TRADE UNIONS FOR ENERGY DEMOCRACY

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TRANSITION IN TROUBLE?

THE RISE AND FALL OF "COMMUNITY ENERGY" IN EUROPE

CUNY SCHOOL OF LABOR AND URBAN STUDIES
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Table of Contents

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Trade Unions for Energy Democracy (TUED) is a global, multi-sector initiative to advance democratic direction and control of energy in a way that promotes solutions to the climate crisis, energy poverty, the degradation of both land and people, and responds to the attacks on workers' rights and protections.

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Transition in Trouble?
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This TUED Working Paper explores the current crisis of local, community, and cooperative energy. Our focus is Europe where these types of initiatives have made the most progress but now find themselves facing an uncertain future. In this paper we will explain what happened, and why.

The goals of this paper are twofold.

The first goal is to draw a clear line of demarcation between the bold claims being made in the name of local and community energy, "energy citizenship," and similar concepts on the one hand, and the current reality on the other—a reality that largely confines local energy initiatives to the margins of energy systems. In the case of Europe, the distance between the claims and the reality is vast, and it is widening.

Local and community energy has attracted a lot of support and enthusiasm from activists, and it is not hard to understand why this is the case. Efforts to advance community energy are frequently carried out in the name of a commitment to social justice, advancing equality, and empowering ordinary people to take a more active role in the transition to a low carbon future. Additionally, the activists and organizations undertaking such initiatives nearly always identify with a "values-driven" mission and aim to rise above considerations of personal gain or private profit.

For a period, it seemed that such initiatives were emerging everywhere across Europe. The growth of renewable energy and the proliferation of citizen and community ownership seemed to be inseparable from each other. Spurred on by falling costs of wind and solar technologies, a radical transition in energy ownership—and a shift in control away from large energy companies to small producers and consumers—seemed not only possible, but perhaps even imminent.

But recent policy changes in Europe have placed community energy into a pattern of decline. The removal of subsidies, particularly the Feed-in Tariff, and other incentives has led to a dramatic slowdown in local energy initiatives and cooperatives. The number of households installing solar photovoltaic panels (solar PV) has slowed to a crawl as onshore wind projects have also declined. While offshore wind installations are increasing, the total level of investment and deployment of renewable energy in Europe has fallen dramatically.

Depending on Subsidies

The phasing out of the Feed-in Tariff in Europe has made visible just how dependent local and community energy initiatives were on policies that protected them from market competition. When the

subsidies were introduced, community energy grew accordingly, and when subsidies were phased out, that growth collapsed. According to one 2018 study, "The introduction of a FiT was a crucial turning point and critical success factor in mobilizing local citizen investors.... A key characteristic of FiTs is that they provide a stable long-term income stream, and therefore reduce risk and make it easier to access bank funding, which appears particularly important for local citizen actors." The period from 2011-2017 saw the EU transition away from the FiTs to competitive auctions, a move that has "undermined the confidence of local citizen investors, who appear less resilient in the face of these changes than more traditional investor classes."[1]

The political implications of this change are very significant. Many have come to see community energy both as a socially progressive alternative—indeed, possibly the only viable alternative—to the current energy system. This is particularly the case in Europe where the electricity sector is still dominated by large energy interests tied to coal, gas, and nuclear power. The confidence in community energy as an alternative has been so strong that other possible alternatives (such as a comprehensive "demarketization" and renationalization of energy systems) are often rejected out of hand. The idea that "putting energy into the hands of ordinary people" will allow for individuals and communities to have real control over the energy-related decisions that affect their lives still exerts considerable influence. But confidence in this idea seems increasingly misplaced.

To be clear, many who share this transformative vision are important allies in the struggle for energy democracy. But our shared struggle needs to be based on hard facts, and the facts make clear that the dominant policy framework advanced by elite institutions—which links decarbonization to further liberalization, privatization, and deepening marketization—is intrinsically hostile to values-driven community involvement in the energy transition.

Reframing the Debate

The second goal of this paper is to help reframe discussions among unions and others fighting for energy democracy on how to cultivate meaningful and broad-based community engagement in the transition to a more sustainable and just future. While community energy projects can bring certain benefits to those who are participating, the evidence suggests that they do not provide a means for the levels of local involvement that many consider to be either necessary or desirable. And even if the subsidies had remained in place, the contribution of community energy initiatives toward meeting decarbonization targets and transforming energy systems would not have been particularly significant. For reasons that will be explained below, the Feed-in Tariff is unlikely to be re-introduced. Today the idea that local and community energy initiatives can both survive and thrive as "market actors" is simply not born out by the facts. This means that their capacity to "disrupt" the dominance of large energy interests is at best minimal.

Unions frequently share the values-driven mission of many community energy activists. Individuals and communities should be able to participate in the energy transition in ways that are meaningful, either as workers, community members, or both. What is impeding that vision from becoming real

1 Joseph Curtin, Celine McInerney, Lara Johannsdottir, "How can financial incentives promote local ownership of onshore wind and solar projects? Case study evidence from Germany, Denmark, the UK and Ontario," *Local Economy,* 2018, Vol. 33(1) 40–61, https://journals.sagepub.com/eprint/Uehz8BaZmW4FgKnR7EeJ/full

is an energy system that is based on private profit. The current policy regime seeks to ensure that a needs-based or "public goods" framework can never materialize politically. And yet it is precisely this framework that offers a real platform for broad-based and sustained involvement of individuals, communities, cities, and regions. A "public goods" framework can allow us to deal with the technical challenges posed by the energy transition, mobilize skills and capacities, create meaningful and decently paid work, and bring to an end the chaos of the current investor-focused and profit-driven approach to energy.

The prospects of such a policy shift are currently far from favorable. But it is becoming increasingly clear that such a shift is urgently needed. In Europe, as well as globally, the energy transition is in trouble because the current policy framework is completely hostage to the imperatives of profit, and the transition we urgently require is not delivering the profits investors demand. If unions, the climate movement, community energy advocates, and other allies can work together to explain the need for a radical change of course, then our chances of success will considerably improve.

The Structure of this Paper

This paper is divided into five parts.

In **Part One**, we clarify some of the terminology and highlight key issues around local, community, and cooperative energy. Because there is some variation in how these terms are used in different contexts, we will at times use terms "community energy" and "local energy" somewhat loosely and interchangeably as general terms for efforts aimed promoting "popular participation" in the energy transition. Where we are dealing with one specific form, we think it will be clear from the context. In any case, we do not believe these variations in terminology affect the overall story.

In **Part Two** we look at some of the hopes that have been expressed for local and community energy, energy citizenship, and other similar ideas. For a period, it seemed that such initiatives were emerging everywhere across Europe, and even that the growth of renewable energy and the proliferation of citizen and community ownership were somehow inherently linked. Spurred on by falling costs of wind and solar technologies, a radical transition in energy ownership—and a shift in control away from large energy companies to small producers and consumers—seemed not only possible; it was perhaps even imminent.

We also show how, encouraged by those trends, community energy advocates accepted, and in some cases supported, the liberalization agenda of the European Commission. There are a number of likely reasons for this accommodation, including the binding nature of directives that established an internal European market for electricity.[2] Since the late 1990s, the Commission and other EU bodies have pushed the liberalization and privatization of energy (and other vital services), and together they have managed to convince "civil society" that these same policies were keys to driving the transition to renewable energy. The impressive growth of the renewable energy sector seemed to validate this view.

2 European Parliament, *Directive (EU) 2019/944 of the European Parliament and of the Council on common rules for the internal market for electricity and amending Directive 2012/27/EU,* 5 June 2019, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0944&from=EN

But advocates of community energy often displayed confidence in the long-term economic viability of community projects, while perhaps underestimating the extent to which that same viability depended on public subsidies. Indeed, some advocates clearly believed that liberalized energy markets had created space for "energy citizens" and local groups and that this space would only grow in the future as markets became even more liberalized in accordance with Commission objectives.

In November 2016, under the title *Clean Energy for All Europeans*, the European Commission presented a series of measures (often referred to as the "Clean Energy Package," or sometimes just "the Package") for "making the European energy sector more secure, more market-oriented and more sustainable."[3] Adopted by the EU in 2019, the Package proposes to take liberalization even further than it has already been extended. Nevertheless, community energy advocates have applauded the Package on the basis that it recognized, for the first time, "citizens or communities as distinct market actors."[4] The Package urged EU Member States to put in place special protections for local non-profit initiatives, protections that can allow these initiatives to survive and proliferate in the period ahead.

Part Three examines why the EU formalized a major shift in policy when it decided to end the system of Feed-in tariffs (FiTs) and move towards competitive auctions and long-term power purchase agreements (PPAs). In April 2014, the European Commission published its revised *State Aid Guidelines on Environmental Protection and Energy 2014-2020*. They said these Guidelines were necessary in order to address "serious market distortions." The Commission concluded that it was "time for renewables to join the market" through "more efficient public support measures that reflect market conditions, in a gradual and pragmatic way." The Commission had also grown concerned about the costs associated with supporting renewables, and how subsidies for renewables were "over-compensating" power producers, and "reducing incentives to efficiency and distorting competition."[5]

The policy shift away from the FiTs to competitive auctions essentially eliminated the opportunity for individual and small-scale generators to sell surplus electricity back to the grid. This caused a sharp downturn in the number of new local energy initiatives. However, some of the little-known technical challenges of integrating renewable energy also began to pose significant problems. These problems included having to deal with the weather-related variability of renewable power, which gave even further impetus to the need for an "induced coma," where renewable energy deployment would be deliberately and dramatically slowed down.

We also draw attention to the fact that local energy initiatives were (and remain) highly dependent on subsidies (mostly aimed at prosumers). Without these subsidies, it seems certain that very few of these initiatives would have seen the initial light of day. Advocates seem generally not to recognize the pivotal role of subsidies in making such projects viable. In Europe, the phasing out of the Feed-in Tariff not only saw a dramatic slowdown in the number of new local renewable energy projects, it even placed established projects in danger.

3 European Commission, "Clean Energy for All Europeans – unlocking Europe's growth potential," 30 November 2016, https://ec.europa.eu/commission/presscorner/detail/en/IP_16_4009

4 Friends of the Earth Europe, Greenpeace EU, REScoop.eu, Energy Cities, and Friends of the Earth Spain and Hungary, "Unleashing the power of community renewable energy," 14 February 2019, https://www.foeeurope.org/unleashing-power-community-energy

5 European Commission (2014) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Energy prices and costs in Europe. COM(2014) 21, 29 January 2014. For a useful analysis of the State Aid Guidelines, see: http://www.justiceandenvironment.org/_files/file/2014/New%20Energy%20State%20Aid%20Guidelines.pdf

Part Four looks at several key countries where community energy had made the most headway. This will look mainly at Germany and Denmark, where such efforts achieved a clear presence in the system (although further prospects do not look good) as well as the UK and Spain, where local and community control over energy has had a more modest impact.

