CIFE Policy Paper N°96

*Rachel Guyet**, *February 1st, 2020*

Low carbon energy transition as a driver and solution to energy poverty and injustice

The « Fée électricité » (Electricity Fairy), as electricity was named in France at the end of the nineteenth – beginning of the twentieth century, brought a vision of modernity, well-being and comfort for all. This resulted in propaganda favouring the domestic use of electrical equipment and electricity (Beltran & Carré 2016). The « all electric mode » conveyed a vision of social progress and technical modernity in the homes and of unlimited usage. Gone is the time, though, when energy was abundant and affordable, when households could consume without counting the cost, based on the promise of the governments that prices would be kept affordable to all. The successive energy crises and climate change issues have resulted in a paradigm shift of energy systems that questions the previous promises.

The energy paradigm shift, moving from a centralised, fossil fuel-based energy supply infrastructure to a more decentralised and low carbon system, can't be summarized as a simple technological shift. It is also a new societal project that can only succeed if no citizen is left behind and if benefits and burdens are more equally distributed. But what does that mean in a European context where over 50 million European citizens are affected by energy poverty, meaning that millions of citizens are unable to afford the energy services required to feel comfortable at home? If energy poverty, defined as the inability of households to "secure a socially- and materially-necessitated level of energy services in the home" (Bouzarovski, Petrova 2015) has not been created by energy transition policies, this new energy context might cause new forms of vulnerability and injustice as well as reinforce existing ones (1). Energy transition is often seen as coming at a cost to society and especially to vulnerable households. How, then, do we make sure that the transition towards a low carbon system can be made fairer (2)?

The justice gap of the energy transition

Energy transition and climate change strategies driven by technological and technocratic perspectives are often incompatible with the principles of justice and are likely to contribute to persisting energy poverty, especially among the most vulnerable groups in society such as single mothers, old age pensioners (mainly women), the sick, ethnic minorities etc. Increasingly, energy deprivation in the framework of the energy transition policy is being studied through the lens of the energy justice principles (Bouzarovski et al. 2014, Sovacool & Dworkin 2015, Sovacool et al. 2017, Jenkins, Sovacool, & McCauley 2018; McCauley & Heffron 2018, Sovacool et al. 2019). The literature examines three concepts of justice. Applied to the energy poverty issue, the recognition dimension of justice requires decision-makers to recognise the need to address energy vulnerability and to take into consideration the consequences of their decisions relating to energy, climate, housing, tax policies etc, regarding the risk of energy poverty. The procedural aspect of justice relates to the lack of participation and representation in the decision-making process and the lack of empowerment of citizens, mainly the most vulnerable ones. Finally, distributional justice in the energy sector relates to the discrepancy between energy needs and the ability to access adequate energy services, which in turn leads to inequalities and can be translated into the unequal distribution of costs and benefits of energy policy (Sovacool 2011, Walker & Day 2012).

So far, the transition towards a low carbon energy system lacks a societal and inclusive vision. It overlooks the fact that some groups bear most of its burdens. Interviews with households show that most of households considered as energy poor, aware of their energy vulnerability, already implement coping strategies, leading them to reduce their energy consumption below their real needs in order to save energy as much as possible, sometimes even to the detriment of their health, safety and comfort, but very often with the aim to remain "invisible" to social institutions (Bafoil, Guyet 2018[1]). A study carried out by the German Economic Institute DIW as early as 2012 showed a major paradox: although the average expenditure on energy is relatively low in Germany in general, it appears that the lowest

income deciles have the greatest share of electricity expenditure. The main reason for this is not voluntary overconsumption, but income level (Neuhoff et al. 2012) and the inefficiency and low energy performance of their accommodation and electrical appliances (Strünck et al. 2016). This inequality is all the more crucial to **acknowledge** and address as the renewable energies are funded through a tax levied on all electricity bills, thus exerting a disproportionately higher pressure on low income deciles (Kopatz 2013, Heindl et al. 2014, Haas 2016, Schneller & Kahlenborn 2018).

The procedural justice represents a second principle of justice. However, the decentralized and decarbonized energy transition bears, in itself, the risk of not respecting this principle. So far, the democratization of energy transition is limited to knowledgeable, motivated consumers with investment capacities, coined by what Putnam (2000) as "bonding social capital". Therefore, the big challenge today is to apply his "bridging social capital" approach, ie, opening up opportunities created by energy transition to groups that are usually excluded from the decision-making process and capital investment - traditionally dominated by wealthy, male, educated people - in order to "reweave social webs" (Putnam and Feldstein 2003). Gender, geography, age, education etc. result in distinctive energy deprivation and lower involvement in the decisions relating to energy transition. Making energy transition more inclusive could not only help close the **procedural justice gap** but also address vulnerabilities such as social isolation.

A third form of injustice lies in the unfair **distribution of benefits and burdens** of energy transition (distributional justice). So far, the energy transition path tends to create opposing groups in a population - those who benefit most from it and those suffering most from it. Let's take again the German example. While energy intensive industries have negotiated with the government to reduce their contributions towards the funding of energy transition (EEG tax) on the grounds of competitiveness residential consumers pay the biggest share of the renewable energy tax. However, not all residential consumers face the same situation. Indeed, homeowners with financial capacities can invest in solar panels and benefit either from cheaper energy or from feed-in-tariffs, so that their investment – in a way - compensates for the payment of the renewable energy tax. However, tenants - who also pay taxes - don't get much in return. For them, energy transition means a heavy financial burden that makes access to basic energy services more expensive with the risk of aggravating their energy vulnerability. So, the current practices and ways of funding and implementing energy transition raises the question of a fairer distribution of costs and benefits in the transforming system.

