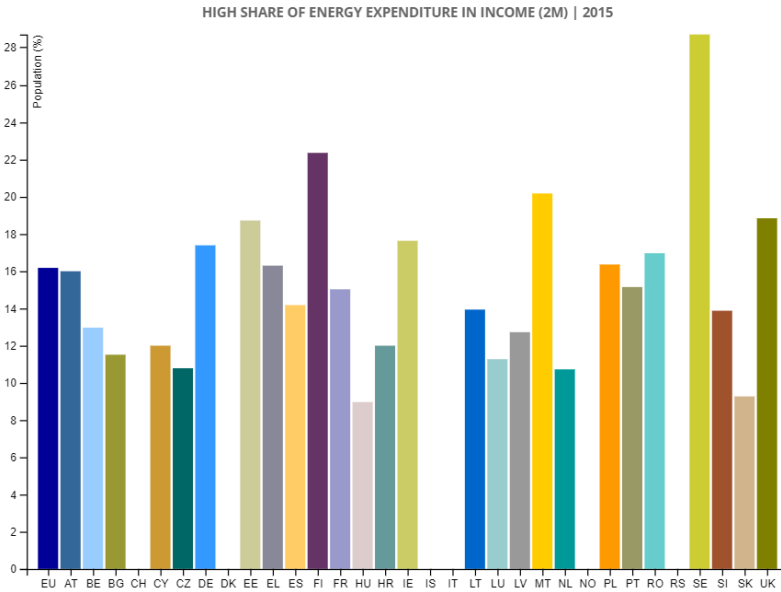


Figure 6 - High share of energy expenditure in income (2M) for EU Member States (2015) from European Commission “Energy Poverty Advisory Hub: Indicators” https://energy-poverty.ec.europa.eu/energy-poverty-observatory/indicators_en

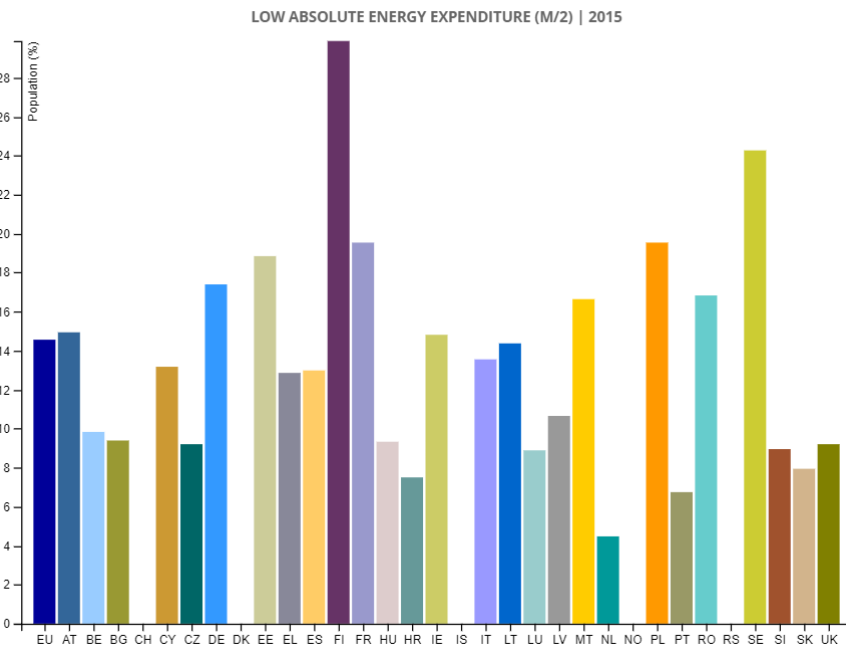


Figure 7 - Low absolute energy expenditure (M/2) for EU Member States (2015) from European Commission “Energy Poverty Advisory Hub: Indicators” https://energy-poverty.ec.europa.eu/energy-poverty-observatory/indicators_en

On the other hand, an explanation for the abnormally high percentage of the population that were unable to keep their home adequately warm, can be found in the fact that half of Greek residences

lack thermal insulation, as they were constructed before the introduction of the relevant regulation in the country in 1980 and renovation rates are quite low.⁷⁴

Contributing factors

Low income has been perceived as the leading cause for energy poverty⁷⁵ while low-income occupants reside in social or non-profit housing that is badly maintained and oftentimes not insulated.⁷⁶ Filippidou and her colleagues in their study based in Athens, Greece, found that as average income increases, so does the total energy used (in kWh/m²).⁷⁷ The amount of cases represented was 43, while the annual income of the population studied was lower or at around €15,000. Their findings are illustrative of the first tenet of our selected definition of energy justice, as a socio-economic dimension of injustices and inequalities is illustrated not only through Filippidou et al's findings, but also from the general European overview which indicates that South-eastern European countries are facing higher levels of energy poverty. The statistics further highlight a disparity not only between social groups in states, but also between states themselves. The ever-widening gap between certain South-eastern European nations and their Northwest counterparts creates broader inequalities and injustices within the Bloc.

Furthermore, Filippidou et al establish in their research that energy prices are another factor playing a major role in contributing to energy poverty, as they have also been the driving mechanism in addressing the issue⁷⁸ such as through subsidised energy prices and social tariff policies⁷⁹ as seen through several European countries in the midst of the war in Ukraine and the energy crisis in 2021 and 2022. On one hand, it is likely that the abovementioned statistics presented by Eurostat on the ability to pay utility bills will differ massively in 2022 due to the rise in energy prices, and the dim rise of annual income.

⁷⁴ Buildings Performance Institute Europe "Greece: Current use of EPCs and potential links to iBRoad" 2020

⁷⁵ M. Santamouris "Innovating to zero the building sector in Europe: minimising the energy consumption, eradication of the energy poverty and mitigating the local climate change" *Solar Energy* 128 (2016) 61-94

⁷⁶ F. Filippidou et al "Mapping energy poverty in the EU: policies, metrics and data" *ECEE Summer Study Proceedings* 1199-1207

⁷⁷ *Ibid* Filippidou

⁷⁸ *Ibid* Filippidou et al

⁷⁹ D. Urge-Vorsatz and S. Tirado Herrero "Building synergies between climate change mitigation and energy poverty alleviation" *Energy Policy* 49 (2012) 83-90

On the other hand, energy prices as indicators and causes of energy poverty may also be illustrative of energy injustices in our current energy systems. The observation can be made again that interstate inequalities arise when considering the rise of energy prices in the second half of 2021 and the first months of 2022.⁸⁰ Electricity and gas prices alike increased in all Member States in the second half of 2021 in comparison to the second half of 2020. Household electricity prices had the highest increase in Estonia (50 percent increase), Sweden (49 percent increase) and Cyprus (36 percent increase) - the highest prices, however, were recorded elsewhere: including Denmark and Germany.⁸¹ On the other hand, gas prices increased significantly in Bulgaria (103 percent increase), followed by Greece (96 percent increase) and Estonia (83 percent increase). While the highest gas prices were recorded in Sweden and Denmark (Figures 8 and 9).⁸²

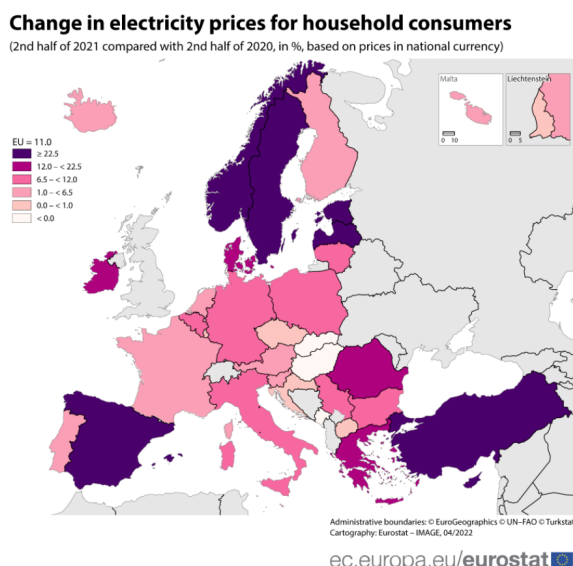


Figure 8 - Change in electricity prices for household consumers (2nd half of 2021) from Eurostat

⁸⁰ Eurostat “Electricity and gas prices in the second half of 2021” 29 April 2022
<https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220429-2>

⁸¹ Eurostat Electricity Prices for Household Consumers
https://ec.europa.eu/eurostat/databrowser/view/NRG_PC_204_custom_2549127/bookmark/table?lang=en&bookmarkId=2adc53ba-582b-41ee-a08f-f9871111a48c

⁸² Eurostat Gas Prices for Household Consumers
https://ec.europa.eu/eurostat/databrowser/view/NRG_PC_202_custom_2549140/bookmark/table?lang=en&bookmarkId=6169c186-9b58-4ff1-8f51-5580a9ff1cc6

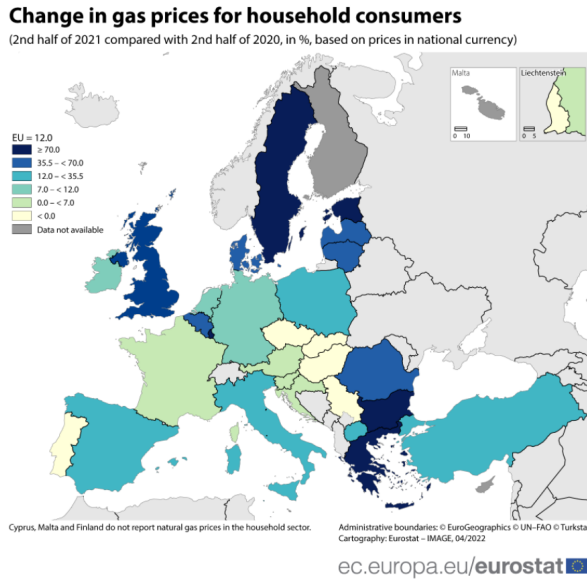


Figure 9 - Change in gas prices for household consumers (2nd half of 2021) from Eurostat

Remarks and Challenges for EU Policymakers

The statistics consistently confirm that energy injustices are not limited to intra-state socio-economic concerns. Inter-state inequalities are created throughout the EU, which can pose a stumbling block for energy policy- and lawmakers in the region, when tackling the question of energy poverty from a justice perspective. A one-size fits all approach, therefore, may become insufficient as energy justice becomes a question of national and regional concern. Bouzarovski and Tirado Herrero have interpreted the macro-level geographies of energy poverty from the lens of what they call the “energy divide” which aims to capture the gap within the EU when it comes to the interplay of energy transitions, regional inequalities and poverty trends.⁸³

Furthermore, the disharmonised measurement indicators through the region mean that energy poverty data is insufficiently calculated - as illustrated from the example of adequate heating above. This poses another challenge for policymakers when setting a benchmark for tackling energy poverty from a justice perspective.

⁸³ S. Bouzarovski, S. Tirado Herrero “The energy divide: integrating energy transitions, regional inequalities and poverty trends in the European Union” *European Urban Regional Studies* (2017) 24, 69-86

In light of the analytical framework established in Section 1, the disparities in the data, and the energy poverty indicators in the EU come to answer several analytical questions in relation to the definition of energy justice. First, they help locate the inequalities resulting from energy systems. Second, the ways that patterns of consumption differ across the EU are illustrated through the vastly different energy poverty levels - which at an EU level are at around 6-7%, while in countries like Greece, they are at around 20% (excluding the current energy crisis which could alter the statistics). However, the data is not sufficient in answering how procedural justice concerns can be met. This needs to be assessed in conjunction with the EU's current energy poverty policies, and its policy objectives.

Chapter 3 – EU Energy Policy and the Energy Trilemma

Having defined the relevant energy justice framework and introduced the concept of energy poverty in relation to it, I will seek to contextualise the EU's Energy Strategy and the resulting energy trilemma. First, I will consider the EU Energy Strategy, and the policies and directives at an EU level as assessed from a justice perspective. Following this, I will define the energy trilemma. Chapter 1 outlined energy poverty in the EU, as it gave a layout of the relevant challenges that decision-makers are faced with, as well as the framework that motivated a consumer-centric approach in policy making in the EU, which has conveniently introduced the gap created by the energy trilemma

EU Energy Strategy

The European Energy Strategy has been reshaped in recent years with several initiatives aimed at speeding up the process of decarbonisation with the ambition that the EU will be the first carbon-neutral continent amongst other objectives.⁸⁴ Several existing mechanisms in these efforts are arguably defined by energy justice principles. Therefore, this section will provide a critical overview of the EU's Energy Strategy from a justice perspective before going on to define the energy trilemma, and examining the extent to which a justice perspective may come to rebalance it.

Third Energy Package, 2009

The initial steps in providing a consumer-centric approach to tackling energy issues were set out in the EU's Third Energy Package in 2009. In brief, the Electricity and Gas Directives encouraged Member States to define the concept of vulnerable consumers and adopt measures to protect them - energy poverty was approached through the understanding of a vulnerable consumer who, according to the EC's report *Consumer Vulnerability Across Key Markets in the EU*, a vulnerable consumer is someone who as a result of their socio-demographic characteristics is at higher risk of experiencing negative outcomes in their market; they are limited in maximising their well-being

⁸⁴ European Commission, A European Green Deal – Striving to be the first climate-neutral continent https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

and is less able to buy, choose or access suitable products.⁸⁵ This entrusted Member States with the exclusive right to define the measures to address energy and final consumer protection, which according to Bouzarovski et al, led to a foggy understanding of who vulnerable consumers are and what the relevant energy poverty policies within national agendas would be.⁸⁶

Nevertheless, the consumer-centric approach to the understanding of energy poverty and emphasising the role of socio-economic and socio-demographic contexts in energy poverty, is significant, as it touches directly on the second element of the definition of energy justice - recognition justice.

