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Conclusions: The Role of Consumer (Co-)Ownership in the Energy Transition

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Consumer ownership of renewable energy (RE) is essential to the overall success of the energy transition. Politicians across the planet are discovering its power to make energy infrastructure projects publicly acceptable. In some cases this has even led to compulsory participation schemes, for example, in Denmark and Germany. We also are witnessing demand for consumer participation by more and more citizens concerned with distributive and energy justice. Countless grassroots initiatives rising across the board—some at the municipal level, some led by individuals and yet others by organised local citizens—testify to the rising awareness of the necessity of shifting away from fossil to renewable energy sources (RES) to arrest global warming. But, perhaps more important, there are sound economic reasons for broad public ownership in RE, which this book explains. These arguments relate to the structural differences between renewables and fossils but also to the new role the active consumer is to play at the heart of the energy markets.

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We are now confronted with the task of developing, implementing and rolling out business models that broaden capital participation of consumers in RE. The challenge is to advance to economies of scale while retaining the benefits of individual consumer participation. This implies a corresponding regulatory framework supported by a well-balanced incentive system and flanked by a concerted set of coherent measures to promote and facilitate the integration of the consumer-owners (Roth et al. 2018). However, a level playing field providing equal opportunities for all actors also implies a fair share in the burden of the Energy Transition. Inclusiveness—often merely a buzzword—is crucial as the success of this undertaking requires a joint effort of society as a whole and will deeply affect our behaviour and routines in everyday life (Rommel et al. 2018). Only if all strata of society are taken on board can we expect citizens to accept these changes as well as the technological infrastructure involved. We must thus seek to avoid a division of society in well-off prosumers deserting from the public grid and benefiting from returns from RE-ownership on the one side and vulnerable consumers confronted with rising energy prices left with a growing share in maintaining the network cost unable to afford basic energy needs on the other side.

Nonetheless, a sustainable economy can most probably be achieved only by measures that make more efficient use of resources, doing more with less, and—while decreasing our dependency on growth—at the same time downsize environmentally harmful production. It will require rational use of existing resources instead of growth for the sake of growth. Although maybe smaller and less dynamic, the sustainable economy will be many times more efficient and also far less wasteful than those we have now (Jackson 2009; Seyfang 2009). Moreover, many products could be produced in a nature-benign way and become a part of a new type of closed circle economy. John Maynard Keynes himself considered a steady-state economy as the foundation for a potential “good society” and argued for consistent, long-lasting energy regimes, a postulate later included in the Havana Charta of the UN in 1949. In this context the problem of “the Tragedy of the Commons” (Hardin 1968), in which freely available, but limited resources are not efficiently used, but are threatened by

overuse, is foremost related to fossil fuels. In contrast, with regard to RES a potential to harness “intelligent growth” might exist (Fücks 2013). This, however, will require foresighted policy-makers, citizens and their municipalities aware of the environmental and social dimension of the Energy Transition as well as committed economic leaders.

Against this background the following conclusions sum up the findings of this book and give an outlook at the enterprise that now lies before us.

31.1 Where Do We Start From?

While established energy companies often are still “locked-in” to fossil fuel-based infrastructures which they find difficult to divest from, citizens as energy consumers, co-investors and producers of renewables have triggered the rise of the notion of the “prosumer” over the last decade in an astounding short period of time. However, drivers and political motivations underlying the Energy Transition often are heterogeneous including conflicting elements resulting in discrepancies between the declared goals regarding the deployment of RE and the actually implemented energy policies (see Chap. 2). We observe that while declared aims—including, for example, prosumership—are easy to identify the chances for realisation need to be carefully evaluated against the background of the current challenges and the driving forces behind policy making which show a strong path dependency.

Despite impressive declarations of intent for the deployment of RES and the set RE targets when only looking at the facts the picture is still sobering: even a pioneering country like Denmark recognised as front runner with its 68 per cent of RE and waste in electricity generation had merely a share of 24 per cent of RE in total energy production. In short, the Energy Transition is all but straightforward and most of the countries under consideration show a similar picture: (1) the energy mix with regard to total energy production is still dominated by conventional fossil fuels and nuclear power and is sometimes driven by dirty imports; (2) the share of RE in primary energy consumption is low; (3) only the share of RE in total electricity consumption is usually higher, although “unsustainable” RES may be included.