Here it becomes clear that, after significant growth of community-level power generation capacity in several major European countries prior to the shift towards competitive auctions, that shift had a chilling effect on the formation of new projects. After 2013, community energy was caught in the undertow of a policy shift where only the largest and strongest energy interests could survive.

Part Five looks at the impact of the policy shift through a wider lens—one that reveals a deep crisis in the "energy for profit" approach to the deployment of renewable energy. It is important to emphasize that the move from FiTs—which offered a general subsidy—to larger, long-term PPAs awarded through competitive bidding processes, has now become effectively the default *global* policy.

The severity of this crisis has been discussed in other TUED working papers and publications, so only the main points will be reiterated (and updated) here. It is nevertheless important to see the current problems of community energy as "a crisis within a crisis." Awareness of this crisis can help community energy advocates and their social allies redefine priorities and frame a new set of arguments. In the EU, challenging the neoliberal thrust of both the Package and, more recently, the "European Green Deal,"[6] presents a number of formidable political challenges. But EU energy and climate policy is in a crisis, and is failing even on its own terms.

Community energy advocates have a major role to play in rallying their forces behind a "public goods" approach to Europe's energy transition. Such an approach can help systematize and generalize the many positive things community energy has to offer. These are things that will not be realized under the current neoliberal "energy for profit" model. A "public goods" approach offers the best and perhaps only means of ensuring the broader transition actually takes place, and in a way that allows climate targets and social goals to be met in the time available.

The Role of Cities

Municipal-level initiatives are growing both in Europe and elsewhere. City-level efforts are frequently discussed as examples of "energy democracy" alongside local, community or cooperative initiatives. The developments around cities—including "remunicipalization"—are an important area of research and activism.

City-level initiatives are not examined in this paper. The actual or potential role of cities in the energy transition raises a different set of questions and also opens up a different range of possibilities for public ownership and control, as well as democratic governance. This therefore warrants a separate discussion.

Cities are adopting some of the world's most ambitious targets for renewables. According to

6 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

REN21, this is "putting them at the forefront of the rapidly expanding renewable energy movement."[7] By the end of 2018, more than 200 cities globally had committed to 100% renewable electricity. In the United States alone, more than 100 cities and towns had set targets for 100% renewable electricity, including most recently Cincinnati (Ohio), Minneapolis (Minnesota) and Washington, DC.[8]

New municipal electricity companies have been set up in major European cities and there have been determined efforts to strengthen opportunities collaboration and shared learning across municipalities.[9] An aggressive program of remunicipalization of power utilities in Germany has played a major role in shaping perceptions of what is possible and desirable. In the UK, city-owned or city-supported energy providers have been formed. These include the "Plymouth Energy Community" in Plymouth, "Robin Hood Energy" in Nottingham, and "Bristol Energy" in Bristol. New municipal electricity companies have been set up in cities such as Barcelona, Pamplona, and Palma de Mallorca. In the words of one researcher, "Hundreds of cities are now also contracting renewable energy cooperatives, such as Som Energia and GioEner, with some municipalities agreeing to pay the electricity bills for the poor families in their area."[10] In Barcelona, the new energy retailer set up by the new governing citizen council has launched a system of tariffs to promote self-sufficiency and efficiency, and is now serving an estimated 20,000 households.[11]

These and similar efforts have enjoyed some early successes, they have also confronted major challenges. For instance, in the UK Robin Hood Energy was created by Nottingham city council in September 2015 as a "not-for-profit" energy company to compete with the country's "big six" energy suppliers. The company has grown to supply gas and electricity to 125,000 customers nationwide. However, by late 2019 they faced the possibility of losing their license after failing to pay industry regulators £9.5m in renewable energy subsidies that it had collected from its customers through their bills.[12] The bill was paid the following month after receiving a loan from the city council.[13]

Similarly in Bristol, Bristol Energy was initially expected to be profitable within a few years, but has needed more than £37m in support from the city to stay afloat. As of March 31, 2019, the company had reportedly sold £76m of gas and electricity in the UK, but operating costs led to a loss of £10m, and in August 2019 the company announced that it "might not make profit for five years."[14]

City-level initiatives may have more room to operate within the current system than smaller community-level projects, but it is not clear just how far they can go, or whether or not they have more potential to lead the energy transition than initiatives that are in every respect smaller and with fewer resources.

7 REN21, *Renewables 2019 Global Status Report ("GSR2019")*, Paris: REN21 Secretariat, 2019, http://www.ren21.net/gsr-2019/, p. 179
8 Ibid., 184
9 Lavinia Steinfort, The Future is Public: Working Paper 13, Transnational Institute, December 2019, https://futureispublic.org/wp-content/uploads/2019/12/TNI_working-paper_13_online.pdf. See also: Andrew Cumbers, "Remunicipalization, the Low-Carbon Transition, and Energy Democracy," in State of the World, Washington, DC: Island Press, 2016, https://doi.org/10.5822/978-1-61091-756-8_23.
10 Ibid.
11 Ibid.
12 Jillian Ambrose, "Robin Hood Energy may have licence revoked if it fails to pay total sum to Ofgem," The Guardian, Tue 1 Oct 2019 10.03 EDT, https://www.theguardian.com/business/2019/oct/01/nottingham-based-energy-supplier-robin-hood-fails-to-pay-95m-in-subsidies
13 Kit Sandeman, "City council to loan £9.5 million more to Robin Hood Energy to pay Ofgem bill," Nottingham Post, 17:05, 22 OCT 2019, https://www.nottinghampost.com/news/nottingham-news/city-council-loan-95-million-3455105
14 BBC News, "Bristol Energy 'might not make profit for five years," 9 August 2019, https://www.bbc.com/news/uk-england-bristol-49293475

Part One: What Is Local, Community and Cooperative Energy?

This section will try to explain the key concepts and terminology that will be in play in the rest of the paper. In the process, we will draw out a key tension that runs through debates around community energy, that advocates of community energy—and energy democracy more generally—must face if we are to realize fully the vision of energy democracy and climate justice.

Around the world, there are countless projects and initiatives being carried out that represent, or that *claim* to represent, one kind of "local," "community," or "cooperative" energy group or another. There are also many different names in play to describe what people are doing, from "community energy," or "citizen energy," to "prosumerism," and "community choice aggregation."

Technological developments have opened up a range of possibilities for people and households to generate electrical power on their own, or to join together to engage in generation, supply, or other energy-related activities with others. Additionally, many people, communities, and private companies are finding ever-new ways to take advantage of these opportunities. From membership-based cooperatives building their own renewable generation assets, to companies offering households the opportunity to benefit from "renewable energy credits" (RECs),[15] or joint purchasing, there are numerous and continually evolving models.[16]

The differences among these various models may affect the ways in which projects are carried out. Essentially all of them have played some role in shaping the vision of "energy democracy." There are important debates that still need to be had in order to deepen and refine our shared understanding of energy democracy, and we hope this paper will make a useful contribution to that process.

Defining "Community Energy"

The variety of names, activities, structures, and motivations involved in "community energy" (broadly understood) can make it difficult to arrive at agreement on some important issues. The lack of consensus and shared definitions is recognized by energy researchers as impeding efforts to quantify the size and scope of what is happening in this area. One team of researchers went so far as to say that merely engaging with such a "complex emerging phenomenon" is "a non-trivial task, which the energy research community is just beginning [as of April 2019] to address."[17]

In REN21's latest *Global Status Report 2019*, the influential global renewable energy research network offered a definition of "community energy," specifically as "an approach to renewable energy development that involves a community initiating, developing, operating, owning, investing and/or benefiting from a project." Communities involved in this way, the report continues, "vary in size and shape (e.g.,

15 Tom Konrad, "Clearing Up Confusion Over Community Solar in New York," *GreenTechMedia*, April 23, 2019, https://www.greentechmedia.com/articles/read/clearing-up-confusion-over-community-solar-in-new-york

16 Andrea Lucan and Nicole Scott, "Clean Power Alliance explains why future of community choice aggregation is so bright," *Renewable Energy World*, 10.17.19, https://www.renewableenergyworld.com/2019/10/17/clean-power-alliance-explains-why-future-of-community-choice-aggregation-is-so-bright/

17 Hewitt Richard J., Bradley Nicholas, Baggio Compagnucci Andrea, Barlagne Carla, Ceglarz Andrzej, Cremades Roger, McKeen Margaret, Otto Ilona M., Slee Bill, "Social Innovation in Community Energy in Europe: A Review of the Evidence," *Frontiers in Energy Research,* 2019, https://www.frontiersin.org/article/10.3389/fenrg.2019.00031

schools, neighbourhoods, partnering city governments, etc.)" and the projects "vary in technology, size, structure, governance, funding and motivation."[18] While that may sound like a promising start, one would be hard-pressed to think of a renewable energy-related project anywhere that would definitely be excluded. The final phrase in particular—"and/or benefiting from a project"—seems to leave the door wide open, or at least far more open than many advocates of "community energy" seem to have in mind.[19]

According to another team of researchers writing in *Energy Research & Social Science* this lack of precision and agreement "hinders policy design because it overlooks the diverse characteristics and qualities of the several citizen ownership models grouped under the label of community energy."[20] This is a problem for policymakers, the authors continue, because "differing and ambiguous definitions of the concept may lead to unintended political consequences," such as failing to prevent large energy interests and investors from benefiting from policy protections by satisfying inadequately precise technical restrictions on what counts as a "citizen project."[21]

Despite the variety and uncertainty of terminology, what the many different efforts being pursued under one name or another have in common is that they all involve some form of *popular participation in the energy transition,* and aim to *enable* or *empower* that participation in ways that advance the energy transition, promote social justice, and enhance the possibilities for self-determination of ordinary people. These efforts have a variety of motivations, but in the end, we think it is clear that motivations do not determine final outcomes.

Importantly, this vision for popular participation in the energy transition, and for "energy democracy" itself, takes for granted that *participation must take the form of functioning as a market player*. This suggests that the dominant vision of "community energy" has been profoundly influenced by neoliberal assumptions, and this influence is larger than many of its advocates may perhaps recognize.