According to the Electricity and Gas Directives, the Member States had to address energy poverty where defined, yet energy poverty indicators remain an unharmonised area for the EU. Furthermore, wide discretion given to Member States in tandem with the lacking system of measurement that equipped them to understand energy poverty, resulted in an arguably similarly lacking, and monocultural set of policy measures that Member States could adopt to tackle what they believed energy poverty was in relation to vulnerable consumers.

Several policy attempts have been made since 2009. The Electricity Directive was replaced by the Directive on Common Rules for the Internal Market for Electricity (EU) 2019/944, while the Gas Directive remains in force.⁸⁷ The most significant energy reforms that have come to radically redefine the European Energy Strategy were the EU's ambitions for an Energy Union, the National Energy and Climate Plans, the Clean Energy for All Europeans Package, and finally, the European Green Deal. I will analyse each in turn.

⁸⁵ European Commission "Consumer vulnerability across key markets in the European Union" January 2016

⁸⁶ S. Bouzarovski, S. Petrova, R. Sarlamanov "Energy Poverty Policies in the EU: A critical perspective" Energy Policy (2012) 49, 76-82

⁸⁷ European Commission "Energy Market Design" https://energy.ec.europa.eu/topics/markets-and-consumers/market-legislation/electricity-market-design_en

Energy Union Strategy, 2015

The Energy Union Strategy (COM/2015/080) was published in February 2015 aimed at building an energy union that gives EU consumers secure, sustainable, competitive and affordable energy.⁸⁸ The Communication envisaged solidarity and trust as defining the free movement of secure energy to citizens, while its objectives see the Energy Union as a low-carbon resilient economy founded on energy efficiency and innovative technologies.⁸⁹ Of interest is the term used in the first page of the communication which says “*To reach our goal, we have to move away from [...] an economy where energy is based on a centralised, supply-side approach [...] We have to empower consumers...*”⁹⁰ Energy poverty is also frequently alluded to throughout the Communication which reinforces the concern that some consumers remain vulnerable due to several factors. The “way forward” set out in the document emphasises, among others, the following dimensions: *energy security, sustainability and competitiveness*, three key objectives that have laid the groundwork for the EU Energy Strategy since 2015, with a broader focus on consumer protection.

The liberal approach to energy policy since 2015 is multifaceted, and arguably poses a series of contradictions and gaps that lead to the slow progress of creating a truly integrated Energy Union - if this is assumed to be a plausible goal. This has rang some alarm bells to academics, who have argued that the EU is moving to a new liberal mercantilism.⁹¹ Others have argued that the EU’s policy shift is moving from a paradigm of liberalisation to securitisation,⁹² as the prioritisation of energy security due to Russia’s dominant role in the European energy mix has consistently led to the imperative to diversify routes, sources and suppliers⁹³ in the last decade. Boersma and Goldthau argue that the focus on security waves farewell to the EU’s liberal paradigm as the Energy Strategy is shifting from a purely regulatory approach to external energy policy and geopolitics.⁹⁴ Indeed that was evidenced by the EU’s weaponisation of its energy policy in the

⁸⁸ Energy Union Package [2015] COM/2015/080

⁸⁹ Ibid Energy Union Package

⁹⁰ Ibid COM/2015/080

⁹¹ Ibid S.S. Andersen, A. Goldthau and N. Sitter

⁹² T. Boersma and A. Goldthau “Wither the EU’s Market Making Project in Energy: From Liberalisation to Securitisation?” in S.S Andersen, A. Goldthau and N. Sitter

⁹³ Ibid T. Boersma and A. Goldthau

⁹⁴ Ibid

recent events of the Russian invasion of Ukraine, which arguably amplified the EU's run to ensure its objectives for energy security.

On the other hand, it has been argued that this comes in direct contradiction with the Energy Union's regulatory aim to achieve market efficiency and transparency through an integrated regulatory framework. The two arguments, in fact, come in tension as Boersma and Goldthau's argument that the EU is moving away from its liberal paradigm is not reinforced by Labelle, who, instead, argues that the Energy Union's market-based regulatory approach to liberalisation correspond to an increase in energy poverty in the EU, which also threatens energy security.⁹⁵

Clean Energy for All Europeans Package, 2019

According to the EU Commission, the EU is committed to tackling energy poverty by protecting vulnerable consumers, which it made its policy priority in the "Clean Energy for All European Package" in 2019. This marked a significant step to implementing the Energy Union Strategy. The package consists of eight new laws which are aimed to bring benefits for consumers, the environment and the economy.⁹⁶ The eight new legislative acts comprise: the Renewables Directive (RED II), the Governance Regulation of the Energy Union and Climate Action, the new energy Efficiency Directive, and the new Electricity Directive.⁹⁷

According to Bouzarovski et al, this set out a clear blueprint for combating energy poverty.⁹⁸ The Package contains several directives and regulations creating new obligations for Member States and institutions, while agreeing on a common definition for energy poverty for the first time in Article 28 of the Market Design Directive which refers to low incomes and dependence on electrical equipment for health reasons, as well as the energy performance of homes.⁹⁹ Filippidou et al argue that the Clean Energy Package presents a consumer-centred approach with energy

⁹⁵ M.C Labelle "Regulating for Consumers? The Agency for Cooperation of Energy Regulators" in S.S Andersen, A. Goldthau and N. Sitter

⁹⁶ European Commission "Clean energy for all Europeans package"

https://energy.ec.europa.eu/topics/energy-strategy/clean-energy-all-europeans-package_en

⁹⁷ Ibid EC

⁹⁸ Ibid Bouzarovski et al 2021

⁹⁹ EUR-Lex *EUR-Lex-32019L0944-En-EUR-Lex*; Publications Office of the European Union: Luxembourg, 2019. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L0944>

poverty at the forefront.¹⁰⁰ With regards to the energy security concerns voiced by Labelle¹⁰¹, the Commission has argued that the new rules have the potential to reduce consumption, increasing the production of renewable energy and improving cross-border connections within the EU, which will reduce the reliance on imports, while diversifying and securing energy.¹⁰²

Regulation on the governance of the energy union and climate action

Regulation (EU) 2018/1999 on the Governance of the Energy Union aims to strengthen the governance structures with a clear division of the competences between the Commission and Member States.¹⁰³ To this end, Member States are mandated to submit Integrated National Energy and Climate Plans (hereinafter, NECPs) every two years.¹⁰⁴ The Regulation has set out an obligation to measure and monitor energy poverty, and NECPs must be prepared with account to energy poverty, and relevant social and other policies must be put in place to alleviate energy poverty.

The NECP obligation has attempted to link energy efficiency and poverty policies under a pan-European prism. Nevertheless, it has arguably failed to do so to a great extent, leading to a fragmented and disharmonised energy poverty overview at a European level. Earlier, the statistics on energy poverty revealed deep inter-state inequalities in the European energy market. This reveals a secondary challenge for European energy decision-makers which is the necessary balance between a pan-European social and market approach to energy poverty, which can be tailored to Member States' needs. Despite the disparities between countries in terms of energy poverty, Bouzarovski observes that countries with the highest levels of energy poverty have not developed ambitious policies.¹⁰⁵ This is tied with a varied speed in relation to specific energy poverty provisions contained in NECPs. Additionally, a further gap can be observed in the differing energy poverty indicators depending on the countries. The evaluation of the official indicators provided

¹⁰⁰ Ibid Filippidou et al

¹⁰¹ Ibid Labelle in S.S Andersen, A. Goldthau and N. Sitter

¹⁰² European Commission, Directorate-General for Energy, *Clean energy for all Europeans*, Publications Office, 2019, <https://data.europa.eu/doi/10.2833/9937>

¹⁰³ Ibid Filippidou et al

¹⁰⁴ Regulation 2018/1999 of 11 December 2018 on the Governance of the Energy Union and Climate Action [2018] L 328/1

¹⁰⁵ S. Bouzarovski, H. Thomson and M. Cornelis "Confronting energy poverty in Europe: a research and policy agenda" *Energies* 14 (2021), 858

by the EU has been provided in Section 2 of Chapter 2, which has highlighted the importance for a combination of factors to be adopted at a pan-European level. In terms of energy justice metrics, following the framework set out in Section 1 of Chapter 1, Bouzarovski et al ranked countries NECPs in relation to access to justice and access to resources. Those with well-developed energy poverty policies included Cyprus, Lithuania, Italy, Spain and France. South-eastern European Member States had stronger distributional policies with a focus on the causes and results of energy poverty, while those with a better procedural approach seemed to have better social policy mechanisms.¹⁰⁶ Therefore, it is arguable that the Regulation has, to an extent, led to some fragmented energy justice across the EU at varying levels.

Renewable Energy Directive and Prosumerism

RED II aimed to involve the energy consumer in the energy market “to generate electricity for their own consumption, store it, share it, consume it or sell it back to the market.”¹⁰⁷ This refers to the energy prosumer¹⁰⁸ who is given the right to carry out the above-mentioned activities, individually or as a collective under RED II. This bottom-up and decentralised approach to renewable energy offers incentives to consumers for RES-consumption and the development of energy communities across the EU. Within the framework of the European Green Deal, the Commission proposed the revision of RED II under the Fit for 55 package of legislative proposals. Nevertheless, several questions and opportunities arise with respect to the developing role of the prosumer in the energy market and the potential for enhancing energy justice further through their empowerment. Some of these questions are highlighted by Horstink et al; which prosumers should be incentives and how? What are some of their characteristics, such as their socio-economic impact?¹⁰⁹ The idea of a prosumer goes to the essence of energy justice, and specifically answers the questions around distributional and procedural justice. The decentralised nature of the prosumer’s role as a stakeholder in the market is representative of what is referred to in this paper

¹⁰⁶ Ibid Bouzarovski et al 2021 Figure 2

¹⁰⁷ European Commission *The state of the Energy Union explained* Fact Sheet, 2019, p5

¹⁰⁸ R. Ford, J. Stephenson, J. Whitaker “Prosumer Collectives: A Review” New Zealand’s Smart Grid Forum, Centre for Sustainability; University of Otago: Dunedin, New Zealand (2016) pp 1-28

¹⁰⁹ L. Horstink, J.M Wittmayer, K. Ng, G.P. Luz, E. Marin-Gonzalez, S. Gahrs, I. Campos, L. Holstenkamp, S. Oxennar, D. Brown “Collective renewable energy prosumers and the promises of the Energy Union: taking stock” *Energies* (2020), 13, 421

as energy democracy, as it is representative of a human-centric, rather than just a consumer-centric approach. This will be further examined in relation to energy justice in the next chapter. The Directive seems to recognise the ways that securing access and sustainable energy may be rebalanced from a decentralised approach to energy as illustrated from the role of the prosumer. However, as I will argue later, this may not be the case.

European Green Deal, 2020

Finally, the European Green Deal has been the latest ambitious package of measures aiming to cut greenhouse gas emissions. The Commission adopted a series of legislative proposals setting out how they intend to achieve climate neutrality in the EU by 2050, including the Fit for 55 package laying out the goal of net reduction in greenhouse gas emissions of 55% by 2030. The Green Deal aims to tackle several areas including energy, climate, the environment, transportation, agriculture, finance, industry, and research. The Green Deal seeks a “just and fair” energy and climate transition aiming to “leave no one behind.”¹¹⁰ The Impact Assessment which accompanied the Commission’s Climate Plan projected that energy costs would increase, which would intensify energy poverty if not adequately addressed.¹¹¹ This led to the Commission’s call for coherence between environmental and social policies and citizens participation in the decision-making process.¹¹²

The Green Deal is the latest indicator of the ways that energy justice is being incorporated in European policymaking. References to justice and fairness with respect to the transition is indicative of the ways that an energy approach is, arguably, already being taken. This reflects the need for procedural justice and for the implementation of effective processes to satisfy consumers who need access to energy resources. Although, arguably, the Green Deal in itself does not directly

¹¹⁰ Ibid European Commission, Green Deal

¹¹¹ European Commission. Commission Staff Working Document- Impact Assessment Accompanying the Document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Stepping up Europe’s 2030 Climate ambition. Investing in a Climate-Neutral Future for the Benefit of Our People, Part 1, SWD (2020) 176 Final.

¹¹² Ibid Bouzarovski et al 2021

answer the question with regards to procedural justice, as this would only, truly, be answered in its essence through a radical shift in European decision-making mechanisms. Furthermore, the Green Deal framework to an extent adequately answers the question with regards to the locality of inequalities in terms of consumption patterns. This is reflected through the Commission's attempt to mitigate the Impact Assessment's projections of a deeper energy poverty as a result of the transition. This seeks to incorporate some elements of procedural justice, while at the same time, however, not setting a clear path to prevent this.