At the same time energy/fuel poverty remains a problem in the majority of countries under consideration while the absence of a common definition stresses that the problem is not sufficiently acknowledged. In the EU, less than a third of the Member States directly recognise the condition of energy/fuel poverty and treat it as a problem distinct from the protection of vulnerable consumers in their national policies. This problem is exacerbated with a disproportional burden of RE surcharges on low-income households in relation to household revenue (IdW 2012). Across the board, when recognised, the condition is addressed predominantly in social policies which mainly deal with supportive subsidies. Policies which actually encourage behavioural changes within vulnerable groups or which transform them into owners of RES providing them with an additional source of income are the exception.

31.2 Active Consumers as a Driver for the Energy Transition

The analysis of the best practice examples from the countries presented in this book shows that both “place”, used here as a synonym for “identity”, and “interest” meaning “common interest”, strongly influence the design of successful RE consumer ownership models. While “identity” and “interest” are deeply rooted in geography and culture, the underlying business models, understood as organisational and contractual arrangements, depend on policy and procedure and thus can adapt to the former. The main question in this context is how to structure the energy transition as a level playing field so that all citizens have the same opportunity to acquire an ownership stake in RES. Both energy-impooverished households and women are underrepresented (see Chap. 3) among consumer-owners for reasons ranging from socio-economic like lower education and general literacy in the case of low-income households and long-term unemployed to psychological and behaviour-based issues for women. Energy justice recognises that the different groups in society confront different barriers to consumer ownership ranging from cultural tradition

over economic opportunity to the geographic situation. In this respect we observe that:

1. It is their contractual and organisational arrangements that link business models to the larger social issues of energy democracy and distributive and social justice. Not only location, rural or metropolitan, but attitudes, motivations and differences in economic status that affect the ability to acquire ownership in RE installations within a given community as well as the relationship with strategic partners must be taken into consideration.
2. For economically disadvantaged consumers, questions of energy efficiency or RE-ownership will typically be secondary to more immediate problems such as adequate housing, food, health, education or childcare. These short-term needs pre-empt attention from long-term issues such as acquiring RE-ownership. But becoming an owner of a RE-installation may require a period of apprenticeship, especially when complex technical issues are involved or the opportunities of participation are unequal because of educational and economic differences.

Against this background, trusted plans like the Consumer Stock Ownership Plan (CSOP) not only allow participating consumers to speak with one voice vis-à-vis other shareholders such as a municipality or a commercial investor after an internal decision-making process supported by a professional trustee. They also level the playing field and provide disadvantaged groups with genuine equality of opportunity. With these considerations in mind, we advocate the CSOP as a technique for financing decentralised RE production. This financial innovation links energy production with energy consumption at the household level; individuals and families are, on the one hand, as shareholders of a utility, producers of energy, and, on the other hand, consumers of the energy they, through their ownership, have produced. This concept is a financial realisation of the traditional cooperative principle of "production for use". This technique could be central to a remodelled European energy policy, as well as to European development cooperation with, for example, the nations of North Africa.

31.3 The Way to a Well-Balanced Legislative Framework for RE Consumer (Co-)Ownership

As the discussion transcends ideological grounds and centres on the question of how to most efficiently achieve the Energy Transition, policy-makers are more and more perceptive to arguments in favour of consumer ownership in RE and have begun to react. We observe a broad variety of policy initiatives resulting in legislative support for RE consumer (co-)ownership and prosumage. While the majority of these regulations remain piecemeal, some indicate the way to a coherent legal framework for consumer ownership in RE. The most prominent and also most recent example for such an enabling framework is the 2018 recast of the Renewable Energy Directive (RED II) as part of the Clean Energy Package of the European Union. The transposition of the RED II into national Law until 2021 introduces a legal framework for consumer (co-)ownership in all EU Member States:

1. Consumers, (1) individually, that is, households and non-energy SMEs (Art. 21 RED II), (2) collectively, for example in tenant electricity projects (Art. 21 RED II), or (3) in communities organised as cooperatives, CSOPs and other business models (Art. 22 RED II) will have the right to consume, store or sell RE generated on their premises. The directive introduces clear definitions in Article 2.
2. RED II also obliges the Member States to provide an enabling framework for local “renewable energy communities”. Defining citizen’s rights and duties the directive links prosumership to such different topics as fighting energy poverty, increasing acceptance, fostering local development and incentivising demand-flexibility.
3. Member States are called on to assess “the possibility to enable participation by households that might otherwise not be able to participate, including vulnerable consumers and tenants”.