The European federation of renewable energy cooperatives, REScoop, has played a leading role in shaping these debates, alongside groups like Friends of the Earth Europe, Greenpeace, and others. Founded in 2011, REScoop is "a growing network of 1,500 European energy cooperatives and their 1,000,000 citizens who are active in the energy transition."[22] In advancing their vision for greater local and community participation in the energy transition, REScoop and its allies have promoted the idea of *energy citizenship*. Rather than attempting to define the term "community energy" as a kind of *activity*, these debates have worked to establish what kind of legal entity should count under EU law as an "energy community." This includes both "renewable energy communities," involved specifically in activities related to generation of electricity from renewable sources, and "citizen energy communities," which may involve activities not necessarily connected to renewables, such as conservation.

18 REN21, GSR2019, p. 243.
19 Similarly, the United States' Department of Energy identifies "community solar" projects as those involving a solar-electric system that "provides power and/or financial benefit to multiple community members." See: U.S. Department of Energy, *A Guide to Community Shared Solar: Utility, Private, and Nonprofit Project Development*, May 2012, https://www.energy.gov/eere/downloads/guide-community-shared-solar-utility-private-and-nonprofit-project-development-book
20 L Gorroño-Albizu, K Sperling, S Djørup, "The past, present and uncertain future of community energy in Denmark: Critically reviewing and conceptualising citizen ownership," *Energy Research & Social Science,* Vol. 57, 101231, https://doi.org/10.1016/j.erss.2019.101231
21 Ibid.
22 REScoop.eu, https://www.rescoop.eu/; accessed November 2019

As the main European federation of cooperatives, REScoop recognizes and works to support several types of cooperative models, including the development of new generation capacity, retail, and supply of renewable energy to members and customers, as well providing a wider range of "energy related services."

As REScoop explains, most renewable energy cooperatives in Europe are involved in the production of energy, and generation in particular. The "primary motive" behind these citizen-led efforts is "the appropriation of energy production."[23] Although the language is sometimes vague, it is fairly clear that people also join cooperatives because of the financial benefits to be had through participation.[24]

Mission Expansion

This would seem to explain another tendency recognized by REScoop among its members. As they write, "one of the characteristics of citizen-led projects is often that they start with a rather specific objective for their first project and later develop a larger model."[25] In other words, a cooperative set up with a relatively limited aim of installing some renewable generation assets will often, over time, branch out into retailing or other services that may bring additional revenues. This is the case, for instance, with the Belgian cooperative Ecopower, "which combines production and supply of electricity," or with Italy's E-Werk Prad, "which produces energy and owns the local grid."[26]

This apparent "mission expansion" that REScoop has identified points toward something that needs to be emphasized. While cooperatives may operate on a "not-for-profit" basis at the *organizational* level, the fact that they *distribute profits among their members* means that commercial imperatives become blended with the social mission of most cooperatives.

The significance of commercial imperatives also affects day-to-day and key strategic decisions that both management and membership of energy cooperatives must confront. For cooperatives aiming to provide electricity to their members from new renewable sources, this means confronting the decision whether to "buy or build" their generation capacity. This decision then imposes its own commercial logic—whatever the values, motivations, or aspirations of the cooperative itself may be.[27]

The dilemma facing cooperatives highlighted here will not be news to people familiar with the history of cooperative movements. The struggles of worker-owned cooperatives to survive and thrive within markets still dominated by large commercial interests can look back on decades of research and many decades of hands-on experience. What matters here is how this susceptibility to the impacts of larger commercial interests and forces affects the prospects for local, community, cooperative, and worker-owned energy initiatives under current conditions. This will become

23 REScoop, "REScoop 20-20-20: Report on financial barriers and existing solutions," https://www.rescoop.eu/starters
24 Quantum Strategy and Technology, "Community Energy: Generating More Than Renewable Energy," Lancaster: Community Energy England, October 2015, https://communityenergyengland.org/files/document/38/1494515699_CEE-Survey-2015.pdf
25 REScoop, "REScoop 20-20-20"
26 Ibid.
27 NRECA, "Renewable Energy for Cooperatives: Ownership vs. Power Purchase Agreements," July 14, 2016, https://www.cooperative.com/programs-services/bts/Pages/TechSurveillance/renewable-energy-ownership-power-purchase-agreements.aspx

increasingly important in deciding the policy and political implications for the energy transition and the struggle for effective solutions to the climate emergency.

Part Two: The Hope and the Vision

In Part Two, we examine the vision that inspires many of the leading advocates of community energy. We also show that a number of these advocates initially either supported or went along with the EU's liberalization agenda, and in so doing entertained notions that this would free up space in the market that local initiatives could exploit. Recent shifts in policy have ushered in a new reality though, a reality hostile to community energy. We explain why these shifts occurred, including the rising costs of the FiT system as well as technical challenges arising from the variable nature of renewable energy.

After making some headway during the period from roughly 2000 to 2013, community energy is now in decline, at least in those countries that saw the most impressive early growth. The main reason for this change of fortune is fairly clear. Under generous Feed-in Tariffs, a variety of local and community energy projects flourished, allowing homeowners, farmers, and other local producers to feed surplus electricity into the grid at contracted rates that were considerably above the wholesale price. Beginning around 2012, key countries made a crucial shift away from this policy towards an auction-based "competitive bidding" approach. The UK was first to change course with the EU following quickly behind. This resulted in a dramatic slowdown in essentially all forms of renewable generation, including local and community energy.

One of the most important lessons that can be drawn from this experience is that, within the current neoliberal policy framework, community energy is not a viable model without subsidies. Put differently, community energy that is expected to "compete" as a "market actor" has no future. The problem cannot and will not be addressed by simply reintroducing the FiT system or by offering community energy special protections. It is also important to recognize that the policy shift to competitive bidding has caused a new set of problems for the renewables sector not only in Europe, but also internationally. Competitive bidding has led to falling profit margins, reduced investment, and a dramatic slowdown in annual deployment levels in key countries. We will return to this larger crisis in the final section of this paper.

The Community Energy Vision

Advocacy for community energy often draws from three main arguments. These are *technical*, *economic*, and *social*.

The *technical* argument claims decentralized generation has enormous untapped potential. It is often pointed out that the ability of wind turbines and solar panels to convert the energy generated by the wind and the sun into electrical power promises to deliver unlimited renewable energy with no fuel costs. Unleashing the potential to produce abundant renewable energy from these sources, this argument goes, will make a massive contribution to meeting climate targets.

The second argument is *economic*. Renewables are, or soon will be, cheaper than new capacity that is based on fossil fuels or nuclear power. Furthermore, community energy will allow economic benefits to be felt at the community level, and not to line the pockets of large energy companies that want to perpetuate our dependency on fossil fuels and nuclear power.

The third argument is *social*. Citizens and communities can participate at a grassroots level in the energy transition and thus widen its political support.[28] Community energy is people-centered and can reflect the desire of local people to be more fully and consistently engaged.

These core arguments have frequently been accompanied by a number of bold claims, whereby community energy is all at once considered crucial to meeting ambitious climate targets, promoting democracy, redistributing wealth and power, and helping redress historical injustices. Community energy is therefore often presented not merely as a viable alternative, but the *only* alternative to "dirty," "centralized," energy.

In a report released early in 2019 titled, "*Unleashing the Power of Community Renewable Energy*"—jointly released by REScoop, Friends of the Earth Europe (FoEE), Greenpeace, and Energy Cities (all of which are especially active in the policy space around community energy)—the authors write:

> *A socially fair energy transformation means putting renewable energy into the hands of communities and people – taking back power from the fossil fuel industry, which has consistently blocked action that threatens its own financial interest, at the expense of people and the planet.... Community energy has the power to achieve an energy transformation more quickly, fairly and with added social benefits.*[29]

Unleashing the Power also points to the immense *technical* potential of "energy citizenship." In particular, the report cites a study commissioned by Greenpeace, FoEE, the European Renewable Energy Federation (EREF) and REScoop, and carried out by Dutch research and consultancy organization CE Delft, which "found that half of EU citizens – including local communities, schools and hospitals – could be producing their own renewable electricity by 2050, meeting 45% of their energy demand."[30] According to the study, 113 million citizens could be generating electricity and many more participating in the transition through charging their own electric vehicles or improving their energy management.

Another report, from UK "innovation foundation" Nesta, describes local and community energy initiatives as "vital to achieving an affordable, secure, low–carbon future and creating other wide-ranging economic, social and environmental benefits."[31] The US-based Environmental and Energy Study Institute (EESI), has declared that collective and community-scale approaches constitute "an appealing alternative to depending on large utility companies. They argue community energy allows self-sufficiency, can reduce costs, helps stabilize energy supplies, and is also far more resilient to storms, flooding, and other natural disasters than regular grids (community energy can provide power even when the grid is down)."[32] Another paper declared that community energy, "is potentially a socially

28 Laurie Laybourn-Langton, *Community and local energy: Challenges and opportunities*, Institute for Public Policy Research, June 2016, https://www.ippr.org/publications/community-and-local-energy-challenges-and-opportunities
29 FoEE et al, "Unleashing the power of community renewable energy," Op. cit.
30 CE Delft, "The potential of energy citizens in the European Union," September 2016, https://www.cedelft.eu/publicatie/the_potential_of_energy_citizens_in_the_european_union/1845
31 Harry Armstrong, "Local energy in an age of austerity: preserving the value of local and community energy," NESTA, 8 December 2015, https://www.nesta.org.uk/report/local-energy-in-an-age-of-austerity-preserving-the-value-of-local-and-community-energy/
32 Environmental and Energy Study Institute, "Community Energy: Benefits of Community Energy," https://www.eesi.org/

transformative economic approach with various benefits for communities, democratic participation and local economies."[33]

These are fairly representative examples of the faith that many supporters of local and community energy have expressed in its transformational capacities. These high aspirations were no doubt spurred on by developments in countries like Germany, Denmark, the UK, and Spain, where policy interventions led to significant growth of individual and collective ownership of renewable generation assets, and a proliferation of "energy cooperatives." This took place alongside a remarkable rise in investment and deployment of renewable generation more broadly.

As we will see, the experience of recent years has dented these hopes. At the same time, this experience has called into question the economic, technical, and social basis that gave rise to them in the first place.

Living with Liberalization

In Part Four below, we will show how in countries like Denmark and Germany community energy made significant headway with a strong social base of support to sustain it. Both countries were regarded as exemplars of a new, fairer, more democratic, and ecologically sustainable energy system. Around the world, energy democracy and climate activists took inspiration from both Germany's *Energiewende* and Denmark's success in ensuring that communities and citizens had some stake in developing a vibrant wind industry that would soon generate more than half of the country's electrical power.

