

THE TRANSFORMATION OF THE ENERGY SECTOR AND “CITIZEN ENERGY”: INSIGHTS FROM GERMANY WITH COMMENTS ON THE LITHUANIAN CONTEXT

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Abstract

Purpose – Explore the extent to which the Energy Transition in Germany is a social transformation and comment on the Lithuanian context

Design/methodology/approach Interviews with German energy entrepreneurs and field notes

Findings The Energy Transition in Germany has been driven by “Citizen Energy”, but this is under threat from recent reforms which undermine the potential of “citizen energy” as a social transformation. There remain barriers to the growth of “Citizen Energy” in Lithuania.

Research limitations/implications It is, to an extent context-specific with limitations for generalizability

Practical implications Findings may be of use to the Lithuanian academic community and policy makers interested in energy policy

Originality/Value Energy entrepreneurship is a timely theme in view of concerns about climate change and energy security

Keywords: “citizen energy”, “crowdsourcing”, “entrepreneurship” “energy transition”

Research type: research paper

Introduction

Growing pressures to transform the energy industry have emerged in response to concerns about climate change and energy security. In Germany, this transformation has involved greater decentralized production of renewable energy at a local level, thus creating opportunities for “citizen energy”. “Citizen Energy entails SMEs and private individuals generating renewable power and feeding this back to the electricity grid, earning revenue in the process. This growth of “citizen energy” is a fundamental social change, as it has stimulated processes of environmental entrepreneurship (Hall, Daneke, & Lenox, 2010; Isaak, 2010; Schaltegger, 2002), with the innovatory and employment advantages that this force can bring in addition to giving the public greater ownership over energy provision which is important given the social importance of energy. This

paper explores the extent to which the energy transition in Germany can be seen as a social transformation whilst making limited comment on the Lithuanian context.

The *Energy Transition* Policy and Outcomes for Citizen Energy

Whilst Germany is committed to the goals of the EU’s Climate and Energy Package (2020), stipulating member states to renewable energy and energy efficiency targets (European Commission 2015), its national *Energy Transition* Policy can be seen as something of a model, in terms of promoting decentralized energy generation. The *Renewable Energy Law* was introduced in 2000 and is one of the main components of the *Energy Transition*. Under the law, feed-in tariffs are paid to producers of renewable energy. Feed-in tariffs are payments that remunerate generators according to the type and volume of renewable energy they produce and are fixed for twenty years. The *Renewable Energy Law* has established a reliable framework for renewable energy in Germany and, as such, has “created reliable investment conditions for system manufacturers, operators and financial institutions” (Büsgen & Dürrschmidt, 2009, P.2544). It can be said that this *Renewable Energy Law* has given German energy policy an “entrepreneurial flavour” (Wüstenhagen & Wuebker, 2011). Environmental entrepreneurs wreak “*environmental creative destruction*”, replacing existing economic structures with environmentally preferable ones (Schaltegger, 2002). In the German energy market, these new entrants have taken market share from existing large energy utilities and are disrupting the energy market. Economic entry barriers for entrepreneurial activity in the German energy market have been alleviated and this has contributed to the growth of citizen energy in Germany. Feed-in tariffs have created opportunities in the renewable energy market, through enabling the capture of value from the generation of renewable power. This has helped to overcome environmental market failure, namely the absence of incentives to pursue opportunities for sustainable development, identified as a constraint of environmental entrepreneurs (Pacheco, Dean, & Payne, 2010). Given the difficulties environmental entrepreneurs encounter in accessing finance (O’Rourke, 2010), with Loock, (2012) describing financing as “one of the most important bottlenecks for the diffusion of renewable energy” (P.229), demand-driven policies, such as feed-in tariffs are likely to be viewed favourably by investors (Burer & Wüstenhagen, 2008) and, therefore, facilitates access to external finance. Increasing decentralization of energy provision in Germany has stimulated entrepreneurial activity in the sector and led to the emergence of a vibrant group of SMEs engaged in renewable power.