Remarks

The EU's current Energy Strategy has laid down the groundwork founded on elements of energy justice. This has also led to the development of the energy trilemma. Attempts have been made since the early 2010s to entrench the protection of vulnerable consumers. Nevertheless, these have been unsuccessful, and the causes of these failures have followed the EU's policy making to the Green Deal. This lies heavily on the Commission's regulatory focus and competences, while responsibility for social policies is exclusively provided to Member States. A comparative investigation undertaken by Kyprianou et al found that regional approaches are more effective in relation to energy poverty alleviation in comparison to those at national level.¹¹³ The study found that countries with a wider range of measures perform better than those with limited options. Furthermore, Kyprianou et al suggest that despite the EU's desire for a pan-European and coherent framework, the EU Directives that mention energy poverty and provide guidelines for Member States are not specific to vulnerable consumers but to consumers at risk of energy poverty in general which is a serious defect as this ambiguity is later translated into national law, leading to the creation of "misguided measures."¹¹⁴ Furthermore, using non-classical fuzzy-set qualitative comparative analysis, with regards to energy poverty policies considerations, Primc and Slabe-Erker found that "Member States facing above-average energy poverty are captured in an energy poverty trap, hereby existing energy-policy focus does not yield the desired results and the social

¹¹³ I. Kyprianou, D.K Serghides and A. Varo et al "Energy poverty policies and measures in 5 EU countries: a comparative study" *Energy & Buildings* 196 (2019), 46-60 in Bouzarovski et al 2021

¹¹⁴ Ibid Kyprianou et al

policy is often too costly to implement due to the problem's magnitude."¹¹⁵ Energy policy in countries with high energy poverty is aimed at liberalisation and privatising the energy sector which leads to an increase in energy prices outpacing household incomes. This in combination with ageing buildings adds to the burden of low-income homeowners who get trapped in energy poverty.¹¹⁶ On the other hand, the research found that the absence of energy poverty can be attributed to high household incomes in combination with energy poverty (Netherlands), or high household income and non-high energy prices, which does not relate to social policies, but rather building efficiency, as in the case of Belgium.¹¹⁷ This is in somewhat of a contradiction with Kyprianou et al, which can be attributed to the snapshots presented in their comparative analysis of Cyprus, Spain, Portugal, Bulgaria and Lithuania: some of the countries facing the highest energy poverty in 2020 according to Statista based on the ability to keep warm indicator.¹¹⁸ Primc and Slabe-Erker's conclusions, therefore suggest that policy measures will differ depending on how much poverty is experienced and what causes this across Member States.

This reinforces the criticism facing the current EU Energy Strategy which lies on governance. Given the EU's market-based and consumer-centric solutions to energy poverty, whilst on one hand, provide an almost satisfactory account of energy justice, on the other, a market approach oftentimes comes to threaten other tenants of the EU Energy Strategy while at ultimately endangering the consumer.¹¹⁹ Labelle echoes this, saying that a market-based approach to energy poverty is redundant, which is reflected in the literature which asserts that energy poverty concerns are best addressed through social policy.¹²⁰ Nevertheless, the Commission's competences in the energy market remain focused on creating an integrated market, making its policies one-sided by legislating on the internal market, while leaving wide discretion to the Member States for social policy remedies.¹²¹

¹¹⁵ K. Primc, R. Slabe-Erker "Social policy or energy policy? Time to reconsider energy poverty policies" Energy for Sustainable Development 55 (2020)

¹¹⁶ Ibid Primc and Slabe-Erker

¹¹⁷ Ibid Primc and Slabe-Erker

¹¹⁸ Statista, Share of households unable to keep their home adequately warm in the EU in 2020, by country <https://www.statista.com/statistics/1260733/eu-energy-poverty-by-country/>

¹¹⁹ Ibid Labelle in S.S Andersen, A. Goldthau and N. Sitter

¹²⁰ Ibid Labelle in S.S Andersen, A. Goldthau and N. Sitter

¹²¹ Ibid Bouzarovski (2018)

There has been an attempt to reconcile this to an extent through the use of soft-law in energy governance by the EU according to Bouzarovski who cites the 2007 Citizens' Energy Forum, which was designed to implement and enforce consumer rights by bringing together consumers as stakeholders, national regulators and governments.¹²² This created the Vulnerable Consumers Working Group (hereinafter, VCWG) which focused on enhancing the understanding of energy poverty, the drivers of vulnerability and the ways that these can be addressed.¹²³ There are clear elements of energy justice in the use of soft-law in tackling intra-state inequalities related to energy access. Nevertheless, such instruments are often ineffective, as with many of these cases, Member States have only agreed to participate on a voluntary basis which may skew the statistics and the information available with regards to distributional justice. There is a clear attempt at a bottom-up approach, which, however, may be ineffective due to the 'soft' nature of such organisations and their ultimate role in policymaking, eventually undermining the importance of procedural justice.

Lastly, the inter-state inequalities created in the prism of energy within the EU pose further stumbling blocks for the creation of an integrated Energy Union founded on solidarity. As the pragmatic landscape differs between countries placed in Northwest Europe and those in the Southeast, as indicated by the statistics on energy poverty in Chapter 2, Section 2, the policy priorities in relation to energy in these countries also varies. Additionally, the lack of a coherent framework, so far, has led to further fragmented European-wide energy policies, which deepen the inequality cracks in the Bloc. Member States are reluctant to give up their sovereignty which rules out several more intrusive measures in relation to several proposals by the Commission, including RES deployment. This is valid as the said disparities in economic, societal and political directions would lead to compromises that not many countries are willing to make.

To conclude, the Commission is making sound attempts at reducing energy poverty, which often satisfy the questions of recognition justice set out in Chapter 2. Several of the issues addressed in CEP and the Green Deal, so far, have been revolutionary in that they have radically changed the EU Energy Strategy to adapt to a world moving to net-zero carbon emissions. Nevertheless, these only attempt to answer the questions of intra-state inequalities in energy systems, without tackling

¹²² Ibid Bouzarovski (2018)

¹²³ Ibid Bouzarovski (2018)

the issues of inter-state inequalities in the Bloc, making it impossible to provide a coherent and adaptable framework founded on justice principles to resolve energy issues in the region. Ultimately, these deficiencies lead to the energy trilemma as the failings of the energy policies mentioned, lead to an ever widening gap between the EU's energy-related objectives.

Section 2 - Energy Trilemma

The European Energy Strategy objectives have been continuously defined throughout several documents. These can be summarised into consumer protection (which is closely interrelated with the alleviation of energy poverty), sustainability and energy security. These objectives are not new to the EU, in fact, Article 3 of the Treaty of Maastricht sets out three activities meant to fulfil the EU's tasks as defined in Article 2; a) a common commercial policy, b) a system ensuring the competition in the internal market is not distorted, and c) a policy in the sphere of the environment.¹²⁴

These three concepts form what is known as *the energy trilemma*, a term first coined by the World Energy Council in 2010, in the context of a report outlining the most pressing issues for the global energy and climate change problems.¹²⁵ This outlines the need for a delicate balance between three dimensions in the context of rapid transition to decentralised, decarbonised and digital energy systems.¹²⁶ The competing demands defining the EU Energy Strategy, and the world's decarbonisation are: a) energy security, b) energy equity (which has become synonymous with terms such as consumer protection, alleviation of energy poverty), and c) environmental sustainability.¹²⁷ Heffron, McCauley and Sovacool define the energy trilemma as the aim of attempting to achieve a balance between competing demands - economics, politics and the environment - of the energy law and policy triangle.¹²⁸ McCauley, in a separate work, reflects this and builds on it as he defines the energy trilemma to be the three most significant outcomes of our

¹²⁴ Treaty on European Union, Treaty of Maastricht, European Union (1992) Official Journal of the European Communities C 325/5

¹²⁵ World Energy Council, World Energy Trilemma Index <https://www.worldenergy.org/transition-toolkit/world-energy-trilemma-index>

¹²⁶ Ibid World Energy Council

¹²⁷ Ibid World Energy Council Index

¹²⁸ Ibid Heffron et al Energy Metric

decisions on energy leading to a trilemma of energy security, fuel poverty and climate change.¹²⁹ Heffron et al incorporate broader categories of conflicts which contain several sub-categories of tension within them. This broader definition arises due to the character of Heffron et al's paper (Figure 10) which developed the Energy Justice Metric aimed at re-balancing the energy trilemma. McCauley builds from the definition provided by Heffron et al (including McCauley himself) and the World Energy Council (Figure 11), by placing energy justice, not as a dimension of the energy trilemma, but at the centre of it. For the purposes of this paper, I will consider the energy trilemma as defined by McCauley (Figure 12) and the World Energy Council, as they provide the specific sub-categories to Heffron et al's wide framework, which are most relevant to the EU Energy Strategy and the EU Trilemma.

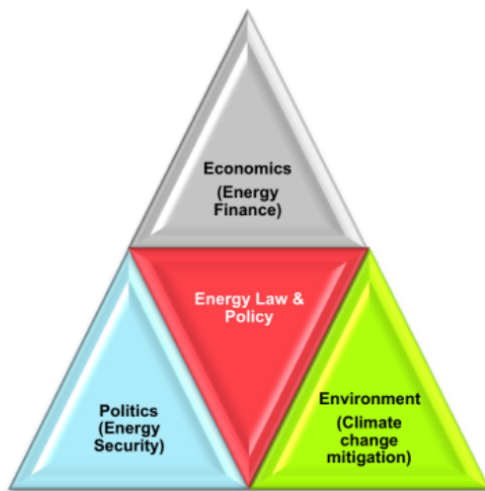


Fig. 1. The Energy law and policy triangle – The 'Energy Trilemma'.

Figure 10 - Energy trilemma in Heffron et al's Figure of the Energy Trilemma

¹²⁹ Ibid McCauley (2018) Chapter 1

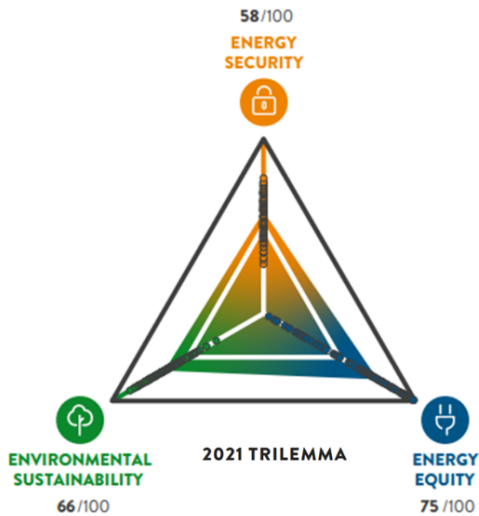


Figure 11 - Energy Trilemma by the World Energy Council

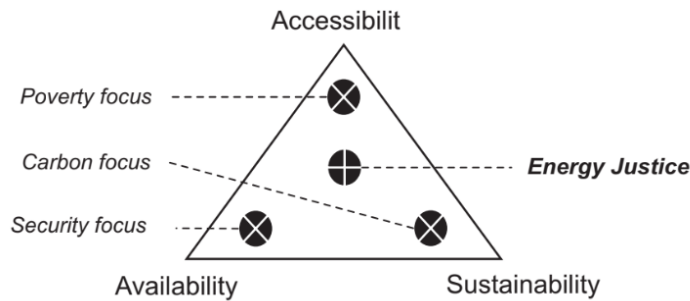


Fig. 1.1 Energy justice trilemma

Figure 12 - Energy Trilemma in McCauley (2018)

Pillar 1: Energy Security

Energy security as a concept has been a heavily contested concept in the literature, as it often bears geopolitical repercussions for the EU and Member States, bringing a political element to the necessity for availability of energy sources. The lack of harmonised interpretation in the literature leads to different approaches in energy policy making which may come to widen the gap in the energy trilemma. On one hand, McCauley defines energy security as “the security of supply for

net importers and demand for net exporters"¹³⁰ This presents a nuanced definition of energy security that attempts to steer clear of the hard-politics approach taken by other scholars in the literature. Sovacool has made several contributions in defining and quantifying energy security. Ren and Sovacool have attempted to translate subjective concepts of energy security to objective criteria through the investigation of cause-effect relationships amongst different metrics. They conclude that the availability and affordability dimensions of energy security are most impactful, while renewable energy and diversification are also compelling national energy security strategies.¹³¹ In practice, energy security has been labelled as a national security concern, as declared by several US Presidents in the 20th and 21st centuries.¹³²

It is beyond the scope of this research to attempt and define energy security, however, several key elements can be derived from the literature with regards to the essence of energy security in the context of EU Energy Policy. It would be misleading to explore energy security from a purely geopolitical point of view¹³³ as several scholars have identified the close causal links between energy security and climate change.¹³⁴ There has been a clear shift in what Boersma and Goldthau label as the "EU's Securitization" - a phenomenon which can be explained and illustrated from the present developments of the Russian invasion of Ukraine, and the previous tensions in the region in the 21st century. Therefore, the geopolitical dimension of energy security in the EU can be said to be related to its dependence on fossil fuel imports from Russia - an unequivocal fact that has led to much tension in the EU as the Bloc's leaders rush to find alternatives to Russian gas and oil in the midst of the energy crisis in 2022. According to 2020 statistics by Eurostat, the EU depended on Russia for 24.4% of all its energy needs.¹³⁵ Securitisation theory reflects that when an issue is

¹³⁰ Ibid McCauley

¹³¹ J. Ren and B.K. Sovacool "Quantifying, measuring and strategizing energy security: determining the most meaningful dimensions and metrics" *Energy* 76 (2014) 838-849

¹³² J. Nyman "Rethinking energy, climate and security: a critical analysis of energy security in the US" *JIRD* (2015), 1-28

¹³³ T. Boersman and A. Goldthau "Wither the EU's Market Making Project in Energy: From Liberalisation to Securitization?" in Ibid Goldthau et al (2018)

¹³⁴ B.K Sovacool "Environmental issues, climate changes and energy security in developing Asia" Asian Development Bank Economics Working Paper Series No. 399 (2014) Vermont Law School Research Paper No. 17-14

¹³⁵ Eurostat EU energy mix and import dependency 4 March 2022 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_energy_mix_and_import_dependency&oldid=556977#EU_energy_dependency_on_Russia

interpreted under the prism of security, it is raised above regular politics.¹³⁶ Reflecting Nyman's argument, mainstream energy security policy discourse and practice views climate mitigation as an afterthought in terms of national security, placing sustainability concerns beyond the scope of high politics despite the imminent danger that the climate crisis poses.¹³⁷ This creates a risk that further widens the gap as the role of sustainable energy and poverty alleviation are sidelined in the name of energy security.