But while embracing this apparent progress, many advocates of local and community energy have apparently made peace with, if not actively embraced, the EU's liberalization agenda. This accommodation with neoliberal policy on the part of community energy advocates seems to be based on three considerations. First, because one of the explicit goals of liberalization in the 1980s and 1990s was to challenge the monopoly position of large publicly or privately-owned energy companies, EU policy promised to create space in energy markets for "new actors," including small businesses embedded in local communities, green start-up companies, and "energy citizens." Second, EU policy has effectively assumed that liberalization and decarbonization have a symbiotic relationship. On this argument, liberalization helps promote decarbonization first through policy supports and better access to markets, which in turn broadens the social and economic base that can reinforce the process on the ground.

Third, many community energy advocates apparently believed that local energy could not only *survive* in a liberalized environment, but could even *thrive*. This was based on consensus among policymakers that the future depended on mass deployment of wind and solar power. Accompanied by falling prices for wind and solar technologies making them "more competitive" and thus driving deployment, it seemed reasonable to assume that policies would be developed to support renewable energy initiatives at all levels and scales, including a wide variety of local, community, and cooperative efforts.

This confidence in the *economic* viability of community energy within liberalized energy markets has frequently led to *political* conclusions that have serious implications for the energy democracy move-

topics/communities/description; accessed 10 March 2020.

33 Iñigo Capellán-Pérez, Nadia Johanisovac, Jasminka Young, Conrad Kunzef, "Is community energy really non-existent in post-socialist Europe? Examining recent trends in 16 countries," *Energy Research & Social Science*, Volume 61, March 2020, https://www.sciencedirect.com/science/article/pii/S2214629619308862

ment. For example, in 2018 the UK's Cooperative Party—which has a formal alliance with the Labour Party—proposed that the cooperative and community sector should play a more prominent role in the UK's future energy system. This was presented as *an alternative* to the public ownership position that was supported unanimously by the Trades Union Congress. The report concluded: "Policies which support and enable a greater number and larger scale of community, co-operative and municipal energy projects to start-up and succeed is a more appropriate solution to public ownership in this sector." Energy supply, it stated, should change from a market dominated by the "Big Six" energy companies to a more diverse market in which "customers have a genuine choice between community, municipal and co-operative suppliers, or can club together to collectively purchase their energy directly from a newly transparent wholesale market."[34]

EU Policy Recognizes "Local Energy Communities"

As noted above, in November 2016 the European Commission presented a series of measures for "making the European energy sector more secure, more market-oriented and more sustainable."[35] The "Clean Energy Package" was adopted by the European Parliament in May 2019. [36]

The Package acknowledged the important contribution of citizens and community energy projects. The Commission defined a local energy community as "an association, a cooperative, a partnership, a non-profit organisation or other legal entity which is effectively controlled by local shareholders or members, generally value rather than profit-driven, involved in distributed generation and in performing activities of a distribution system operator, supplier or aggregator at local level, including across borders." By way of the Package, the term "energy communities" took on a legal form.

For REScoop and others, passage of the Package by the EU parliament was a cause for celebration. They argued that the EU's recognition of community energy had created space for the "non-commercial" aspirations of ordinary citizens and local groups that want to be part of the energy transition, serving as a policy counterweight to a "profit-at-all-costs," approach.[37] Policy should continue to carve out a clearly defined, protected space in which initiatives aspiring to embody non-commercial values could thrive. Policy support could include concessionary financing, or exemptions from certain reporting or other requirements.[38]

34 Anna Birley & Joe Fortune, "Ownership Matters: Democratic Public Ownership for the 21st Century," Co-operative Party, April 2018, https://party.coop/publication/ownership-matters/

35 European Commission, "Clean Energy for All Europeans – unlocking Europe's growth potential," 30 November 2016, https://ec.europa.eu/commission/presscorner/detail/en/IP_16_4009

36 European Commission, "Proposal for a Directive of the European Parliament and of the Council on common rules for the internal market in electricity," COM(2016) 864 final/2, https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52016PC0864&from=EN

37 The European Commission defines "local energy community" as "an association, a cooperative, a partnership, a non-profit organisation or other legal entity which is effectively controlled by local shareholders or members, generally value rather than profit-driven, involved in distributed generation and in performing activities of a distribution system operator, supplier or aggregator at local level, including across borders." European Commission, "Proposal for a Directive of the European Parliament and of the Council on common rules for the internal market in electricity."

38 "For instance, the definitions for 'local energy community' proposed in the new IEM Directive for electricity and for 'renewable energy community' put forward in the new RED should be streamlined and coordinated to ensure RE communities are an example or sub-category of local energy communities, which can in turn perform a variety of services (as outlined in the previous recommendation)." From: Gancheva, M., O'Brien, S., Crook, N., Monteiro, C., "Models of Local Energy Ownership and the Role of Local Energy Communities in Energy Transition in Europe," European Committee of the Regions, September 25, 2018, https://op.europa.eu/en/publication-detail/-/publication/667d5014-c2ce-11e8-9424-01aa75ed71a1/language-en/format-PDF/source-115187093, p. 58. See also: Tounquet, F.; De Vos, L.; Abada, I.; Kielichowska, I.; Klessmann, C., "Energy Communities in the European Union," Energy Communities in the European Union: Revised Final Report of the ASSET [Advanced System Studies for Energy Transition] Project, Brussels, Belgium, May 2019, https://

This would provide the opportunity for "individuals, groups of individuals, households, small businesses or local authorities" to collaborate and develop solutions at the local level. Such initiatives, according to their advocates, could then "play an important role in the energy transition as they can enable the development of sustainable energy technologies and bring a variety of benefits to local communities."[39]

Political Breakthrough

For many advocates of community energy, the official recognition of an "important role" for community energy and energy citizens in the Clean Energy Package constituted a political breakthrough. According to the *Unleashing the Power* report cited above, citizens who wanted to be involved in renewable energy production had beforehand mostly relied on local and national policies. As a result of those policies, "community energy initiatives [were] becoming prevalent in some parts of Europe." But the Package confirmed that the EU itself was recognizing the potential of community energy. Things seemingly could now only get better.[40]

A January 2019 report from the Green European Foundation also applauded the Package: "Today, there are already more than 2400 renewable energy cooperatives in the whole of Europe, bringing together more than a million committed European citizens." The adoption of the Package "is not only about shifting from fossil fuels and nuclear energy to renewable energy; it is also about power and ownership, about citizens getting their voices heard and not being left out in the cold." [41]

Now that the EU Parliament had made its decision, the main task would be to ensure that all Member States comply with the commitments to community energy made in the Package. REScoop urged Member States to "acknowledge citizen and renewable energy communities as a different type of market actor, which emphasizes open and democratic ownership and control." All Member States should "ensure effective control by citizens, local authorities and small businesses and guarantee autonomy—preventing bigger companies from setting up and controlling energy communities."[42]

Re-Packaging Neoliberal Policy

It is a testament to the efforts of community energy advocates and their allies that today the EU policy today consistently references the fact the Europe's energy transition has been, and will continue to be, "people-driven." From the above, we can see that the political strategy of leading community energy advocates has been to make sure that community energy projects be supported by robust and consistent policies that can both protect and ensure their viability and allow them to fulfill their values-based mission.

But one of the consequences of that strategy is that both the neoliberal thrust of the Package and its wider implications for community energy, and the energy transition itself, are either played down or

asset-ec.eu/home/advanced-system-studies/cluster-4/eu-energy-communities/

39 Gancheva, et al. "Models of Local Energy Ownership and the Role of Local Energy Communities..."

40 FoEE et al, "Unleashing the power of community renewable energy," Op. cit.

41 Green Energy Foundation, Citizens Energy: Making Energy Democracy Happen, (authors Dirk Holemans & Kati Van de Velde) January 2019

42 REScoop, *Community Power Coalition: Vision Statement*, October 9, 2019, https://www.rescoop.eu/blog/community-power-coalition?categoryId=39507

ignored. Indeed, among community energy advocates both explicit and implicit support for the EU's liberalization agenda persists. One supporter noted that local initiatives would benefit from "more market action and enhanced private sector involvement"; such involvement offers "the only sustainable route for scaling up existing efforts."[43] According to *Unleashing the Power*, "The liberalization of the electricity market has made it possible for community-owned renewables projects to start supplying energy to their members."[44] The report noted that, prior to the Package being passed, the EU had failed to carve out a protected space for community projects, thus "effectively forcing citizens and communities out of the market."[45] The Package would alter that dynamic in a manner that would permit community energy initiatives to be market actors, and thus lay the foundation for their future growth.

Community energy advocates applauded the fact that the Package called for Member States to introduce "enabling frameworks that support citizens and communities investing in renewables."[46] According to REScoop, this was "a game changer for citizens" because citizen and energy communities in the EU would now "have a number of guarantees that ensure they are able to invest in renewables and benefit from the energy transition. Acknowledgement of their role, support, and… the right to produce, consume, sell and store renewable energy are all now enshrined in EU law."[47]

Whatever national-level supports for community energy are ultimately implemented as a result of the Clean Energy Package, they will not change the fact that the Package will further promote and extend a neoliberal "energy for profit" agenda. This agenda does not serve the interests of community energy and, perhaps more importantly, there are clear signs that it will not deliver on decarbonization targets. The Package's definition of energy citizens is unapologetically neoliberal:

> *All consumers should be able to benefit from directly participating in the market, in particular by adjusting their consumption according to market signals and, in return, benefiting from lower electricity prices or other incentive payments….* All customer groups *(industrial, commercial and households) should have access to the electricity markets to trade their flexibility and self-generated electricity.*[48] *[emphasis added]*

Similarly, according to the Final Report of the *High-Level Panel of the European Decarbonisation Pathways Initiative*, delivered to the Commission in November 2018:

> *The liberalisation of electricity markets in the EU tends to reinforce the power of people as consumers by giving them the choice of their supplier. Consumer empowerment in the energy system has become a goal of the European Commission, and corresponds to the ability of consumers to switch supplier easily, to receive an understandable bill, and to have access to a certified comparison tool to make well-informed decisions but also to become more active in the energy system. An active consumer in the energy system develops into a prosumer who is able to generate, self-consume, store or sell electricity.*[49]

43 Bertoldi P et al, Guidebook: How to develop a Sustainable Energy and Climate Action Plan (SECAP) – Part 1 - The SECAP process, step-by-step towards low carbon and climate resilient cities by 2030, Luxembourg: Publications Office of the European Union, 2018, http://publications.jrc.ec.europa.eu/repository/handle/JRC112986
44 FoEE et al, Unleashing the power of community renewable energy," Op. cit.
45 Ibid.
46 Dirk Holemans & Kati Van de Velde, Citizens Energy: Making Energy Democracy Happen, Green European Foundation, January 2019, https://gef.eu/publication/citizens-energy-making-energy-democracy-happen/
47 FoEE et al, "Unleashing the power of community renewable energy," Op. cit.
48 European Commission, "Proposal for a Directive of the European Parliament…," Op. cit.
49 European Commission, "Final Report of the High-Level Panel of the European Decarbonisation Pathways Initiative," November 2018, https://ec.europa.eu/info/publications/final-report-high-level-panel-european-decarbonisation-pathways-initiative_en

It should be clear by now that, when it comes to recent developments around the Package, advocates of community energy have declared victory when, in fact, there are compelling reasons to be concerned about what the Package means for the kind of values-driven initiatives they support. How can these initiatives "trade their flexibility?" Where, exactly, does the "non-commercial purpose" of community energy fit in with the notion that "all customer groups" should have the opportunity to be market players?"[50] Put differently, EU law now recognizes that community energy projects have the right to play the market, but it also encourages much more powerful interests to do the same. This does not seem so much like "throwing the cat amongst the pigeons," but more like throwing a few sparrows into a large group of cats.