Although this legislative initiative paves the way to a coherent EU-wide legal framework, it still needs to be complemented by the Internal Electricity Market Regulation (IEMR) and Directive (IEMD), transposed into national law and subsequently filled with implementing provi-

sions. Taking into account the complexity of the issues involved as described in the two policy chapters of this book (Chaps. 29 and 30) consistent solutions are much needed, solutions that coherently link the role of the prosumer with the other agents on tomorrow's energy markets. The—sometimes conflicting—goals of this process require trade-offs and pose tasks in three areas, namely (1) policy efficiency and simplicity, (2) predictability and flexibility, and (3) the sharing of benefits and costs. To reduce transaction costs associated with integrating new, typically small- or medium-sized actors in a complex policy setting demands an efficient but simple framework. While support schemes should be predictable both for investors and for public finances, they need to adapt flexible to evolving market conditions. Exemptions from fees and levies for some consumers lead to higher end-prices for the remaining threatening their acceptance of RE.

Thus, five important challenges remain:

1. Creating a coherent incentive system for RES and RE prosumage based on market-related price signals.
2. Designing a consistent structure of network charges permitting adaptation of network tariffs to changing conditions with a view to their influence on consumption behaviour.
3. Market integration of consumer (co-)owned RE projects while avoiding sub-scale investments, allowing pooling of local projects and partnerships with municipalities.
4. Integration self-consumption and net metering into a future decentralised electricity storage system including sector coupling and e-mobility.
5. Regulating aggregation and direct marketing including peer-to-peer as well as the challenges of digitalisation such as smart grids, micro grids and blockchain technology.

31.4 Outlook: Future Tasks for Research and Policy

A society based on a paradigm that tends to overload the capacity of its ecosystem must inevitably change in time or perish. The history of the mythical Easter Island Rapa Nui illustrates the doom that awaits a people

who destroys its own habitat. In the year 800, when Polynesian settlers arrived, Rapa Nui was entirely wooded with palms. The islanders began to cut down the trees, at first for farmland and firewood, then to build canoes and houses, and finally to manufacture sledges for transporting their enormous stone statues to the coast. At some point a fierce competition broke out between clans and tribes to build statues even more monumental. Some 850 years later, the last tree fell. Erosion set in, bringing agriculture to a stop. Materials needed for making canoes to hunt tunas were no longer to be had. Hunger set in; then war, and an ancient once-thriving civilization came to its end.

The crucial question, thus, is not so much whether to downsize our economies but to determine how sustainability can be achieved without causing more environmental harm. Nor will mere substitution of processes or products be sufficient. The changes required must also repair the damage that has been done. Climate change illustrates the problem. If energy consumption were arrested at the current level, global warming and resource depletion would only be slowed down, not stopped. Reducing consumption and waste by prolonging the lifecycle of products, for example, is equally important. These changes need not have a negative impact on the quality of life, which is an important dimension, as sustainability also depends on lifestyle changes acceptable to people. However, they require us to adapt both energy consumption as well as energy production when employing RES. This is a task for both research and policy.

It should, therefore, be recalled that in the EU of the money spent on energy research over the past decades only about one euro out of ten went to renewables while nuclear energy was in the focus with almost two thirds of spending (EC/Ecofys 2014).¹ The successful adoption of the Clean Energy Package should be a welcome occasion to set new priorities in energy research. This is of particular importance as estimates of the worldwide energy investment stock for 2040 by energy sources see renewables dominated by wind and solar with USD 7.4 trillion far ahead of

¹ Results of a cross-country study in 19 EU Member States on expenditure for research, development and demonstration in energy between 1974 and 2007 (EC/Ecofys 2014).

fossils with merely USD 2.8 trillion (Frankfurt School 2017; IEA 2015). With regard to subsidies this shift to RE long overdue has already somewhat happened: in 2012 direct subsidies for RE amounted to EUR 40.3 billion while those for fossil and nuclear energy was only at EUR 22.9 billion plus EUR 13.7 billion additional free EU emission allowances (ENERGY ATLAS 2018; EC/Ecofys 2014). At the same time, in 2016, Europe already created more than a million jobs in RE (IRENA 2017). In the light of these figures and the potential environmental impact of ill-advised investments it is even more important to develop a sustainable strategy towards a carbon-free economy.

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