Pillar 2: Eradicating Energy Poverty

McCauley defines this section as access to energy which is “the ability of an individual to benefit from energy provision for multiple purposes.”¹³⁸ This is tied to the right to energy as outlined in Chapter 1, and what is provided as Sustainable Development Goal 7 by the UN which demands affordable, reliable, sustainable and modern energy.¹³⁹ As illustrated in Chapter 1 and through the EU's attempts at alleviating energy poverty in recent years, ensuring adequate access to energy for consumers is an essential pillar of the EU's Energy Strategy.

Pillar 3: Environmental Sustainability

Sustainability in itself is a complicated term that was initially coined in the 1980s. However, it remains beyond the scope of this paper to define sustainability as anything beyond what McCauley argues to be “the reduction of carbon emissions at an acceptable level.”¹⁴⁰ According to the International Energy Association (hereinafter, IEA), power generation and transport together accounted for over two thirds of total emissions in 2021, setting energy at the forefront of the global, and specifically, European efforts, to reach net-zero by 2050 (Figure 13).

¹³⁶ Buzan et al in Ibid Nyman (2015)

¹³⁷ Ibid Nyman

¹³⁸ Ibid McCauley

¹³⁹ Ibid SDG 7 Brief UN

¹⁴⁰ Ibid McCauley

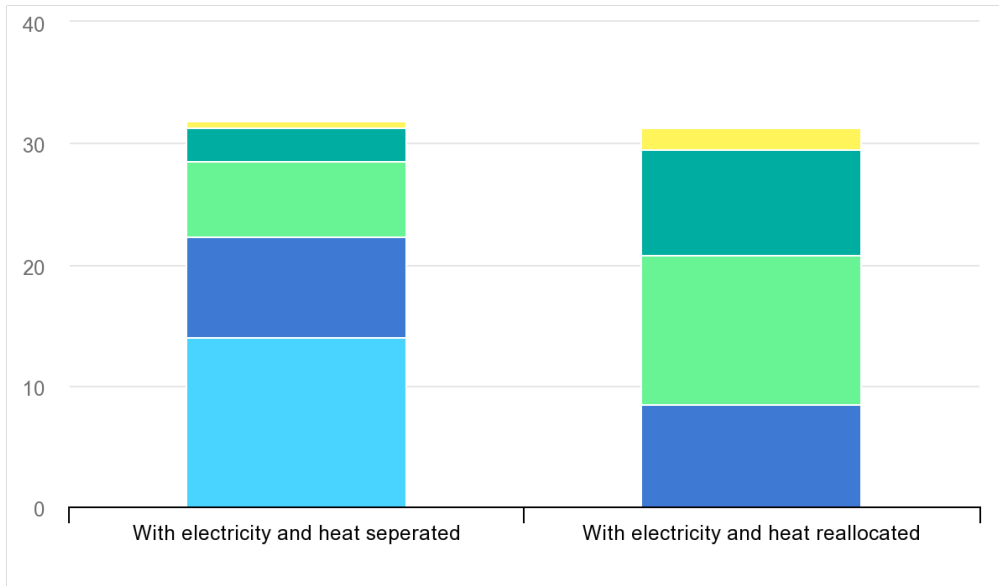


Figure 13 - Global Energy Review CO2 Emissions in 2021 by the IEA

EU Energy Mix

Energy sources

According to Eurostat, petroleum products dominate the EU energy mix, as in 2020, nearly 35% of energy came from total petroleum products, and 24% came from natural gas. This comes to indicate the continuous heavy reliance on fossil fuels in the European energy mix to date (Figure 14).

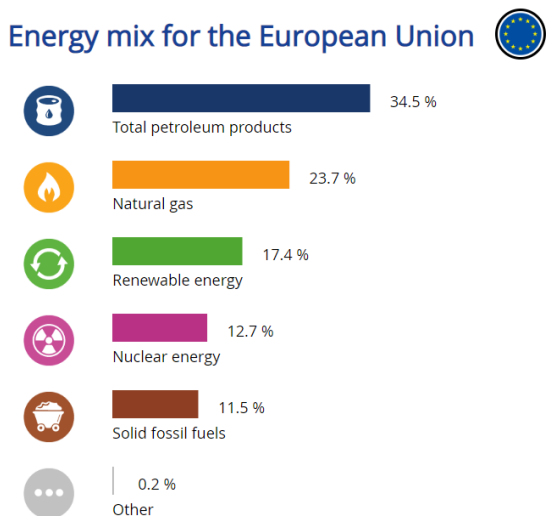


Figure 14 - Energy mix for the EU Eurostat, Where does our energy come from? <https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-2a.html>

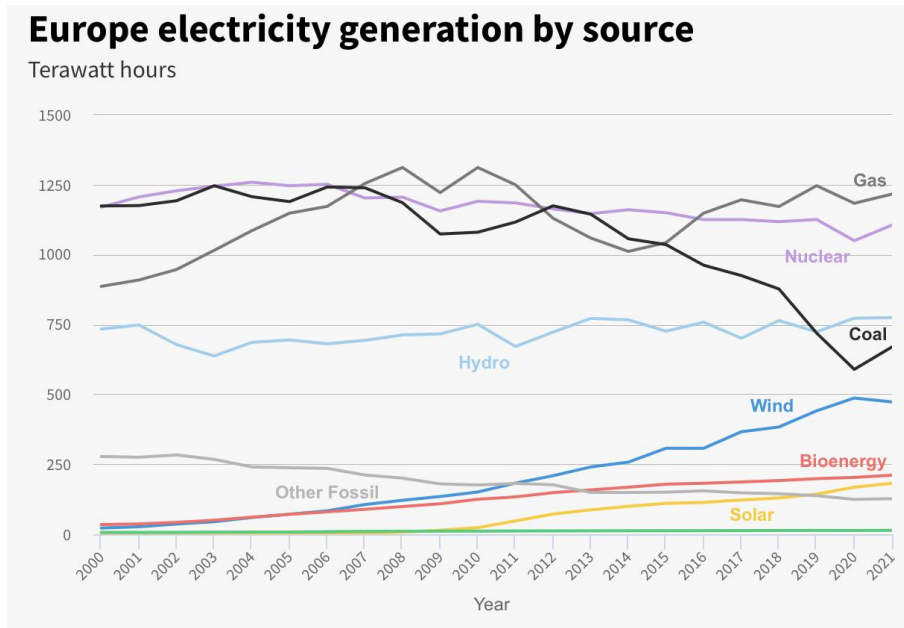


Figure 15 - Europe electricity by source Ember Europe electricity generation by source Terawatt hours (2000-2021)

On the other hand, Ember - an independent energy think tank that uses data-driven insights to shift the world from coal to clean energy - provides updated data relating to Europe’s electricity generation by source until 2021, which fill in the gap in the accessibility of data for the year of 2021 that are not provided by the IEA and Eurostat. The role of wind and solar in Europe’s electricity generation by source is increasing, while the use of coal is consistently falling. The role of wind energy in European electricity generation is seen to exponentially increase at a faster rate than solar, while it begins to reach other low-carbon sources of electricity generation such as Hydro and Nuclear (Figure 15). As other graphs provide the use of renewables as a composite measurement, this is a useful distinction to be made for the purposes of this paper when considering the justice implications of different energy sources.

On the other hand, two observations can be made: first, the role of nuclear power has been slowly dropping since 2000 but electricity generation by nuclear power has remained somewhat consistent. On the other hand, the role of gas has become more prominent in the European electricity grid. It can be seen that in years where Russian-related instabilities take place,

specifically, 2014 and the accession of Crimea, the use of gas in European electricity generation fell to the lowest point since 2000. The numbers continue to increase after this, with 2021 levels being near those of 2008 and 2010 (Figure 16). Despite this, natural gas remains the highest source of European electricity generation, in comparison to other low-carbon counterparts, while nuclear comes in second place.

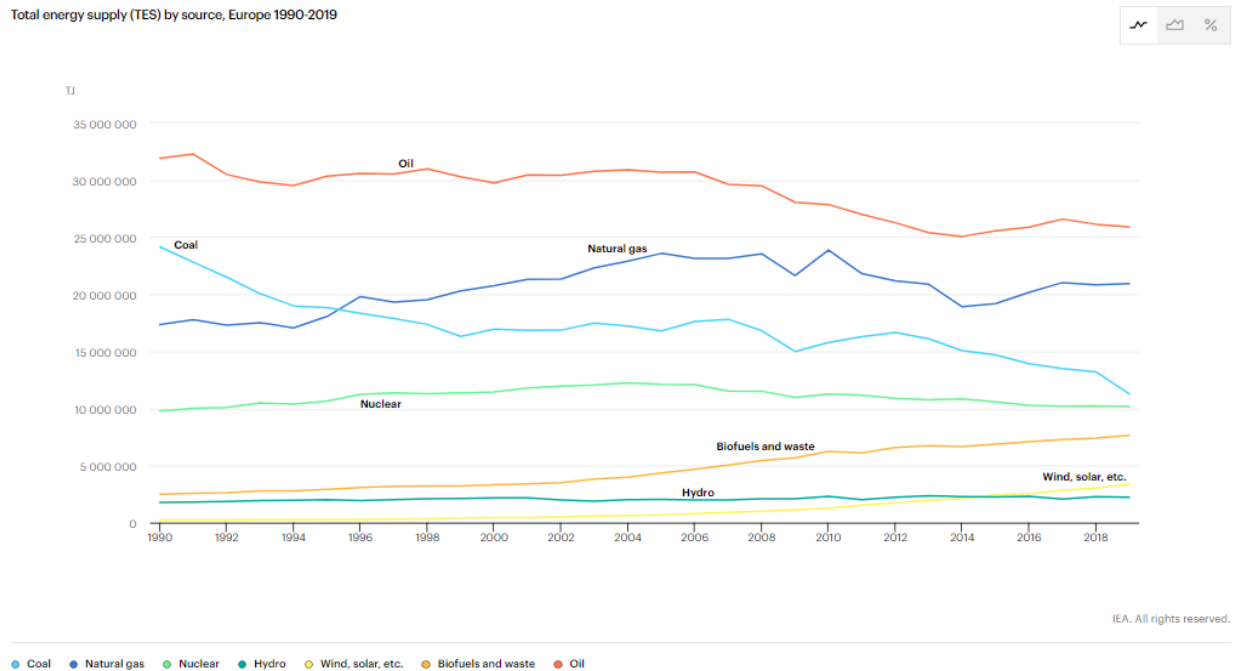


Figure 16 - Total energy supply by source Europe 1990-2019 IEA Europe Overview <https://www.iea.org/regions/europe>

Last, according to the IEA’s Total Energy Supply by source in Europe between 1990 and 2019, the total energy supply in the EU predominantly came from oil, while there is a clear increase since the late 1990s in the total energy supply coming from natural gas. The IEA data indicate a dramatic fall in the use of coal, and a consistent increase in renewable energy sources including wind and solar. The role of nuclear energy has remained consistent in the data, which can be largely due to the varying levels of access to materials and knowhow amongst European countries, as well as the varying levels of acceptability - something I delve deeper into in later sections.

Energy imports and dependency rates

Relative to the energy mix data provided by Eurostat for 2020 above, the graph below indicates that EU energy imports dependency has been consistently increasing, with the highest value in

2019 being 60.5% and with more than half of the energy the Bloc consumes being imported - at 57.5% - in 2020. The drop can be due to the COVID-19 pandemic, and the numbers may be different for 2021, but widely fluctuating due to the invasion of Ukraine in February 2022.