Facing Facts and Taking Stock

Many advocates of community energy are on the front lines in terms of fighting for a more democratic and people-centered energy system.

As noted previously, community energy initiatives may provide certain benefits to their participants; they can also serve as platforms for local organizing. But the dominant policy framework advanced by the European Commission (and, at the global level, the World Bank, and the IMF), displays an unwavering commitment to an investor-focused path to decarbonization involving more future liberalization and privatization. These policies are not friendly to community energy and the current political strategy will, at best, create a protected space for these initiatives, but a space that will produce only limited gains, no matter how it is used. Meanwhile, the EU's policy continues on a path that will not produce a "just energy transition."

In contrast, a "public goods" approach, based on true *public* ownership and a break from profit-driven investment and distribution decisions, could create genuine space for community-level engagement. Such an approach could promote energy conservation and efficiency while ensuring that everyone has sufficient energy to live in dignity and work productively. Such a framework offers the best possible vehicle for broad-based and sustained involvement of individuals, communities, cities and regions in the formidable challenges of the energy transition. It can also help sustain already existing efforts to strengthen local, community, and municipal control over energy.

Part Three: The Policy Shift and the Big Slowdown

In this section, we explain why the EU undertook a major change of course that would dramatically slow deployment of renewables, and seriously damage the prospects of community energy in the process.

As noted in the introduction, the European Commission had published its revised *State Aid Guidelines on Environmental Protection and Energy 2014-2020* in April 2014. [51] The Guidelines were the result of

50 Josh Roberts and Claire Gauthier, "Energy communities in the draft National Energy and Climate Plans: encouraging but room for improvements," Friends of the Earth Europe, REScoop.eu and the Europa Universität Viadrina, 7 Jun 2019, https://www.rescoop.eu/blog/necps

51 European Commission, "Energy prices and costs in Europe," Communication from the Commission, COM(2014) 21, 29

growing concerns regarding the costs of the FiT programs and the need to introduce a system where renewable energy companies would compete for contracts by way of a competitive bidding system.[52] The new system is based on a procurement auction, where typically a certain amount of power (MW) or energy (MWh) of renewables are offered up for bidding. Bidders compete to be allowed to deliver these volumes.[53] The Commission's guidelines called for auctions that are "technology neutral" whereby all renewable energy technologies compete against each other on a level playing field in order to support those bidders which require the lowest support payment to supply the renewable electricity.[54]

The goal of the shift from the FiT to auctions was to reduce the costs and slow down the growth of renewables across Europe. According to the Commission, the Guidelines, "gradually introduces competitive bidding processes for the allocation of public support.... As of 2017, such processes will apply to the award of all public support for renewables." The shift formalized what key Member States—such as the UK—had in already started to do, and spelled the end of the FiT systems across Europe.[55]

Countries beyond Europe soon began to abandon their FiT systems and to adopt a competitive auctions approach. In both Europe and beyond, the result was the same: a period of booming growth in deployment of renewables under the FiT system gave way to a dramatic slowdown and, in some instances, a crash.

It is important to know why this policy shift occurred and what it means for the role of community energy and energy citizenship in the energy transition. In the final section of this paper, we will summarize what the shift has meant for the energy transition in Europe and globally.

"Eat Your Carrots": Reasons for the FiT Subsidies

The reasons for the shift away from FiT subsidies towards competitive auctions are explained in considerable detail in the 2017 TUED Working Paper 10, *Preparing a Public Pathway: Confronting the Investment Crisis in Renewable Energy*,[56] so only a brief summary is provided here. That working paper also explains why the subsidies were put in place in the first place, and provides data that show the negative impact of the shift towards competitive auctions both on EU investment levels and on investment levels in other countries where a similar policy shift has been made.

Regarding the introduction of subsidies, in the early 2000's awareness and concern about climate change began to rise significantly. This was accompanied by a growing optimism about the capacity of "modern renewables" (principally wind and solar PV) to play a major role in achieving the levels of emissions reductions necessary to avoid dangerous climate impacts. But at that point in time

January 2014, https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52014DC0021&from=EN

52 European Commission, "Guidelines on State aid for environmental protection and energy 2014-2020," Communication from the Commission (2014/C 200/01), https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52014XC0628(01)&from=EN.

53 Alvarez et al, "Auctions for renewable energy support: Taming the beast of competitive bidding," Technical University of Denmark, 2017, https://orbit.dtu.dk/files/142941994/aures_finalreport.pdf

54 Ibid.

55 Association Justice and Environment, "New Guidelines on Environmental and Energy State Aid for 2014–2020: Legal Analysis," 2014, http://www.justiceandenvironment.org/_files/file/2014/New%20Energy%20State%20Aid%20Guidelines.pdf

56 Sean Sweeney and John Treat, *Preparing a Public Pathway: Confronting the Investment Crisis in Renewable Energy*, TUED Working Paper #10, November 2017, http://unionsforenergydemocracy.org/resources/tued-publications/tued-working-paper-10-preparing-a-public-pathway/

renewable generation technologies were simply not in a position to compete economically with electricity generated from coal, gas, and nuclear. The FiT system was used to incentivize homeowners, farmers, and community groups to become both producers and consumers of renewable energy (or "prosumers").

It is crucial to remember here that the insistence on competition is central to neoliberal doctrine. In an energy sector undergoing serious reconfiguration, where consumption continues to expand in some regions while it levels off or contracts in others, different forms and sources of energy will be forced to compete against one another. This enforced competition happens whether or not this makes any sense from a technical, social, ecological, or even economic standpoint.

A public goods approach would make no such demand on low carbon energy. The subsidies for wind and solar energy were an attempt to reconcile decarbonization goals with market liberalization, and the need to secure profit for private interests. In the case of renewables and the need to transition away from coal and gas, it was clear that "the market" was not going to produce the desired results. Neoliberal policy decided instead to rely on government-introduced "sticks and carrots" to shape market behavior in a way that might reduce emissions in order to address climate change. For "sticks," they proposed to put a "price on carbon" (carbon tax; cap-and-trade). In Europe this led to the formation of the EU's Emissions Trading Scheme. Meanwhile, for "carrots" the EU settled on various subsidies, incentives and guarantees ("out-of-market protections") to renewable energy interests in order to help advance wind and solar power and drive down costs through "learning by doing," technological innovations, economies of scale, and by facilitating access to low interest financing from bodies like the publicly owned European Investment Bank.

These subsidies and incentives initially included generous FiTs and, eventually, long-term Power Purchase Agreements (PPAs). Technically, the FiT is a PPA contract on a smaller scale in accordance with government regulations. Under the competitive auction systems, a PPA emerges as a result of a bidding process. Backed by law, the contracts normally last for 20 years and locks in revenues for this period. PPAs often come with "priority of dispatch," exemptions from "system costs," and other forms of policy support.

As will be explained in more detail in Part Four, decentralized generation flourished as a result of this supportive policy environment. This was specifically designed to incentivize distributed generation. Individuals and local groups could not only offset their own electricity costs, but could also generate income by "feeding in" electricity to the grid (thus "Feed-in Tariff) at a pre-agreed, above-market price. The focus on local and household generation was a product of community-level organizing around renewables that had already gained considerable momentum in Denmark and Germany. In Germany, local organizing around energy had grown out of the struggle against both nuclear weapons and nuclear power and its political message became more powerful with the rise of parties like the German Greens.

Rapid Growth in Renewables, but Limited Decarbonization

By 2014, EU countries had invested approximately €1.1 trillion in renewables.[57] The share of fossil

57 Tommaso Rondinella and Elena Grimaccia, "How austerity put a brake on the energy transformation in Italy," in Béla

fuel generation (coal, gas, and oil) decreased from 54% in 2008 to 37% in 2017—a remarkable shift for a period of just 10 years. During the same period, the share of renewables' generation capacity (including wind, solar, hydro, and biomass) also increased impressively from 17% to 33%.[58] The EU was also the first region to develop offshore wind, with over 90% of global installations in 2015.[59]

In 2016 and 2017, renewables accounted for almost one third of all electricity consumption.[60] Renewables also accounted for the overwhelming majority (85%) of new EU electricity-generating capacity. And on a *per capita* basis, the EU is still the world leader in renewable energy deployment. [61]

For many, these numbers add up to a clear policy success story. Subsidies for renewable energy produced an expansion of renewable power and established Europe as the world leader in renewable energy and its related technologies. But it also established Europe as the policy leader. Seeing a "success story" unfolding before their eyes, other countries and regions began to emulate the EU's approach in an effort to blend liberalization and privatization with power sector decarbonization. The use of FiTs, PPAs, concessional financing, and others became widespread. This has been especially evident in countries where existing coal, nuclear, and older gas-fired power stations are getting close to retirement.

But there are other aspects of the EU's success story that need to be examined and understood. This examination is crucial for any discussion of community energy and its future prospects, but it is also important in terms of grasping larger questions about the energy transition.

The first thing to acknowledge is that the renewables sector was built because public money was used to make profitable what would not otherwise be profitable. Despite that support, as of 2018 wind and solar together provided a little less than 16% of the region's electrical power over the course of the entire year. In other words, the development of modern renewables (wind, solar, and biomass for combustion) has had a limited impact when viewed in the context of overall electricity use. It is also important to note that public hydroelectric systems contribute nearly another 12% of the EU's annual electricity use. These hydro systems fall into the category of "renewables" but they were, in most instances, built decades ago and their capacity for expansion is highly limited in most instances.