A possible perspective on this restructuring of the energy industry is that it represents a crowdsourcing of the provision of energy in Germany. Crowdsourcing involves outsourcing a task to a crowd rather than conducting the activity in-house or allocating it to a specific contractor (Afuah & Tucci, 2013). Whilst crowdsourcing has conventionally been considered a more economical and efficient solution for firms to find solutions to problems, in a wider sense, it is a “generic way to use a crowd for an

outsourcing operation” (Lebraty & Lobre-Lebraty, 2013). According to Lebraty & Lobre-Lebraty, (2013), the crowd offers three essential qualities: ongoing presence, availability and speedy reaction. In the context of the energy market, smaller-scale generators, including SMEs and households demonstrate this presence and availability, in that they are contracted to supply energy to the grid for twenty years in order to receive the feed-in tariff. To an extent they have a fast reaction, in that it does not take as long for small-scale generators to set up a project or for householders to install renewable energy appliances. This contrasts with the disadvantages of incumbent energy utilities due to their sunk costs in existing fossil-fuel infrastructure (Hockerts & Wüstenhagen, 2010)) and the greater resistance to change besetting such organizations (Dean & McMullen, 2007; York & Venkataraman, 2010).

German entrepreneurs, participating in the study, highlighted the contribution of these new entrants to the energy industry in driving the *Energy Transition*:

“There are millions of energy producers now in Germany and this public ownership is why renewables have so much public support”

“More than half of the expansion of renewable energy in Germany has been driven by citizens....and the large utilities have a very small share in this....The expansion has been mostly on the basis of the initiatives of citizens...investments of citizens....that came about through the old Renewable Energy Law.”

“The investment in and the implementation of renewables has been driven by individuals...by the public here in Germany”

“Up until recently in Germany, we had a monopolistic energy market....they tried to bring in SMEs....and this was very successful with the Renewable Energy Law....many firms emerged” (G5)

“Do you help the small guys to grow or do you say....that the big guys will do it all.... We trust you that you will set a good price....That depends on whether I take a socialist or capitalist stance”

Several interesting points arise from the above quotes. Firstly, there is the recognition that the *Renewable Energy Law* has been a catalyst in supporting the growth of smaller producers in the market. Thanks to the feed-in tariffs, these producers have enjoyed greater security in terms of the returns that they will receive for the energy they produce and the tariffs have also incentivized investment by external financiers through reducing market risk. It is argued that the existence of opportunities for citizens to earn money in generating renewable energy has reinforced public support for the *Energy Transition* policy. If citizens have greater involvement in the transformation of the energy sector, then they are far more likely to be willing to pay for the costs of government promotion of the dissemination of renewables. There is implication of

distrust in the energy utilities in Germany and that the rise of smaller energy generators has redressed this situation, with these new entrants weakening the power of monopolistic actors that dominated the market previously. Indeed, it is suggested that the growth of citizen energy will ultimately lead to fairer prices and correspond to a more “socialist” vision of how the market should be organized as opposed to a “capitalist” one, perhaps hinting at a degree of inherent exploitation under the previous structure of the energy market.

In Germany, thanks to the *Renewable Energy Law*, smaller scale providers and the public have enjoyed unprecedented opportunities to participate in the production of energy. This represents a social transformation in that it, to a certain extent, democratizes control over this fundamental social and environmental good.

Recent Reforms to the *Energy Transition* Policies and their Potential Impacts

Whilst citizen energy has developed strongly over recent years, recent reforms to the *Renewable Energy Law* threaten to undermine opportunities for this entrepreneurial activity. From 2017, feed-in tariffs for small-scale generation will be replaced by more market-orientated mechanisms. These measures are in response to controversy about the cost of promoting renewables and are designed to rein in these costs. However, German entrepreneurs expressed anxiety as to how smaller operators would be affected by these changes:

“Currently, the Renewable Energy Law...the way it is being implemented....will, without doubt, constrain us....”

“Renewables....are being completely.....hampered in Germany at the moment....If they just left us....we would achieve the transition in a pretty short time....”

These entrepreneurs believe that the government’s commitment to the “Energy Transition” is waning, in light of these reforms, and that they would achieve great progress if the government simply left them to flourish.

Respondents were experiencing reform fatigue, stating that they could not keep up with the pace of reforms and that it was difficult to plan in the face of such uncertainty and that certain reforms would involve a long period of adaptation:

“For my firm, it is important that the legislation does not change every year...that there is continuity, certainty”

“Even as this reform is being ratified, they are already working on the next stage of reforms...where is the security?”

There were also suggestions that SMEs have little scope to absorb these changes – they have taken risks to enter the market, with this innovative technology, however margins are still low and they will struggle to manage the additional costs associated with the reforms. Certain firms are clearly struggling to cope with the effects of the restructuring of the support mechanisms:

“We dared.... We entered the market..... When the tariff is gone, we cannot bear these costs....because we do not have much of a margin...The profit is not that high....”