Energy imports dependency

European Union - 27 countries (from 2020) 2020

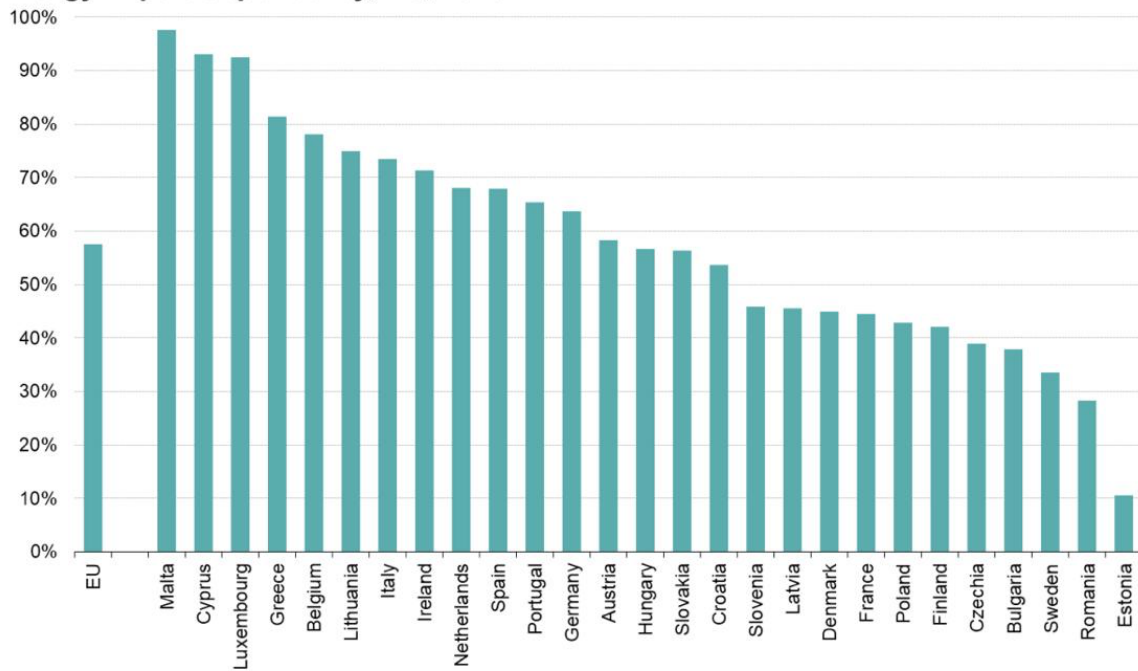


Tool 1: Energy imports dependency, EU, 1990-2020
 (% of the total energy needs)
 Source: Eurostat

Figure 17 - Energy imports dependency Eurostat EU energy mix and import dependency 4 March 2022
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_energy_mix_and_import_dependency#Energy_mix_and_import_dependency

The levels of energy import dependency vary amongst EU Member States, with Malta having the highest import dependency at almost 100%, and Estonia having the lowest dependency at 10%. The European average is 57.5% as seen above (Figure 17). The country-specific breakdown can come to illustrate the ways that energy-related injustices and inequalities are created amongst different Member States in the EU, and the ways that one size fits all policies aimed at alleviating energy decadence may be inappropriate, as these could mean the exaggeration of energy poverty in countries with high energy dependence who would have to seek more expensive energy sources in the short-term.

Energy import dependency, EU, 2020

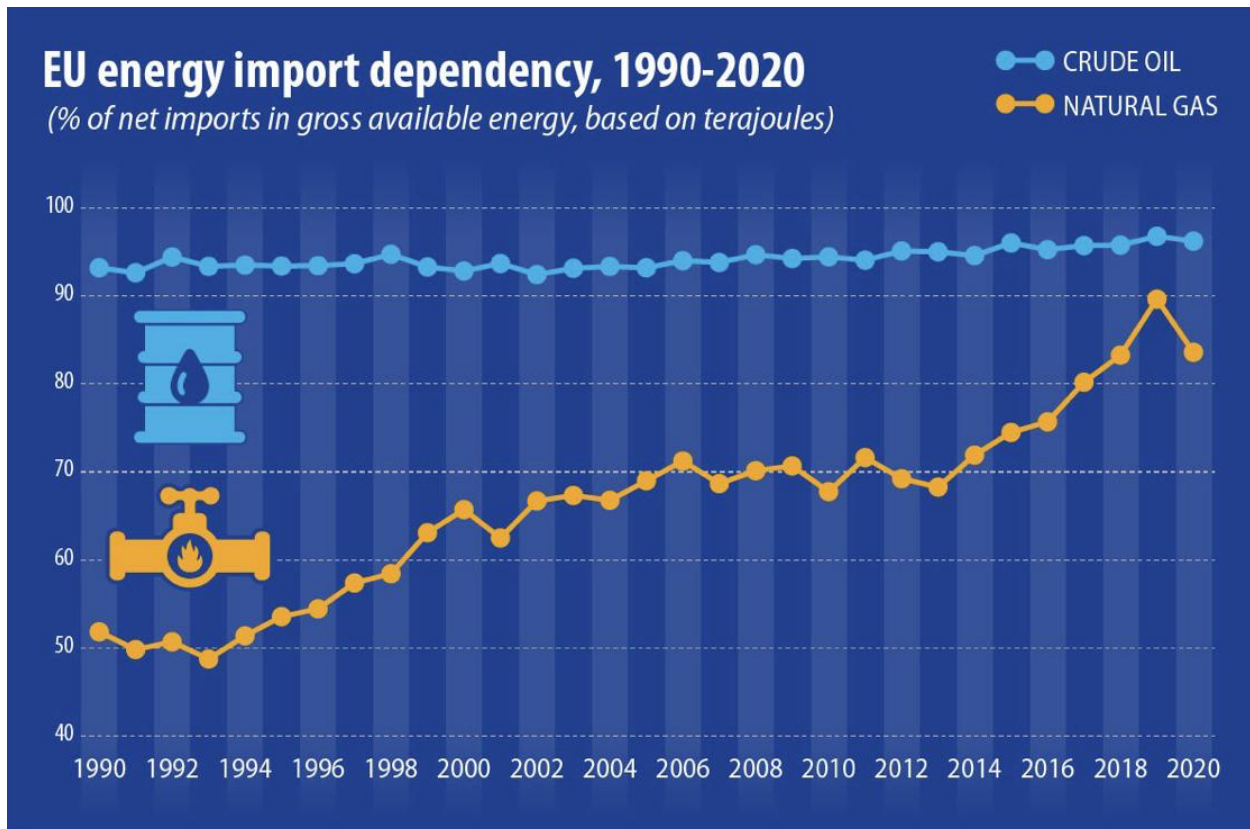


Source: Eurostat, calculation based on energy balances

eurostat 

Figure 18 - Energy import dependency, EU, 2020 Eurostat EU energy mix and import dependency 4 March 2022 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_energy_mix_and_import_dependency#Energy_mix_and_import_dependency

Specifically, energy dependency rates have stayed steady in relation to crude oil but have been increasing since 1990 for natural gas according to Eurostat (Figure 19).



ec.europa.eu/eurostat

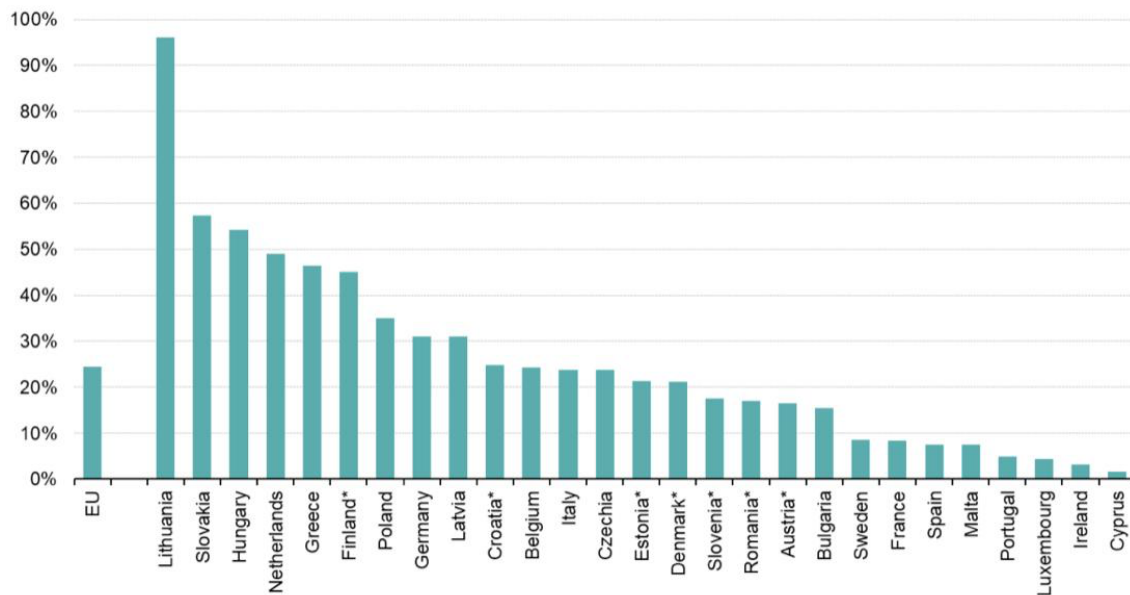
Figure 19 - EU energy import dependency, 1990-2020 Eurostat EU energy mix and import dependency 4 March 2022 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_energy_mix_and_import_dependency#Energy_mix_and_import_dependency

The EU predominantly depends on Russian imports for its natural gas - with imports from Russia making up 41.1% of EU natural gas imports according to Eurostat (Figure 20).¹⁴¹ Furthermore, imports from Russia in 2020 varied per country. A caveat must be noted which is that the below graph does not illustrate natural-gas-specific imports, but rather imports from Russia in gross available energy, which may skew the picture of energy (in)security today. Given the significant role that natural gas plays in the European electrification as illustrated by the statistics employed from Ember above, the issues of energy security, energy poverty and sustainability all come into play not only in light of the current events and the war in Ukraine, but also in light of the concerning increase in reliance of imported fossil fuels in the EU. Specifically, despite the consistent and

¹⁴¹ Eurostat EU energy mix and import dependency 4 March 2022 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_energy_mix_and_import_dependency#Energy_mix_and_import_dependency

historical calls for diversification, Europe’s monocultural reliance on Russian natural gas in particular has raised alarm bells for analysts through the years. In the context of this paper, this serves as a demonstrative example of the injustices created at an inter-state level amongst Member States. For instance, distributional issues are put at the forefront in relation to the risks from electricity generation when the dominating source of electricity generation is also the source that defines energy dependence in the EU. Furthermore, post-distributional justice, or recognition justice, also becomes essential in asking which countries will be the most affected, as an inevitable result of their higher-than-average energy dependence rates, when energy independence is sought at an EU-wide level in the short-term.

Imports from Russia in gross available energy, EU, 2020



Source: Eurostat, including estimates for non-reported data for countries with *



Figure 20 - Imports from Russia in gross available energy, EU, 2020 Eurostat EU energy mix and import dependency
 4 March 2022 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_energy_mix_and_import_dependency#Energy_mix_and_import_dependency

Energy from Renewable Sources

Renewable sources include wind power, solar power, hydro power, geothermal, tidal power, and biofuels.¹⁴² Directive 2009/28/EC set binding targets for increasing the share of energy derived from renewable sources¹⁴³This has led to the dramatic increase in the share of renewable energy in the EU, with the EU exceeding its 2020 target for the percentage of renewable energy of gross final consumption.

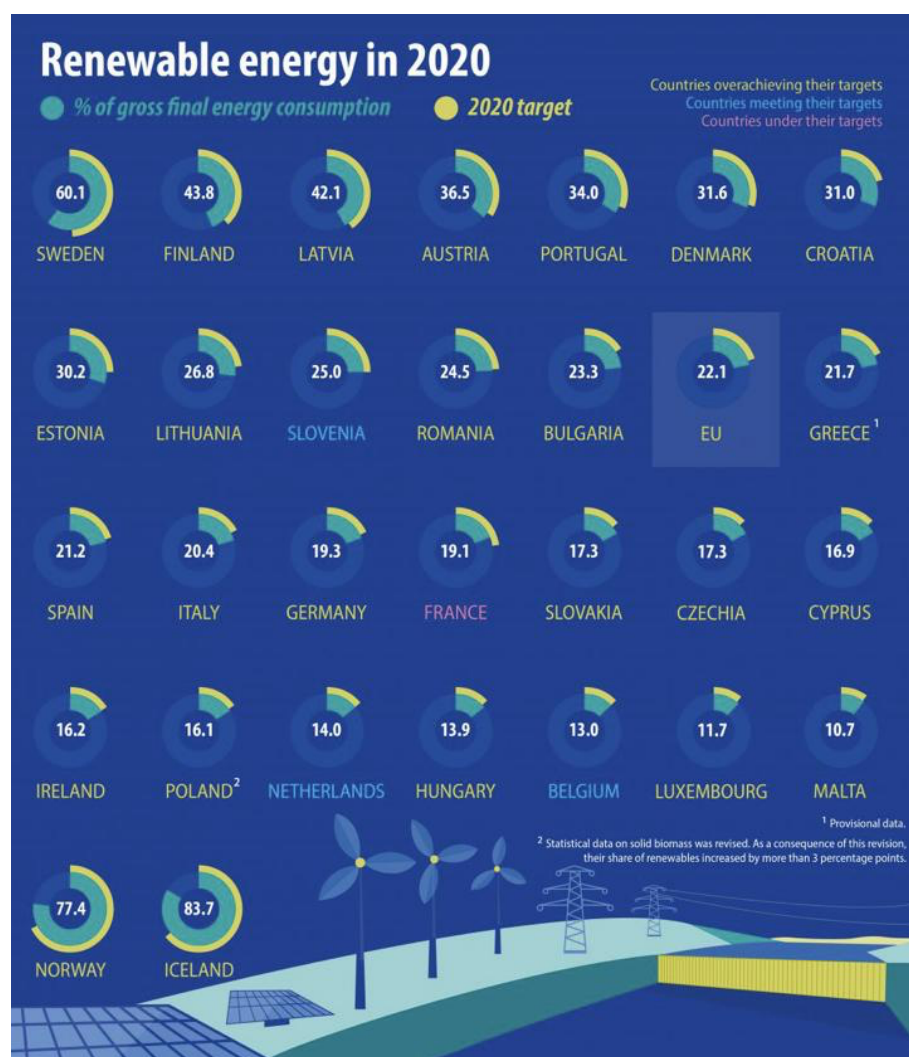


Figure 21 - Renewable energy in 2020 from Eurostat EU energy mix and import dependency 4 March 2022 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_energy_mix_and_import_dependency#Energy_mix_and_import_dependency

¹⁴² Eurostat Renewable Energy Statistics January 2022 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Renewable_energy_statistics#:~:text=In%202020%2C%20renewable%20energy%20sources,and%2033%20%25%2C%20respectively).