Of course, what this all means is that the EU's power system is today still massively dependent on coal, gas, and nuclear. These sources currently supply roughly 70% of Europe's electricity needs on any given day.[62] Installed renewable capacity continues to grow, but in recent years the proportion of energy from renewable sources has fallen as more energy from non-renewable sources is consumed.[63]

Galgóczi, ed., *Europe's energy transformation in the austerity trap*, European Trade Union Institute, 2015; http://www.etui.org/Publications2/Books/Europe-s-energy-transformation-in-the-austerity-trap

58 Eurostat data, cited by European Commission, "Energy prices and costs in Europe," Op. cit.

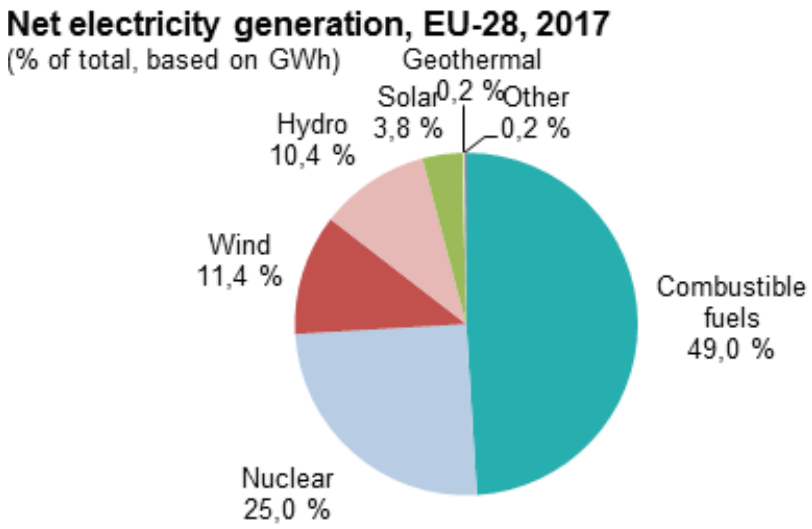
59 Environmental and Energy Study Institute (EESI), "Factsheet — Offshore Wind: Can the United States Catch up with Europe?" January 4, 2016, https://www.eesi.org/papers/view/factsheet-offshore-wind-2016

60 European Environment Agency (EEA), *Renewable energy in Europe 2018*, (EEA Report, 20/2020) https://www.eea.europa.eu/

61 Ibid.

62 Eurostat, "Electricity production, consumption and market overview — Figure 3: Net electricity generation, EU-28, 2017," https://ec.europa.eu/eurostat/statistics-explained/index.php/Electricity_production,_consumption_and_market_overview#Electricity_generation

63 EEA, *Renewable energy in Europe* 2018, Op. cit.



Source: Eurostat[64]

The Cost of Subsidies

The shift from FiTs to competitive auctions reflected a desire on the part of policymakers to bring an end to the proliferation of FiT contracts that were locking in 20-year revenue streams to small producers. The costs of these contracts were showing up in higher electricity bills. A UK report noted that FiTs and similar subsidies "have left legacy costs on a very large scale, already comprising around 20% electricity bills. It is not obvious that what the UK has got as a result in first-generation renewables is optimal, but it is one that households and industry will live with for decades to come."[65] One study concluded that the cost of solar installations consisted of a roughly "50-50" division between the cost of the solar panels and "non PV costs," with the main non-PV cost being the FiT. The study concluded:

> *Such a favourable level of incentives in relation to the costs of the renewable technologies has fostered strong growth in photovoltaic power installations, the generating capacity of which has doubled in four years, while overall expenditure on this form of energy, both private and public, has increased fourfold.*[66]

Furthermore, electricity bills were further inflated because utilities took steps to recover the "system costs" (such as grid upgrades and extensions) incurred as a result of integrating market-protected renewables by simply adding these costs onto retail charges. This is because, within existing market structures, renewables exert a downward pressure on wholesale prices. This is especially true at times of peak renewable generation and often with quite "disruptive" consequences, since those times of peak *generation* have no regard for times of peak *demand*. This leads to only a partial recov-

64 Eurostat, "Electricity production, consumption and market overview — Figure 3: Net electricity generation, EU-28, 2017," Op. cit.

65 Dieter Helm, *Cost of Energy Review*, 2017, https://www.gov.uk/government/publications/cost-of-energy-independent-review. See also: Jeffrey Ball, "Germany's High-Priced Energy Revolution," *Fortune*, March 14, 2017 6:30 AM EST, https://fortune.com/2017/03/14/germany-renewable-clean-energy-solar/

66 Tommaso Rondinella and Elena Grimaccia, "How austerity put a brake on the energy transformation in Italy," in Béla Galgóczi, ed., *Europe's energy transformation in the austerity trap*, ETUI, 2015, https://www.etui.org/Publications2/Books/Europe-s-energy-transformation-in-the-austerity-trap

ery of utility costs, and thus the utility raises the retail price (essentially, electricity bills, or tariffs) in order to compensate for declining wholesale market revenues.

An Upward Redistribution of Wealth?

It is important to note that the costs of the FiTs were also passed on to consumers, driving electricity bills still higher. While benefits to the community may, as is claimed, broaden the support for the energy transition among prosumers and attract the approval of those who see the ecological need for more renewable energy, the fact that the bulk of FiT costs ended up on the electricity bills of consumers (and particularly renters) may have contributed to the loss of political support among the broader working class. As a general rule across Europe, the deeper the penetration of renewables, the higher the retail price for electricity.

For 2012 alone, the European Commission calculated that FiT payments added €40 billion to the electricity bills of EU consumers.[67] In 2016, German consumers saw €23 billion added, and the average household electricity price in Germany was 25% higher than it would have been without the subsidies.[68] German households and small businesses pay the renewables surcharge while big industry enjoys generous exemptions in order to help keep German businesses competitive in international markets. Between 2009-2014, these exemptions grew by 47%.[69]

In Italy, the FiT stimulated an impressive 16.4 GW of new renewable capacity, but 85% of the incentives went to large producers. According to one trade union source, "the capital behind those investments overwhelmingly originated outside Italy, while the bill was paid by 29 million Italian consumers."[70] Italy's support for renewables, the report noted, meant that landowners were set to receive €20,000 per hectare over 20 years for letting out fields. This price was barely a fraction of the earnings from the subsidy itself. According to the study, permits ultimately reached a value of €400,000 / MW, so that "those who had bought permits for a few thousand euros for a 10 MW plant were able to resell [them] for as much as €4 million."[71] Businesses, farmers and property owners benefited from the FiT, but most of the costs fell on those who are less well off, generating a significant backlash.

Technical Challenges and Policy Implications

Another factor that contributed to the shift away from FiTs was recognition among energy policy makers that there were major market-related and technical challenges associated with renewable energy deployment.

67 Ecofys, "Subsidies and costs of EU energy," European Commission, 11 November 2014, https://ec.europa.eu/energy/en/content/final-report-ecofys

68 "The rise in that surcharge is the single biggest reason that the amount the average German household spent on electricity rose to 1,060 euros in 2016, up 50% from 2007." Jeffrey Ball, "Germany's High-Priced Energy Revolution," *Fortune*, March 14, 2017 6:30 AM EST, https://fortune.com/2017/03/14/germany-renewable-clean-energy-solar/. However, in Germany's case, renewables contributed 32% of the country's electricity consumption during the same year.

69 Sylvia Borbonus, "The German Energiewende under pressure," in Béla Galgóczi, ed., *Europe's energy transformation in the austerity trap*, ETUI, 2015, https://www.etui.org/Publications2/Books/Europe-s-energy-transformation-in-the-austerity-trap

70 Rondinella and Grimaccia, "How austerity put a brake on the energy transformation in Italy," Op. cit.

71 Ibid.

On windy and sunny days, renewable energy can flood into the grid, depressing wholesale prices and depriving coal, gas, and nuclear energy providers of the revenues they need to cover their costs. Again, this market-related challenge is directly tied to neoliberal policy and the need to sell electricity in a "competitive" market, and to do so in ways that return profits to investors. The *technical* challenges posed by variability are already formidable enough, but neoliberal policy forces utilities and policy-makers to solve an additional—and entirely unnecessary—set of purely *market-related* challenges. They must not only make sure that power is delivered where and when it is needed, but also to ensure that marketized energy players are able to secure profits in the process as well.

It is crucial to recognize that the record level of renewable power generation for all of Europe *on any given day* has never exceeded 30.1%—a high point that was reached on July 30th, 2017. What that means is that, even on Europe's "best" day to date, "incumbent" sources of power—fossil fuels, nuclear, and existing large hydroelectric systems—provided almost 70% of the region's power. But just as importantly, a mere three weeks later—during the evening of August 25, 2017—modern renewables provided just 5.5% of the region's power.[72]

The technical challenges associated with variable generation become much more serious once a certain level of wind and solar deployment has been reached. Solving these challenges will not be easy, and will require considerable investment. According to the European Commission, €30 billion was invested in EU's distribution networks in 2018 (i.e. 85.7% of the total EU grid spending) and €3.5 billion in transmission networks. The average investment needed for the EU's power grids in the 2021-2030 horizon has been estimated to be €60 and €110 billion per year.[73]

According to one recent study, rooftops could potentially produce enough solar electricity annually to meet 24.4% of the EU's current electricity consumption. But the study also acknowledged that high levels of penetration of rooftop solar into distribution networks "may lead to stability issues and distortions of the power system," and that the mitigation of such effects "will require wider use of battery systems coupled with intelligent control systems that utilise and store surplus power."[74]

The experience of Europe suggests that integrating variable sources of renewable power into the grid will continue to pose significant technical difficulties. There is already an extensive technical literature on the challenges posed by increasing the levels of variable renewable energy. The discussions around "system costs" have provoked sharp disagreements among those with specialized knowledge of the power sector and energy technologies.[75] For some, system costs are trivial; for others, they are very substantial. According to the International Energy Agency (IEA), "costs vary widely," and "a useful rule of thumb holds that grid infrastructure is a factor of ten cheaper than generation capacity," but overall

72 Bruno Lajoie, "Europe's interconnected electricity system: an in-depth analysis," *Medium*, Jun 8, 2018, https://medium.com/electricitymap/what-does-it-take-to-decarbonize-europe-d94cbed80878

73 Data cited by Eurelectric, see: https://cdn.eurelectric.org/media/4005/power-barometer-final-lr-h-3A4C4DC9.pdf. See also, European Commission, *2050 Long-Term Strategy*, https://ec.europa.eu/clima/policies/strategies/2050_en