“We see firms that have seen the market decline by 50%.....a SME tried to do direct selling....but they had to lay people off.....this is the consequence of the restructuring of the Renewable Energy Law”

Certain intriguing comments suggested that the reforms were being driven by incumbent firms who had underestimated the growth of renewables and were defending market share:

“RWE...They have neglected this movement (decentralised energy)...They want to get on board now...the current reforms of the Renewable Energy Law will give them the opportunity to get in on the act”

“I don’t know which lobbyist managed to get influence.....they are forcing....producers to go in a direction that can only be bad for them....”

This suggests that incumbents are influencing these reforms to try to change the direction of the renewable energy law in their favour, to suit their capabilities.

The responses from the interviews demonstrate major concern that the attempts to better integrate renewables into the energy market could, in fact, be highly detrimental to this successful citizen energy movement that has been one of the main traits of the Energy Transition in Germany. Since these new entrants are displacing market share from incumbent firms, there appears to be justification for the view that these new measures are designed to stymie the expansion of citizen energy in Germany. Fundamental changes to the overall dynamic of the *Energy Transition* in Germany, apparently unfavorable to citizen energy, cast doubts over the extent to which this social transformation towards localized energy production, driven by SMEs and the public, will be fulfilled.

Comments on the Lithuanian Context

In Lithuania, the government has set itself the priorities of ensuring energy independence and reducing carbon emissions and this will be achieved by building a new

nuclear power station at Visaginas and increasing output from renewable sources (Streimikiene et al, 2012). The fact that the government is keen to boost renewable generation in Lithuania is evident from the existence of a feed-in tariff for renewable electricity (International Energy Agency, 2014) and this tariff gives rise to opportunities for energy entrepreneurs and citizens. However, on a more macro level, Gaigalis et al, (2014) claims that significant obstacles to renewable generation remain in Lithuania, namely “high investment costs”, “long payback periods” and a lack of finance available to promote renewables. Moreover, Gaigalis et al, (2014) also highlights the dominance of biomass in Lithuania’s renewables portfolio, with very limited development of wind power. This suggests that citizen energy has not been pursued in the Lithuanian energy market. This is perhaps due to flaws in the design of the feed-in tariff mechanism in Lithuania or poor availability of external financing for renewable energy projects. For instance, the feed-in tariffs are guaranteed only for eleven years in Lithuania (International Energy Agency 2014) which is roughly half the guarantee period in France, Germany and the UK and this period may be too short to reassure investors that they can recover the money that they put in to a renewable energy project. Streimikiene et al (2012) discuss the role of municipalities in the development of renewable energy in Lithuania, with such institutions having established Sustainable Energy Development Plans and also managing district heating systems. It could be argued that, in Lithuania, local, public sector, authorities will have a greater role in the deployment of renewable energies compared to smaller-scale private actors and citizens. The expansion of renewables in Lithuania may be driven to a greater extent by actors like municipalities than entrepreneurs. The high presence of nuclear power could also affect the perceptions of smaller-scale operators of the existence of a strong market for renewables in the country in spite of government commitments to expand renewable power. It is possible that the conditions of the Lithuanian feed-in tariff are not attractive enough to entice entrepreneurs into the renewables market, especially wind and PV.

Conclusion

The greening of the energy sector does not merely constitute an environmental change, but also a social one, in that the public have greater proximity than ever before to the production of a good that is core to their daily lives. This is because energy is produced at a decentralized level, with entrepreneurs setting up energy generation businesses or households producing energy, a proportion of which they feed back to the grid. Findings suggest that such public participation in the energy market is important to the greening of the sector, as it is likely to lead to greater public support for policies aimed at the expansion of renewables. However, there is a serious issue relating to the large utilities which may suffer from this displacement of the market share in favour of smaller operators in Germany. A decline of these larger operators gives rise to an opportunity cost, as, despite disadvantages they may face in radical innovation processes, they nevertheless enjoy scale economies in implementing environmental innovation at a

later stage (Hockerts and Wüstenhagen 2010). It is possible that there is a trade-off in promoting citizen energy, with its associated social advantages, and a more efficient, faster greening process through promoting greater involvement of utilities in renewable generation. Reforms to support mechanisms for renewables, which appear to be advantageous to utilities, will be a real test of the durability of citizen energy in the German market – principally, it will be demonstrated whether smaller actors can compete in a more open market. Arguably, citizen energy is under-developed in Lithuania and this may be due to the greater focus on nuclear power, the enhanced role of public authorities in the expansion of renewable energies at a local level and the relatively less favourable feed-in tariff for electricity. The question is whether the Lithuanian Government desires greater citizen energy, as seen in Germany, or whether it considers other means of expanding green energy to be more efficient (i.e. through municipalities) in achieving renewable energy targets as rapidly as possible.

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