¹⁴³ Directive 2009/28/EC

Therein, Malta had the lowest share of renewable energy consumption at 10.7% - a figure correlating to Malta's highest energy dependence in Europe for the same year as shown above. On the other hand, Sweden, which had the highest share of renewables at 60.1% (Figure 21).¹⁴⁴ of energy consumption, has been shown to be one of the Member States with the lowest energy import dependence for the same year.

Furthermore, according to the European Environment Agency, an “unprecedented transformation in the energy system will be necessary to meet the current 32% renewable energy target set for 2030” (Figure 22).¹⁴⁵

Figure 1. Progress towards renewable energy source targets for EU-27

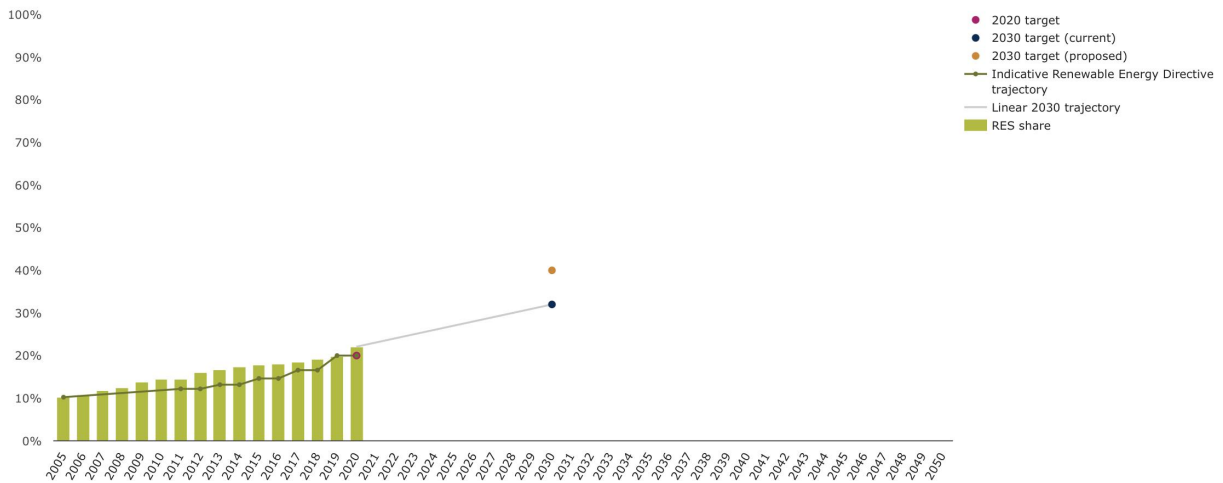


Figure 22 - Progress towards renewable energy source targets for EU-27 European Environment Agency “Share of energy consumption from renewable sources in Europe” 4 March 2022

Furthermore, according to Eurostat, wind and water provide most of renewable electricity in the EU, but solar is the fastest-growing energy source.¹⁴⁶ Ember’s European Electricity Review, which analyses full-year electricity generation data for 2021 in all EU-27 countries to understand the Bloc’s progress in the energy transition has presented the following findings (Figure 23). The

¹⁴⁴ Eurostat “What is the share of renewable energy in the EU?”

<https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-4c.html?lang=en>

¹⁴⁵ European Environment Agency “Share of energy consumption from renewable sources in Europe” 4 March 2022 <https://www.eea.europa.eu/ims/share-of-energy-consumption-from#:~:text=The%20EU%20had%20set%20the,2019%20to%2022.1%25%20in%202020.>

¹⁴⁶ Ibid Eurostat Renewable Energy 2022

report found that renewable energy replaced costly gas instead of coal in the gas crisis during the second half of 2021. Nevertheless, this does not account for the 2022 crisis as a result of the war in Ukraine, which arguably, saw a shift from the short-term resort to renewable energy for electricity generation.¹⁴⁷ Furthermore, wind and solar power provide the majority of renewable growth since 2019 which reached a new record high, and outpacing electricity generation than fossil gas in 2021.

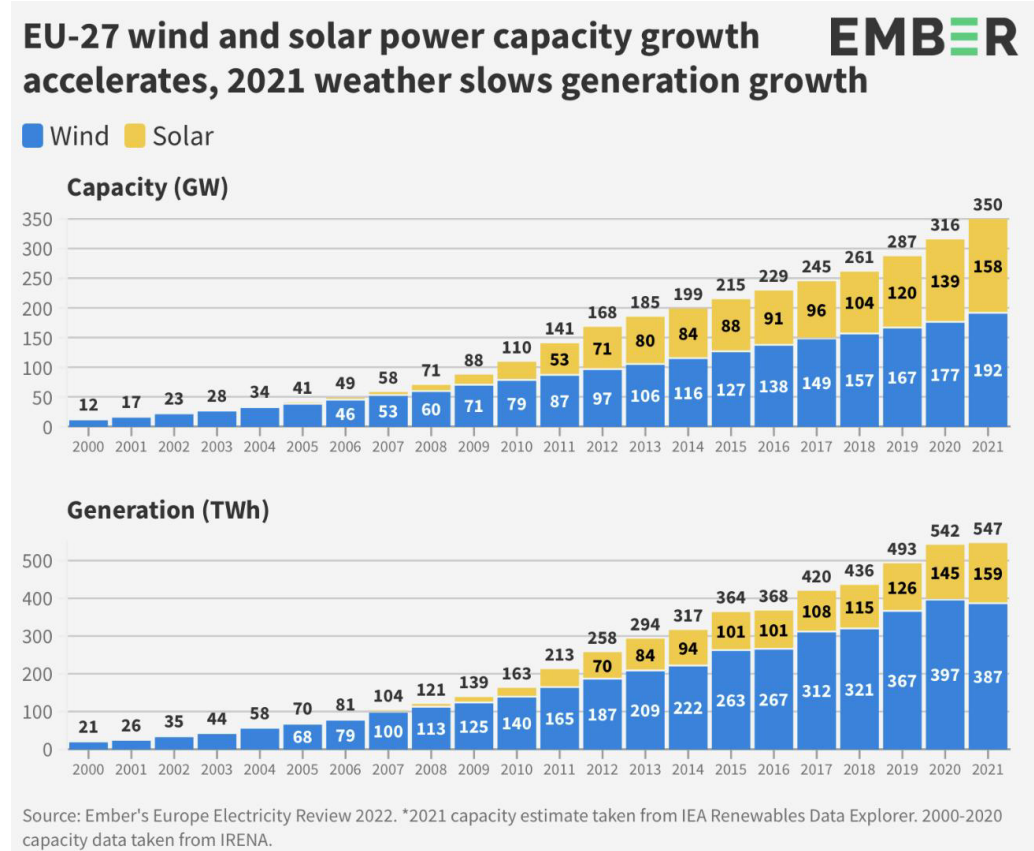


Figure 23 - EU wind and solar power capacity growth from EMBER's Europe Electricity Review 2022

Nevertheless, output growth for wind and solar has remained at around 1% which Ember labels as “modest” and attributes to low wind speeds in 2021 in comparison to 2020. Despite the higher percentage of electricity generation that can be attributed to wind in 2020 - as seen above in the statistics provided by Eurostat and Ember, solar is dominating electricity generation in several Member States, with a 25% increase from 2019 (Figure 24).¹⁴⁸

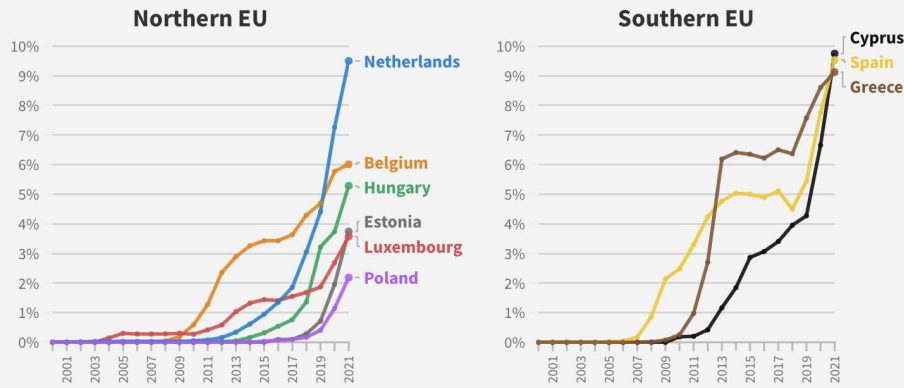
¹⁴⁷ Charles Moore for Ember “European Electricity Review 2022” 1 February 2022

¹⁴⁸ Ibid Ember Report

Solar is now soaring across the EU, in northern and southern countries



Solar as a % share of gross electricity demand



Source: Ember's Europe Electricity Review 2022

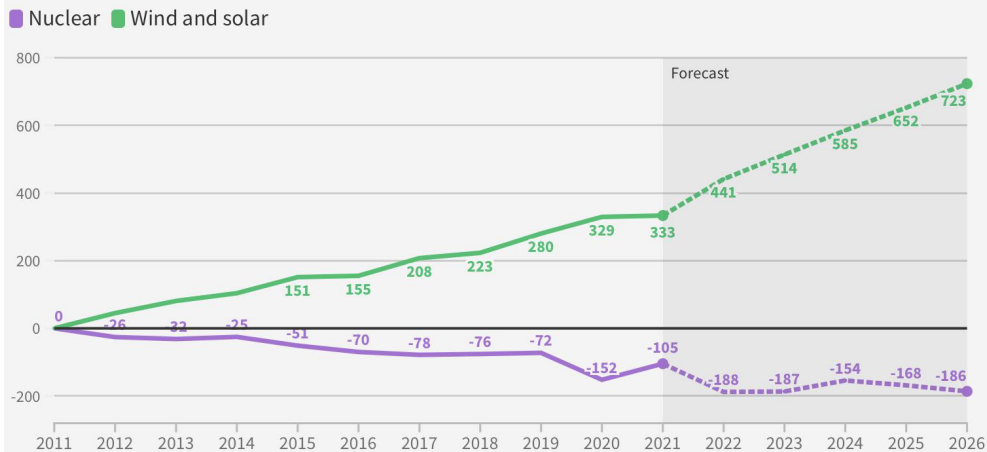
Figure 24 - Solar as a % share of gross electricity demand from EMBER's Europe Electricity Review 2022

On the other hand, according to the report, nuclear energy remains in a long-term decline, which Ember argues to have slowed the emissions reductions in the EU despite the rapid increase of wind and solar (Figure 25). Nevertheless, the report forecasts that despite the fall in nuclear power, the acceleration of solar and wind will come to fill the gap created in the decarbonisation process of the EU.

Structural decline of nuclear is slowing power sector decarbonisation



Cumulative change in EU-27 electricity generation versus 2011 (Terawatt hours)



Source: Ember's European Electricity Review. IEA baseline forecast for wind and solar power, from the IEA's 'Renewable Energy Market Update 2021' report. Ember forecast for nuclear power using the latest announced closures and start dates from the World Nuclear Association, National Energy & Climate plans and EDF's forecast for 2022 and 2023.

Figure 25 - Decline of nuclear energy Europe Electricity Review 2022

The interaction of the three pillars

The interactions and inherent tensions arising from the abovementioned pillars give rise to the creation of an energy trilemma for policymakers. It may be arguable that different priorities arise depending on the global arena in a given time. For instance, historically where access to energy in the EU has been jeopardised, energy security has been put at the forefront of the conversation: this was seen in 2009 with the Ukraine-Russian tensions, in 2014 with Crimea, and today, in 2022 with the invasion of Ukraine by Russia. This comes in contradiction to the EU's consistent and non-hierarchical ranking of its energy policy objectives.

The current situation has been illustrative of the tensions between the above-mentioned tenets. Despite the efforts to reduce the dependence on fossil fuels, the short-term solution for the EU to the disruptions caused by the Russian invasion, led to the increase in the use of coal and other 'dirty' sources of energy. On the other hand, reflecting Franza and Van der Linde, "affordability has been sacrificed on the altar of security"¹⁴⁹ where Liquefied Natural Gas (hereinafter, LNG) imports from countries like the US and Qatar threaten the fine line drawn between energy security and energy poverty due to the expensive nature of LNG imports, as several European countries set long-term goals to import LNG by accelerating the speed of building LNG ports.