74 "High penetration of rooftop PV into distribution networks may lead to stability issues and distortions of the power system. Rooftop PV generation exceeding the demand may rise the voltage. Typically, to mitigate this challenge, excess solar power production is curtailed. The mitigation of such effects will require wider use of battery systems coupled with intelligent control systems that utilise and store surplus power." From Bódis et al, "A high-resolution geospatial assessment of the rooftop solar photovoltaic potential in the European Union," *Renewable and Sustainable Energy Reviews*, Volume 114, October 2019, https://www.sciencedirect.com/science/article/pii/S1364032119305179

75 B.P. Heard, B.W. Brook, T.M.L. Wigley, C.J.A. Bradshaw, "Burden of proof: A comprehensive review of the feasibility of 100% renewable-electricity systems," *Renewable and Sustainable Energy Reviews*, 76 (2017) 1122–1133, https://www.sciencedirect.com/science/article/pii/S1364032117304495.

system costs can be as high as 15% of the cost of new capacity.[76] Another study noted, "These system changes and technology upgrades represent an extensive investment on the part of electric utilities, rate payers, and equipment manufacturers, and a huge change in the way the power system is operated and designed."[77]

Market Concentration and the Death Spiral

EU policy consistently references the fact the Europe's energy transition is, and will continue to be, "people-driven," and subject to the influence of a range of non-traditional market actors. But according to a 2019 study by the European Federation of Public Service Unions (EPSU) on the impact of 20 years of liberalization, electricity markets are dominated by a small number of pan-European companies, such as EDF, RWE, E.ON, ENEL, and ENGIE (known as "the Big Five").[78]

These companies are, however, facing what has been called the "utility death spiral." Electricity sales are falling, and a combination of falling profits and high levels of debt have led to the downgrading of many utilities' credit ratings.[79] For example, in 2018 RWE's net income fell by a staggering 83%, EDF's by 65%, and E.ON's by 22%.[80] In response, RWE and E.ON have split themselves into separate companies with old, 'sunset' activities like nuclear and fossil generation in one part, and continuing activities such as renewables, retail, and networks in the other.[81] EDF, which has a strong focus on nuclear power, is expected to divide its nuclear and renewable businesses. The financial pressure EDF is under also caused EDF's board to discuss the partial renationalization of EDF, whereby its nuclear operations would be renationalized.[82]

For many countries, the "death spiral" of incumbent utilities has sparked concerns about security of supply and system instability, and the loss of investor confidence, prompting policymakers in various EU member states to intervene in order to ensure that incumbents generate enough revenue to cover costs. These interventions have mainly taken the form of "capacity payments"—essentially "insurance" payments to electricity generators that allow them to keep their generation capacity available for those times when it may be needed, even when it is not actually being used.[83]

76 International Energy Agency (IEA), *Getting Wind and Sun onto the Grid: A Manual for Policy Makers*, 16 March 2017, https://webstore.iea.org/insights-series-2017-getting-wind-and-solar-onto-the-grid

77 Energy Policy Research Institute, "Power Generation Technology Data for Integrated Resource Plan of South Africa—Technical Update, April 2017," http://www.energy.gov.za/IRP/irp-update-draft-report2018/EPRI-Report-2017.pdf, p 293. See also, Darius Corbier, Frédéric Gonand, Marie Bessec, "Impacts of decentralised power generation on distribution networks: a statistical typology of European countries," *Working Papers from Chaire Economie du climat*, https://econpapers.repec.org/paper/cecwpaper/1509.htm

78 Vera Weghmann, *Going Public: A Decarbonised, Affordable and Democratic Energy System for Europe*, PSIRU, University of Greenwich, July 2019, https://www.epsu.org/article/going-public-decarbonised-affordable-and-democratic-energy-system-europe-new-epsu-report

79 Tomas, S., "Corporate performance of the Seven Brothers of the European energy market: Then there were five," *Utilities Policy,* Volume 50, February 2018, Pages 164-174, https://www.sciencedirect.com/science/article/abs/pii/S0957178717301534

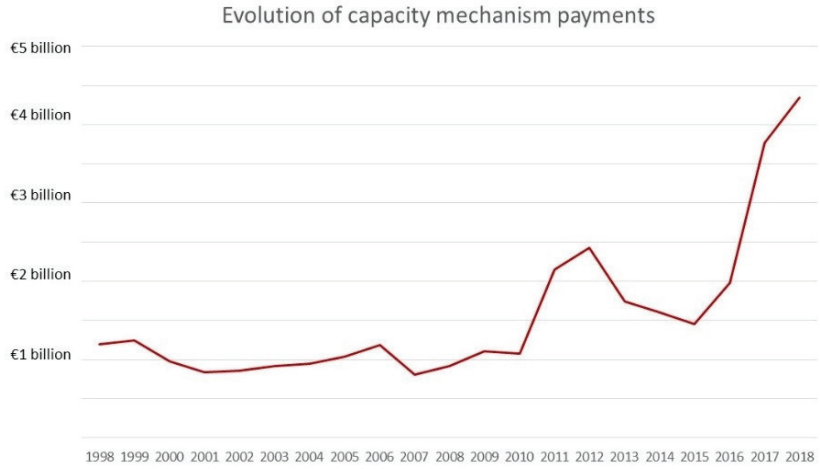
80 Weghmann, *Going Public*, Op. cit.

81 Tobias Buck, "Germany's €43bn energy shake-up wins market favour," *Financial Times*, March 12 2018, https://www.ft.com/content/d020a052-25e4-11e8-b27e-cc62a39d57a0

82 Adam Sage, "Unions fear break-up as EDF plans to renationalise nuclear operations," *The Times*, April 16 2019, https://www.thetimes.co.uk/article/unions-fear-breakup-as-edf-plans-to-renationalise-nuclear-operations-nx8p6bhrr

83 The UK government calculated that £100 billion of capital investment would be needed over a 10-year period needed to replace aging generation capacity and to meet the UK's carbon targets. According to the national regulator, OFGEM, increased risk across the power sector was a barrier to mobilizing investment at such high levels. See: OFGEM, "Press Release: Action Needed to Ensure Britain's Energy Supplies Remain Secure," Wednesday 3 February 2010, https://www.ofgem.gov.uk/ofgem-publications/76371/ofgem-discovery-phase-ii-draft-v15.pdf. See also: Department of Energy & Climate Change,

Capacity payments have led to a large transfer of funds to coal, gas, and nuclear interests. Without guaranteed capacity payments, there will be no investment in "base load" power. In the words of one source, in recent years "little or no investment in conventional plant has taken place, except where it had support via some form of capacity remuneration system."[84] Capacity payments are needed in order to "ensure sufficient reliable capacity is available by providing payments to encourage investment in new capacity or for existing capacity to remain open."[85]



Source: Greenpeace European Unit October 13, 2018[86]

Environmental groups in Europe have been severely critical of capacity payments for coal, gas and nuclear because such payments appear to be sustaining "dirty," "dangerous," and "uneconomical" energy. According to Greenpeace's European Unit, "From 1998 to 2018, these subsidies to old, unprofitable, and polluting power stations have cost consumers €32.6 billion. A number of European governments have already committed to a further €25.7 billion until 2040, with Belgium and Poland allocating the largest sums to date."[87]

But what, then, is the alternative to capacity payments? And how will investment levels be increased to the levels required to ensure security of supply? According to the European Commission, Energy Roadmap 2050, "massive investments" are needed in infrastructure:

> *The public sector might have a role as a facilitator for investment in the energy revolution. The current uncertainty in the market increases the cost of capital for low-carbon investment. The EU needs to move today and start improving the conditions for financing in the energy sector."*[88]

"Policy paper: 2010 to 2015 government policy: UK energy security," Appendix 5, https://www.gov.uk/government/publications/2010-to-2015-government-policy-uk-energy-security/2010-to-2015-government-policy-uk-energy-security#appendix-5-electricity-market-reform-emr

84 Malcolm Keay and David Robinson, *The Limits of Auctions: reflections on the role of central purchaser auctions for long-term commitments in electricity systems*, Oxford: Oxford Institute for Energy Studies, April 2019, https://www.oxfordenergy.org/publications/limits-auctions-reflections-role-central-purchaser-auctions-long-term-commitments-electricity-systems/

85 EMR Settlement Limited, *Capacity Market*, https://www.emrsettlement.co.uk/about-emr/capacity-market/

86 Greenpeace, "Media briefing: €58 billion in hidden subsidies for coal, gas and nuclear," September 13, 2018, https://www.greenpeace.org/eu-unit/issues/climate-energy/1508/media-briefing-e58-billion-in-hidden-subsidies-for-coal-gas-and-nuclear/

87 Ibid.

88 Energy Roadmap, 2050, page 16, PDF, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0885&from=EN

Again, capacity payments reflect the contradictions of the current "energy for profit" model where companies must sell enough electricity to generate "satisfactory" returns for investors.

Neoliberal policy has thus degenerated into a "subsidies for all" situation. The unplanned, *ad hoc*, and ultimately irrational nature of this "policy" has wreaked havoc on the entire system. Objectively, the FiTs were part of that chaos, as was the growth in the number of local and community energy initiatives. In retrospect, the FiT approach seems like a case of "trying to run before you can walk," and governments around the world, one after another, have stumbled into a policy quagmire.

Addressing these challenges will require a planned approach whereby the grid technologies and demand management innovations develop in tandem with the deployment of renewables. As the German Association of Local Utilities (VkU) recently noted, "Relevant amounts of renewables were not present when the current (neoliberal) market design was established. Therefore, the design that has evolved is not suitable for the necessary transformation of the system unless changes are made."[89]

Induced Coma

The EU's decision to move away from the FiT towards competitive auctions was therefore not simply a problem of "insufficient political will" or a "lack of climate ambition." Governments have slammed the brakes on developing renewables through a universal subsidy, but this is because relying on them to press forward to major penetration of renewables in Europe would have involved far higher levels of expenditure. Using FiTs to press forward to 40%, 50% or 60% renewables in Europe would have generated enormous additional costs. But, as we will see, without the FiTs, community energy has little space to grow.

The reasons behind the policy shift were both financial and technical. The proliferation of FiT contracts was about locking in 20-year revenue streams to small producers, but then the costs of the contracts were showing up in higher electricity bills. Electricity bills were further inflated when "incumbent" utilities attempted to recover the higher "system costs" incurred as a result of integrating renewables. Since "cheap" renewables exert a downward pressure on wholesale prices, this leads to only partial recovery of utility costs, and thus the utility raises the retail price (essentially, electricity bills or tariffs) in order to compensate for declining wholesale market revenues.[90]

Part Four: The New Reality and Beyond

Feed-in Tariff (FIT) schemes had provided generous incentives for owners of renewable generation. But despite some impressive gains in a few European countries, the contribution of local, community, and cooperative energy initiatives to overall energy system has overall been quite minor.