The energy transition as a tool to address energy justice

So far energy poverty has been is traditionally addressed by three categories of policies: emergency funding support and short-term financial support to pay the bill to mitigate the effects of energy poverty and energy efficiency measures to prevent energy vulnerabilities in the long term. Despite these public policies, the level of energy poverty remains high[2] and they don't address the justice principles. Therefore, how could the low carbon energy path represent an adequate framework to address energy poverty and justice in Europe?

First, energy transition actors need to **recognize** that no citizen should be left behind while transforming the energy systems. They should also admit that distribution of costs and benefits should be revised to avoid worsening existing inequalities and creating new ones. Of course, this is the task of governments, but initiatives can also emerge at other levels of governance. The Covenant of Mayors for climate and energy were not mistaken when they decided in 2015 to add a third pillar to the objectives of the initiative in order to incentivise cities to take action to "alleviate energy poverty" (Covenant of Mayors 2018). The European initiative highlights and supports the role of cities in promoting action and in creating an adapted local framework to address energy poverty in addition to, or, as part of their climate change strategy. Recognizing the need to address energy vulnerabilities within their climate change strategy is a step towards the recognition of a need for a just transition. The involvement of cities can help create a link between national governments, public action and citizens (Schneller & Kahlenborn 2018). They have the capacity to directly and indirectly act to prevent the risk of energy poverty and injustice that may arise from their climate and energy strategy.

The concept of "citizen energy community," introduced by the EU in the "clean energy for all" package, could represent a tool for democratising the energy transition project. Supporting energy com-

munities could help to **include and empower** broader social groups, enabling them to participate in the energy transition process, to create new networks based on mutual trust and support and to produce more inclusive and sustainable forms of local cooperation (Lautermann 2016). By democratizing the access to renewable energy and by giving a "voice" (Hirschman 1970) to those traditionally excluded from the decision-making process and to those whose voice is rarely heard, energy communities could make the energy transition more inclusive and offer some alternatives to those traditionally deprived of choices. It could help better address the procedural gap in the energy justice framework as defined in the literature while offering cleaner and more affordable energy. There is still a long way to go to implement the principle of procedural justice, but increasingly, renewable energy communities or citizen energy communities are addressing this by engaging with local communities as a whole[3]. If energy deprivation is rarely a direct target of these initiatives, the co-benefits they produce should not be ignored.

Finally, the fairer **distribution of costs and benefits** of energy transition should be addressed, notably by international institutions and national governments. However, action at this level of governance is slow. Initiatives and new cooperation networks are emerging at a local level with actors from the energy, technology and housing sectors. Together, energy operators, technological companies, start-ups and social housing providers are trying to make energy transition fairer by developing low carbon energy solutions that can help low income households. Social tenants can benefit from the energy transition related technologies when their housing provider find a way to share the benefits of their investment in solar panels for example (Bafoil, Guyet 2018). Through such initiatives, people affected by energy vulnerabilities can take part in the low carbon path and reap tangible benefits from it such as access to cheaper energy, better comfort, consumption pattern changes, better health, better social links etc. The collective result of such initiatives can only be successful and fairer if they do not translate into overburdening the most fragile social groups by rent increases for example (Grossman 2019). This requires the development of alternative business models with a social purpose. For example, combining heating systems with storage and artificial intelligence can help improve thermal comfort, make energy savings and reduce household bills but also contribute to a better management of the grid through the storage dimension of the heating system, addressing both the risk of energy poverty and energy transition. The cooperation between technological companies, social housing providers and grid operators can help to balance the operation financially without adding to the burdens on social tenants[4].

So far, energy transition has missed its societal goal by leaving aside part of the population and especially energy vulnerable social groups and by increasing inequalities. The political will is lacking to address this issue of social cohesion and justice. However, the context of energy transition also represents a window of opportunity for public and private actors to address those gaps and to involve all citizens in the process while lifting them out of energy poverty. The positive effects can only be reached under certain conditions of stability, funding, design and cooperation. When such conditions are not respected, projects which are supposed to alleviate energy poverty may result in negative side effects, increasing the risks of inequalities. Energy transition projects have to be carefully designed in order to be more inclusive and fairer.

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Acknowledgements

This paper is inspired by discussions carried out within the ENGAGER network, the industrial chair HOPE and EDF R&D and ESH projects. Be the colleagues and interviewees thanked for their time. A special thank to François Bafoil, CNRS senior research fellow.

Footnotes

[1] https://www.sciencespo.fr/ceri/sites/sciencespo.fr.ceri/files/Housing_EnergyEN.pdf

[2] 10.9% of English households (BEIS 2019), 11.7% of the French households (ONPE 2019)

[3] SCORE project https://www.score-h2020.eu/

[4] This is a solution developed by Lancey Storage in cooperation with social landlords and DSOs in France. Based on an interview carried out in the

framework of the industrial chair HOPE in October 2019, https://www.lancey.fr/fr/

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Rédaction: Aline Palige et Jean-Claude Vérez
Policy Paper / Note de recherche est publiée par le Centre international de formation européenne, association dont le siège est 81, rue de France, F-06000-Nice.

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Ce projet a été financé avec le soutien de la Commission européenne. Cette publication (communication) n'engage que son auteur et la Commission n'est pas responsable de l'usage qui pourrait être fait des informations qui y sont contenues.

Avec le soutien du programme Erasmus+