Furthermore, a factor that may potentially threaten the energy security of the EU is not related to its foreign policy - to some extent, but this remains beyond the scope of this paper - but rather in its transition to reliance on renewable energy sources; energy systems which, arguably lack the technological advancements which would create the conditions of secure and complete transition from fossil fuels. Compared to the fossil fuel market which is characterised by volatile prices and highly politicised stakes,¹⁵⁰ renewable energy remains an uncertain and unreliable energy source for the time being. The tension between the two, therefore, threatens one of the key pillars established in the EU Energy Strategy.

¹⁴⁹ L. Franza and C. Van der Linde "Geopolitics and the Foreign Policy Dimensions of EU Energy Security" 2017 S.S Andersen et al (eds.) *Energy Union*

¹⁵⁰ Ibid McCauley

Remarks

There are several ways suggested by the literature and by the European and National plans for tackling the energy transition, which may come to solve or widen the energy trilemma. These are predominantly shaped around the deployment of low carbon energy sources, including renewable energy sources and the innovation of technology therein. Indeed, the EU's energy mix is seeing a slow shift in favour of renewable energy. Nevertheless, fossil fuels still dominate energy provision and electricity generation in the EU. An observation that can be made throughout this the analysis of the current energy mix is that those nations with the highest deployment of renewable energy are those who enjoy lower rates of energy import dependency relative to other Member States, while those with the lowest deployment of RES see some of the highest rates of energy import dependency. This is demonstrative of the role that sustainability-focused policies play in balancing the energy trilemma overall, as those nations with lowest energy Import dependency are the ones least affected by the current energy crisis and instability in the region. Furthermore, some of the countries with the highest levels of energy poverty such as Bulgaria and Lithuania, are those faced with high import dependency rates, confirming the link between energy security and energy poverty. This further supports my initial hypothesis that the current policy focus which prioritises energy security widens the gap in the energy trilemma, which can be resolved by the deployment of sustainability-gearred policies, as well as poverty-alleviation policies, which pose a consumer-centric approach which can rebalancing and "securitise" energy security. On the other hand, the same countries faced with high levels of energy poverty remain above or around the European average of renewable energy deployment according to Eurostat. This indicates that there is a gap between energy poverty alleviation and sustainable energy where there is smaller scale deployment of renewable energy. The relationship between a rebalancing of energy poverty alleviation, energy security and sustainability is best illustrated where there is large scale deployment of renewable energy such as in countries such as in Norway, Sweden and Finland. In fact, according to the World Energy Council's Energy Trilemma Index, Sweden was ranked first top performer, while Finland was fourth and Norway eighth.¹⁵¹

¹⁵¹ World Energy Council Trilemma Index 2021, p7

In addition to this, it has become obvious through the review of the modern EU Energy Strategy, that a justice perspective holds the potential to rebalance the energy trilemma. This reflects McCauley's initial proposition as well as my hypothesis that an energy justice approach can rebalance the trilemma as placing justice and fairness at the heart of policy responses can lead to the rebalancing of competing priorities between security of supply and availability for consumption.¹⁵² However, as my analysis of the EU policies shows, despite an energy-just perspective in EU energy policy, several injustices arise which may, in fact lead to a widened gap in the trilemma where invisible inequalities are not tackled. This is exacerbated by the current state of flux that the European Energy Strategy is faced with due to the energy crisis.

The deployment of low-carbon technologies in energy systems in itself cannot re-balance the energy trilemma as it comprises one third of the issue. Despite this, there seems to be a strong correlation between a balanced energy trilemma where low-carbon technologies are coupled with a decentralised approach to energy policy. The EU's Energy Strategy attempts to achieve this at a pan-European level, as the diversification of energy sources with a focus on RES deployment may increase energy security as we move away from volatile energy prices, while providing a decentralised forum for consumers to come closer to energy production as prosumers. Indeed, a justice perspective, using the examples of wind-power and hydro, McCauley has illustrated that the two energy sources are inherently more decentralised in comparison to fossil fuels, opening the access to individuals and households to assume responsibility for their energy consumption.¹⁵³ Nevertheless, this may be difficult to achieve where inter-state inequalities are not concurrently tackled in policymaking. The discretion left on Member States to create social policies leads to gaps that may deepen the trilemma across the EU-27. Last, as illustrated from the present situation in the EU, when faced with a crisis, a justice-focused approach provides a long-term goal, where elements of the trilemma are prioritised over others leading to a state of flux that may have long-term economic implications on the market.

¹⁵² T. Boersma *Energy security and natural gas markets in Europe: Lessons from the EU and the US* (2015) Routledge in McCauley

¹⁵³ Ibid McCauley, also see, Iris Marion Young 2011

Chapter 4 – Low-Carbon Energy Sources and Energy Justice

Following the above analysis, this section aims to answer the sub question that arises as a result on the role of energy justice in re-balancing the energy trilemma, by considering solar energy as an illustrative example of the role that low-carbon energy sources play in promoting energy justice and the ways that this can re-balance the energy trilemma in the EU. .

This paper is separated into the following sections. Having laid out the current and predicted energy mix for the EU to illustrate the potential opportunities and challenges to the European Energy Strategy in the previous chapter, I will now turn to analyse the role of solar energy from a justice perspective by focusing on energy communities in the EU and the potential invisible injustices that may arise. Last, I will conclude that despite the presumption that low-carbon energy sources and energy justice have a mutual impact on one another, the analysis of the above comes to show that energy injustices remain rooted in low-carbon energy systems.

Solar Power, a Case Study of Energy Justice

Despite the dominant role of wind energy in the European electricity grid, given the increasing role of solar energy therein, this chapter will focus on solar power as an illustrative example of energy justice. Unlike fossil-fuel-based energy, renewable energy may be deployed in small scale by individuals, communities or organisations which has the potential to dramatically transform the current state of centralised, and inaccessible energy due to the unequal distribution of fossil fuel resources. Furthermore, due to the perpetual nature of renewable energy, the fuel source (wind, solar etc.) is ultimately ‘free’ - while renewable energy technology and electricity generation are not;¹⁵⁴ nevertheless, the costs of solar photovoltaics have significantly dropped. This section will focus on the role of energy communities in the EU as a demonstration of energy justice, and its

¹⁵⁴ J.C Stephens “Energy democracy: Redistributing power to the people through renewable transformation” *Environment: Science and Policy for Sustainable Development* (2019) Vol. 61, No. 2, 4-13

procedural counterpart - energy democracy - in energy policy, as well as the potential injustices that the deployment of solar energy may give rise to in the energy transition.

Solar Energy, Prosumerism and Energy Justice

The rapid growth of solar power in recent years, as illustrated with the data in the previous chapter, puts the deployment of solar energy at the epicentre of the energy transition.

It is argued that solar power, and specifically, photovoltaics (hereinafter, PVs) are suitable for decentralised generation in small units close to where the demand is located.¹⁵⁵ Indeed, according to Heffron et al with regards to the deployment of solar energy more broadly, renewable energy may offer a feasible option in the short- and long-term that can supply urban and rural areas, while in the long-run, this can maintain or contribute to energy security and access.¹⁵⁶ Heffron et al introduce the concept of energy flexibility and flexibility justice which are concerned with the operation of the energy sector, aiming to ensure that the market is open to existing and new stakeholders that can supply flexibility.¹⁵⁷ The employment of flexibility justice, according to Heffron, has the potential to foster new entrants in the market from all sectors.¹⁵⁸

The appropriate assessment of the transition to low-carbon energy from a justice perspective can be carried out by following illustrative case-studies. This is conducted by Mundaca et al who assessed Samsø in Denmark and Feldheim in Germany.¹⁵⁹ The research aims to study the (in)justices perceived in the decision-making process and the interdependencies between procedural and distributive justice issues.¹⁶⁰

¹⁵⁵ Y. Karneyeva, R. Wustenhagen “Solar feed-in tariffs in a post-grid parity world: The role of risk, investor diversity and business models” *Energy Policy* 106 (2017) 445-456

¹⁵⁶ R. Heffron, S. Halbrugge, M.F. Korner, N.A. Obeng-Darko, T. Sumarno, J. Wagner, M. Weibelzahl “Justice in solar energy development” *Solar Energy* 218 (2021) 68-75

¹⁵⁷ R.J Heffron, M. Korner, M. Schopf, J. Wagner, M. Weibelzahl “The role of flexibility in the light of the COVID-19 pandemic and beyond: Contributing to a sustainable and resilient energy future in Europe” *Renew. Sustain. Energy Rev.* 140 (2021)

¹⁵⁸ Ibid Heffron et al 2021

¹⁵⁹ L. Mundaca, H. Busch, S. Schwer “‘Successful’ low carbon energy transitions at a community level? An energy justice perspective” *Applied Energy* 218 (2018) 292-303

¹⁶⁰ Ibid Mundaca et al 2018

From a procedural justice perspective, the researchers found that consultation processes and information campaigns were integrated into the planning processes in the case studies, which together with the leadership from within the community resulted in reduced tensions, while the existence of formal and informal information channels legitimised the consultation processes and facilitated participation.¹⁶¹ A sense of community was critical, but did not eradicate conflicts; a caveat to this can be identified, which is that both communities were heterogeneous and resistant to change but the value of participation aided in limiting conflict.¹⁶² In relation to distributive justice, interviewees assessed opportunities as positive and acknowledged a net positive social gain for the community.¹⁶³ The paper argues that the ‘losers’ of this transition were those who opposed it; but who, nevertheless, were no worse off than they were prior to the transition. However, as the authors admit, this research lacks an assessment of the distribution of social, environmental and economic costs and benefits in these communities.¹⁶⁴ Furthermore, while the illustrative examples are somewhat representative of the justice implications in decarbonising the energy grid, it is only done so in an isolated context. While Samsø has an approximate population of around 3,700 people,¹⁶⁵ Feldheim has a population of 145.¹⁶⁶

Another illustrative example of energy justice through the deployment of solar energy may be that of the prosumer. As mentioned in Chapter 3, the Renewable Energy Directive set the scene for the prosumer to play a central role in energy decision-making. The decentralised approach of prosumer brings the consumer to the generation, distribution, and consumption of energy, predominantly from renewable energy sources, and according to the literature, the overwhelming majority of prosumers produced energy using PVs - at 90%.¹⁶⁷

¹⁶¹ Ibid Mundaca et al 2018

¹⁶² Ibid Mundaca et al 2018

¹⁶³ Ibid Mundaca et al 2018

¹⁶⁴ Ibid Mundaca et al 2018

¹⁶⁵ Samsø Municipality in Midtjylland (Denmark) Population Citypopulation.de in https://citypopulation.de/en/denmark/admin/midtjylland/741_sams%C3%B8/

¹⁶⁶ K. Pauls “Tiny German village a model in country’s energy revolution” CBC News, 8 March 2013 <https://www.cbc.ca/news/world/tiny-german-village-a-model-in-country-s-energy-revolution-1.1407262#:~:text=Feldheim%2C%20population%20145%2C%20generates%20all%20its%20own%20heat%20and%20light&text=The%20tiny%20village%20of%20Feldheim,economically%20viable%20without%20fossil%20fuels.>

¹⁶⁷ Ibid Horstink et al (2020)

Energy communities pool members' resources and develop local renewable energy projects,¹⁶⁸ contributing to energy decentralisation.¹⁶⁹ Energy vulnerable groups are often excluded from the energy transition¹⁷⁰ which may put energy communities in the epicentre of ensuring a just energy transition in theory.¹⁷¹ Hanke et al put this to the test by applying the energy justice framework also cited throughout the present paper, in their exploratory research investigating how what they call "renewable energy communities" (hereinafter, RECs) engage in the social role of mitigating energy poverty as a form of energy justice from data collected among 71 European RECs.¹⁷²

Horstink et al outline the socio-cultural and socio-economic factors of prosumerism, finding the following.¹⁷³

- a) Institutional features of communities that decide to self-produce.¹⁷⁴
- b) Social drivers.¹⁷⁵
- c) Desire to democratise and decentralise energy.¹⁷⁶
- d) Financial benefits for communities engaged, aside from responding to societal challenges.¹⁷⁷

¹⁶⁸ K. Linnerud, P. Toney, M. Simonsen, E. Holden "Does change in ownership affect community attitudes toward renewable energy projects? Evidence of a status quo bias" *Energy Policy* 131 (2019) 1-8.

¹⁶⁹ B. Wiersma, P. Devine-Wright "Decentralising energy: comparing the drivers and influencers of projects led by public, private, community and third sector actors" *Contemporary Social Science* (2014) 456-470

¹⁷⁰ S. Bouzarovski, H. Thomson, M. Cornelius, A. Varo, R. Guyet "Towards an inclusive energy transition in the European Union: confronting energy poverty amidst a global crisis" Publications Office of the European Union. EU Energy Poverty Observatory (2020)

¹⁷¹ F. Hanke, J. Lowitzsch "Empowering vulnerable consumers to join renewable energy communities - towards an inclusive design of the Clean Energy Package" *Energies*, 13 (2021)

¹⁷² F. Hanke, R. Guyet and M. Feenstra "Do renewable energy communities deliver energy justice? Exploring insights from 71 European cases" *Energy Research & Social Science* 80 (2021)

¹⁷³ Horstink et al (2020)

¹⁷⁴ S. Wirth "Communities matter: institutional preconditions for community renewable energy" *Energy Policy* (2014), 70, 236-246

¹⁷⁵ T. Bauwens, B. Gotchev, L. Holstenkamp "What drives the development of community energy in Europe? The case of wind power cooperatives" *Energy Res. Soc. Sci.* (2016), 13, 136-147

¹⁷⁶ R.J. Hewitt, N. Bradley, A. Baggio Campagnucci, C. Barlagne, A. Ceglarz, R. Cremades, M. McKeen, I.M Otto, B. Slee "Social innovation in community energy in Europe: a review of the evidence" *Front. Energy Res.* (2019), 7, 31

¹⁷⁷ D. Vansintjan "The energy transition to energy democracy - power to the people" *REScoop.eu* (2015)

- e) Cultural barriers include the lack of technical knowledge in the initiatives which are often run by volunteers, the spread of misinformation and the lack of legitimacy attributed to the cooperative model.¹⁷⁸
- f) A gender imbalance has been observed in energy prosumerism, where women are highly underrepresented.¹⁷⁹

According to Heldeweg and Saintier, due to the heterogeneity of the sector, decentralised actors are difficult to categorise.¹⁸⁰ Despite this, the pair argues that this variety in motivation is necessary in their community impact. According to them, the framework set out in RED-II for energy prosumers satisfies the three requirements for energy justice.¹⁸¹ The idea of voluntary participation set out in RED-II conceptualised as consensus relates to procedural justice. Further, RED-II's purpose for providing sustainable benefits for shareholders in energy communities and the legal personality of such communities are representative of distributive justice.¹⁸² Finally, the prescribed autonomy of energy communities as envisaged in Article 22 of RED-II, communities' legal rights and the entitlement of only natural persons being members, are some of the ways that recognition justice is achieved in principle.¹⁸³

Indeed, energy communities pride themselves as core models of energy democracy. As previously mentioned, there is no consensus on the meaning of energy democracy, and there is vast literature that attempts to define the concept. This remains outside the scope of this paper, which considers energy democracy to be the procedural counterpart of energy justice. I will borrow Heldeweg and Saintier's model for conceptualising energy democratisation as including participation and economic redistribution of benefits to communities. According to Walhund and Palm, energy communities and individual prosumerism are two direct forms of energy participation.¹⁸⁴ In terms

¹⁷⁸ Ibid Vansintjan

¹⁷⁹ J. Clancy, V. Daskalova, M. Feenstra, N. Franceschelli "Gender perspective on access to energy in the EU" European Union (2017)

¹⁸⁰ M.A Heldeweg, S. Saintier "Renewable energy communities as 'socio-legal institutions': a normative frame for energy decentralisation?" *Renewable and Sustainable Energy Reviews* 119 (2020)

¹⁸¹ Ibid Heldeweg and Saintier (2020)

¹⁸² Ibid Heldeweg and Saintier (2020)

¹⁸³ Ibid Heldeweg and Saintier (2020)

¹⁸⁴ M. Wahlund and J. Palm "The role of energy democracy and energy citizenship for participatory energy transitions: a comprehensive review" *Energy Research & Social Science* 87 (2022)

of governance, Horstink et al's survey research sheds some light to the models used by energy communities. Their survey showed that in strategic decision-making, processes ranged from involving staff, asking for opinions, actual input and involvement in the discussion.¹⁸⁵ About half of the cooperatives in their research reported that they decided by majority vote and prosumer initiatives were in favour of participative/inclusive forms of decision-making - close to 60%.¹⁸⁶ This shows an element of procedural justice within the initiatives themselves, as well as the potential for democratised energy clusters. It becomes clear that on the face of it, RED-II and the conception of European energy communities thus far, are an attempt at democratising energy at a local and communal level based on membership participation. There is merit in this process as energy communities create benefits for their members and may even lead to positive spill-over effects. These include the reinvestment of financial surplus to new renewable energy projects, while the joint decision-making process by all members, and knowledge sharing¹⁸⁷ taking place within communities encapsulate the object of RED-II, which did not create, but rather solidified the role of energy communities in the energy transition.

Solar Energy, Prosumerism and Energy (In)Justices

Despite the theoretical potential of solar energy to enhance energy justice and its theoretical counterparts in the EU, this oftentimes remains 'in the books' as practice unveils deeper injustices in a negligible energy transition. This is best illustrated by Sovacool et al's work on the injustices of four low-carbon transitions, of which I will focus on Germany, as Sovacool et al's research focuses on the country in relation to its solar energy transition.¹⁸⁸ According to their expert interviewee, there is no loser in the solar energy transition in Germany, which supports a broader utility perceived by the proponents of solar energy as enhancing energy justice in the energy transition, however, echoing Sovacool et al, this also comes to emphasise the invisibility of many injustices that their paper reveals.¹⁸⁹ Several distributional injustices were discussed, centring on coal miners and nuclear power workers becoming redundant and the uneven access to the Feed-in

¹⁸⁵ Ibid Horstink et al (2020)

¹⁸⁶ Ibid Horstink et al (2020)

¹⁸⁷ Ibid Horstink et al (2020)

¹⁸⁸ B.K Sovacool, M. Martiskainen, A. Hook and L. Baker "Decarbonisation and its discontents: a critical energy justice perspective on four low-carbon transitions" *Climatic Change* (2019) 581-619

¹⁸⁹ Ibid Sovacool et al (2019)

Tariff (FIT) which provides a guaranteed income for renewable energy producers for a period of 20 years.¹⁹⁰ One focus group emphasised the difficulty to re-train coal miners, as well as the challenges of relocation for many living in villages that relied on income from coal mining, especially “elderly ex-miners who [...] can’t just go back to university.”¹⁹¹ With regards to procedural justice, respondents raised concerns regarding planning processes and the dominance of industrial interests, which led to the slowing of the energy transition through caps to protect it, which according to one respondent is “madly Orwellian.”¹⁹² Lastly, respondents voiced concerns of a double effect on lower-income classes in the transition, as they do not have enough capital to instal solar systems, while having to pay higher prices.¹⁹³ The effects of this are especially felt by single mothers and elderly women, who have a single source of income meant to cover households of more than 2 or 3 people.¹⁹⁴ This comes to illustrate the gaps that are created from a quick energy transition, as well as the invisibilities that a pan-European approach cannot take when implementing the Green Deal throughout Europe. While this leaves social policies in the hands of Member States who may be misguided in terms of the appropriate distribution of power and benefits from the overall energy transition, it becomes clear that more attention to detail is necessary on behalf of both national and European policymakers in the context of the energy transition.

Furthermore, with relation to energy communities, Hanke et al argue that for RECs to contribute to energy justice, they must recognise that the costs and benefits of their participation in the energy transition, must be distributed equally among all social groups.¹⁹⁵ However, such a distribution is not realised which further prevents vulnerable groups facing energy poverty from participating in and benefiting from the energy transition.¹⁹⁶ In terms of recognition justice, they argue that recognising the distinct living conditions and social inequalities created as a result of energy poverty is essential for developing inclusive procedures in RECs.¹⁹⁷ Despite the locality of energy

¹⁹⁰ Ibid Sovacool et al (2019)

¹⁹¹ Ibid Sovacool et al (2019)

¹⁹² Ibid Sovacool et al (2019)

¹⁹³ Ibid Sovacool et al (2019)

¹⁹⁴ Ibid Sovacool et al (2019)

¹⁹⁵ Ibid Hanke et al (2021)

¹⁹⁶ Ibid Hanke et al (2021)

¹⁹⁷ Ibid Hanke et al (2021)

communities, the authors argue that a localist trap is created because RECs are perceived as just and democratic solely due to their local role, which often excludes vulnerable groups from their member structure.¹⁹⁸

Additionally, with regards to procedural energy justice and the participation of underrepresented groups, their research found that 27% of RECs offer reduced membership fees or share prices, of which 18% address underrepresented groups.¹⁹⁹ The authors found that the share price ranging from 50 to 3,000 euro, is representative of the lack of understanding of the financial constraints faced by vulnerable groups, and therefore, the superficial application of procedural justice.²⁰⁰ Last, with regards to distribution justice, the study found that there is a distinction between RECs sharing their benefits and services directly with their members and those sharing the benefits indirectly through external activities targeting vulnerable groups.²⁰¹

Adding to this, energy communities are notoriously known in the field for their gender imbalances due to two factors, namely: the risk of energy poverty associated with gender, and the disparities between genders in the participation of energy policy decisions, where women are highly underrepresented,²⁰² illustrating a fundamental failure of the model to be truly energy just, or democratic.

Finally, according to Szulecki and Overland, the public v private dichotomy is misleading in the context of prosumerism, which in itself encourages the rise of private ownership, signalling a divide between the emphasis of energy citizenship and energy communities.²⁰³ Furthermore, the concept of energy democracy is poorly defined, and the fragmented literature on the topic in relation to energy communities leads to a misleading understanding of ownership at a local level, furthering the divide and confusion with regards to the role of the government in the energy transition.

¹⁹⁸ Ibid Hanke et al (2021)

¹⁹⁹ Ibid Hanke et al (2021)

²⁰⁰ Ibid Hanke et al (2021)

²⁰¹ Ibid Hanke et al (2021)

²⁰² European Institute for Gender Equality “Gender and energy” Publications office of the European Union, Luxemburg (2016)

²⁰³ K. Szulecki and I. Overland “Energy democracy as a process, an outcome and a goal: a conceptual review” Energy Research & Social Science 69 (2020)

Remarks

Despite some of the clear benefits that the deployment of solar energy and more specifically energy communities relying on PVs bring in the energy transition from a justice perspective, they are not without associated injustices. These injustices often go unnoticed, as Sovacool et al's research reveals, while energy communities and the idea of prosumerism are far from being perfected, or influential enough in carrying the burden of democratising the energy transition. There are several justice concerns that arise in both, predominantly with regards to distribution, while procedural representation of wider community concerns and the inclusion of vulnerable groups is still lacking. The EU attempts through RED-II to encourage a decentralised mode of energy production is not without merits, nevertheless, the reliance on Member States to enact relevant incentives, and legislation that would encourage prosumerism is a major pitfall in the development and the normalisation of decentralised energy. Further, these refer to communal situations, and are difficult to apply at a regional, EU-wide level.

Proponents to decentralised models seem to be quick to assume that a low-carbon transition will be accelerated by this form of energy production, and in particular the role that solar energy may play in this. The argument favouring a correlative relationship between energy security, sustainability and the alleviation of energy poverty from a justice perspective is yet to flourish beyond principle, as real-life case studies analysed in this section show that deep inequalities and injustices can be created at a national level during an energy transition that is so often assumed to be resulting in enhanced energy justice, security, access and sustainability. Instead, community concerns show that energy poverty may be further deepened where a sustainable energy transition leaves vulnerable groups behind.

Chapter 5 – Conclusion and Recommendations

Recommendations

The definition of energy poverty needs to be harmonised and reshaped across the EU. The current definition of the concept is scattered across the EU, leading to the inevitable exclusion of multiple vulnerable groups while limiting decision-makers' potential policies that could enhance energy justice and re-balance the energy trilemma. A key recommendation is therefore by extension, that the energy transition should indeed focus on a just transition that leaves no-one behind, where access for all is put at the forefront of the discourse where mere affordability is not the priority.

It is tempting to focus solely our decision-making efforts on renewable energy. Indeed, they offer several opportunities not only for a clean energy transition, but also for several aspects of energy justice. However, this tunnel vision has pitfalls. A key takeaway from my research has been the necessity to place renewable energy in the context of an energy mix defined by alternative, low-carbon energy systems.

Furthermore, even where decentralised energy systems exist, social and economic policy must ensure the redistribution of costs and benefits across societies to ensure that nobody is left behind during the energy transition. This is made easy through the use of renewable energy systems; however, it must become the norm where low-carbon technologies are further deployed.

The European Energy Strategy must come to incorporate policies aiming at alleviating inter-state energy-related inequalities that arise during this energy transition. The disparities between national priorities are reflected in national policies, which creates gaps in relation to areas where wide discretion is provided to Member States to legislate and regulate.

Concluding Remarks

I have presented the analytical energy justice framework and the relationship between energy justice and energy poverty in the EU. I have used this to present and evaluate the current EU Energy Strategy and the ways that the objectives set forth by the EU in relation to its energy-related decision-making have led to the reinforcement of the energy trilemma in the Union. In assessing

whether an energy justice perspective may lead to a rebalancing of the energy trilemma, my research has proven my initial hypothesis partially wrong as the currently energy-justice-gearred approach to the European Energy Strategy, has led to a wider gap between several objectives. Based on the above findings, the energy trilemma may be rebalanced in through the large-scale deployment of renewable energy systems, as seen from specific examples such as Norway and Sweden. The current European Energy Strategy sets a substantial framework focused on energy justice by focusing on decentralisation and a consumer-based approach. However, this is tainted by the disparities that remain in European energy-related policymaking, which limit the potential of nations with limited capabilities to deploy large-scale renewable energy systems to power their grids. To answer the first research question, an energy justice perspective, therefore, does have the potential to rebalance the energy trilemma. However, at a European level this remains in the books, as energy justice is yet to be appropriately institutionalised, and the benefits thereof are yet to be realised at a pan-European level.

Further, in answering what the role of low-carbon energy systems in enhancing energy justice in the EU, I have concluded that the current system hides several injustices as presented in the literature. Low carbon energy does have the potential to lead to increased energy justice, however, this argument merely scratches the surface, as without sophisticated measures that balance intra- and inter-state inequalities may further widen energy justice concerns in the EU while amplifying the gap between the varying energy trilemma tenets.

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