89 BET and enervis, "A Sustainable Energy Market Design for Germany (Condensed Version)," Verband kommunaler Unternehmen e.V. (German Association of Local Utilities), 26 June 2013, https://www.academia.edu/7514406/A_Sustainable_Energy_Market_Design_for_Germany

90 Gregor Erbach, "Understanding electricity markets in the EU," European Parliament Think Tank, 11 November 2016, https://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_BRI(2016)593519

But now a "new reality" is haunting Europe's energy transition. The policy shift from FiTs to competitive auctions has ensured that capacity additions in renewable energy have slowed dramatically. Community energy initiatives have not only slowed accordingly, but the system of competitive auctions means that the large renewable energy companies are competing directly for contracts, and individuals and communities are being largely squeezed out of the system altogether. Auctions normally lead higher market concentration and penalize small bidders. But auctions can be designed to "safeguard actor diversity (e.g. applying additional criteria benefitting smaller bidders or exemption rules allowing them to receive non-auction based support."[91] For example, in recent bidding rounds in Germany, "farmers and associations" have secured 20% or so of new capacity. However, the largest share (totaling around 60%) was secured by project developers and "institutional actors". Municipalities accounted for a little over 9%.[92]

Falling Bid Prices

Under the competitive auctions system, governments now decide on both the size and timing of capacity additions, and then oversee a process where renewable energy developers bid to secure long-term power purchase agreements (PPAs). Now that developers are expected to bid against each other, bid prices have fallen quite dramatically for several years in succession. By 2018, the price of power generated by solar PV had fallen 75% from the levels of 2009, and wind prices had fallen 50%.[93]

According to the European Commission, the decline in bid prices is one of the key drivers for an increase in corporate sourcing of renewables where "corporate energy users sign a direct power purchase agreement with a renewable energy developer. Over the period from 2015 to 2018, corporate power purchase agreements for renewable electricity in Europe quadrupled from 506 MW to 1,967 MW."[94]

It is important to note that countries beyond Europe have also phased out their FiT schemes in favor of auctions. Therefore, falling bid prices are today a global phenomenon. The introduction of auctions goes a long way towards explaining the recent global fall in renewable energy bid prices, but it is also true that technological improvements and economies of scale have made a significant contribution, as have historically low borrowing costs (interest rates).

But one of the consequences of the bidding system is that it has led to tighter profit margins. As a result of both a slowing down in capacity additions and falling profits, investment in renewable energy in Europe has fallen dramatically, while global investment levels are also trending downwards.

91 Mora Alvarez, DF, Kitzing, L, Soysal, ER, Steinhilber, S, del Río, P, Wigand, F, Klessmann, C, Tiedemann, S, Blanco, ALA, Welisch, M, Kreiß, J, Fitch-Roy, O & Woodman, B, "Auctions for renewable energy support - Taming the beast of competitive bidding," *AURES*, 2017, https://orbit.dtu.dk/en/publications/auctions-for-renewable-energy-support-taming-the-beast-of-competi

92 Fabian Wigand and Silvana Tiedemann, Ecofys Germany GmbH, "Webinar #7: Specific Design Elements for RES Auctions: Ensuring Actor Diversity," AURES, https://youtu.be/ag5I9FDhths?t=609

93 European Commission, *Renewable Energy Progress Report*, Brussels, 9.4.2019 COM(2019) 225 final, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019DC0225&qid=1559033163855&from=EN

94 Ibid.

On the Margins Nearly Everywhere

Before we look at community energy in specific EU Member States like Denmark, Germany, the UK, and Spain, it should be kept in mind that these are generally considered to be the most promising examples. This is certainly true of Germany and Denmark.

Outside of this small group of countries local and community energy has remained marginal in relation to the EU's total electricity generation and use. For example, while Denmark's windmills supply roughly 47% of the country's annual electricity demand, in the Netherlands renewables meets just 6.6%—which means community energy is a subset of an already small part of the country's energy system. As we have seen, "modern renewables" (mostly wind and solar) account for a little less than 16% of the EU electrical power generation over the course of the entire year.[95] Almost half (49.0 %) of the net electricity generated in the EU-28 in 2017 came from combustible fuels (such as natural gas, coal, and oil), while a quarter (25.0 %) came from nuclear power stations. In 2017, wind generated 11.4 % of the EU 27's electricity, while solar power contributed just 3.8%.[96]

A May 2018 paper looking at how to advance "prosumerism" in solar PV presented data for eight EU countries: Austria, Belgium, France, Germany, Italy, the Netherlands, Portugal and Spain. The study looked at the share of solar PV in meeting overall electricity demand for the years 2015, 2016, and 2017.[97] Of the 8 countries studies, PV penetration surpassed 7% only in Germany (with a high of 7.5% in 2017) and Italy (a high of 7.9% in 2015—but down the next year to 7%). In only two other countries did it exceed 3%: Belgium (3.7% in 2015) and Spain (3.6% in both 2015 and 2017). It reached 2.2% in the Netherlands (2017), but never surpassed 2% in Austria, France or Portugal. Again, this is for total solar PV in each country, so the share from local community-based generation will be a smaller subset (and often difficult to determine with any precision).

Importantly, the authors note that PV prosumerism faces a number of serious obstacles, stating that "collective self-consumption [of solar PV—i.e., "PV prosumerism"], regardless of scale… is currently not feasible in most countries." As they explain, "Although PVP concepts that use the public grid to sell excess PV electricity to third parties are legally allowed, such schemes are hardly ever operational in real life, due to economic, administrative and regulatory barriers."[98]

The situation is even less encouraging in "post-socialist Europe." In a paper attempting to answer the question, "Is community energy really non-existent in post-socialist Europe?" the authors found that, of sixteen countries studied, in only one (Croatia) did "community energy" have any meaningful presence as of January 2019 according to the authors' criteria: first, "collective legal ownership and democratic governance" and second "having other-than-profit goals."[99] In five others, the authors found "a limited and rather small-scale scope" of projects. In none of the remaining ten countries did the authors find even one project that satisfied their two criteria.[100]

95 Eurostat, "Electricity production, consumption and market overview — Figure 3: Net electricity generation, EU-28, 2017," Op. cit.
96 Ibid.
97 Georg Lettner et al, "Existing and Future PV Prosumer Concepts," PVP4Grid, May 2018, funded under the European Union's Horizon 2020 research and innovation programme, https://www.pvp4grid.eu/wp-content/uploads/2018/12/D2.1_Existing-future-prosumer-concepts_PVP4G-1.pdf
98 Lettner et al, "Existing and Future PV Prosumer Concepts,"
99 Capellán-Pérez, Johanisovac, Young, and Kunzef, "Is community energy really non-existent…"
100 *Ibid.*

The CE Delft study referenced in Part Two estimated that 113 million EU citizens could potentially be generating their own electricity, enough to cover 45% of their needs. But how many are currently doing so?

According to the *Final Report of the High-Level Panel of the European Decarbonisation Pathways Initiative*, "In 2015, there were 4.8 million EU household prosumers and 620,000 collectives, and it can be expected that around half of EU households will be prosumers (either individually or collectively) by 2050."[101] The report does not indicate the source of its 4.8 million households estimate. Neither does it explain what is meant by "collectives." However, if these numbers are accurate, then the number of households generating renewable power today is just a small fraction of the 133 million citizens who the Delft study claims have the potential to be prosumers or participants in local initiatives. This again draws attention to the distance between the technical potential of self-generation and self-consumption and the current reality.

Denmark

Denmark is often recognized as an early pioneer in advancing local control of renewable energy. Citizen ownership, in both individual and collective forms, has played a significant role in the country's wind sector for many years. As early as the 1970s, wind turbines were seen as key to the country's energy security following the oil crises. Favorable economics in the face of high oil prices also played into their scaling up.[102] Although citizen investment in wind turbines was actively promoted, this was limited by proximity requirements (i.e., citizen owners had to be near the windmills in which they owned shares) and by consumption requirements (where ownership share in cooperatively owned assets was tied to household consumption levels).

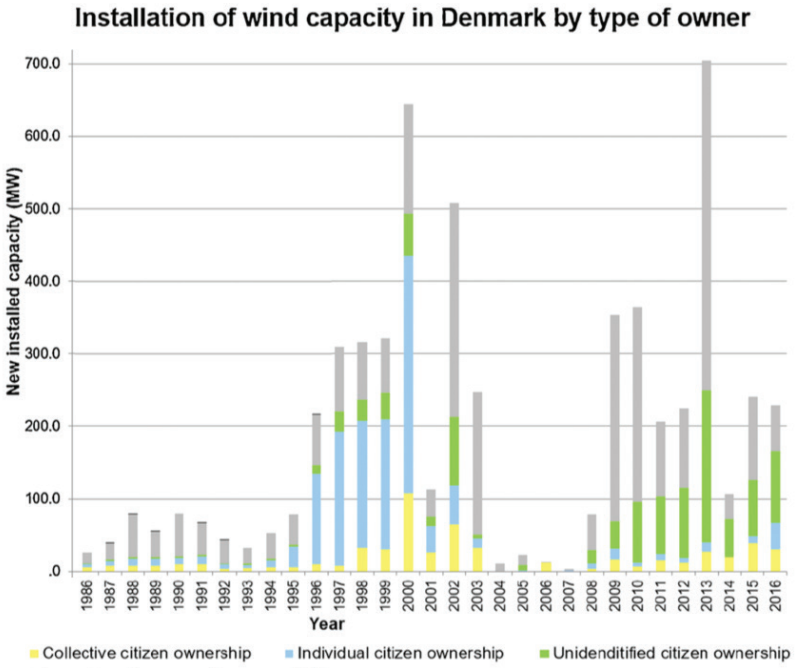
A subsequent loosening of these restrictions, and the introduction in 1992 of a Feed-in Tariff program with guaranteed interconnection and purchase at a "fair price" of 85% of retail and other protections, led to a surge in citizen ownership. This became the dominant form of ownership in the mid-1990s.[103]

By 2002, according to a statistical analysis of the role of energy cooperatives in the energy transition in Europe, such cooperatives owned about 40% of installed turbines in Denmark, with participation by roughly 150,000 households.[104] But as the authors of that analysis note, a center-right Danish government elected in 2002 announced the end of the FiTs, arguing that wind was "mature enough as a technology to not warrant further government support." The new government also "pushed for market liberalization as an attempt to increase competition and lower consumers' electricity costs." The elimination of the FiT brought a "substantial decrease in wind energy cooperatives," with larger energy companies winning out.

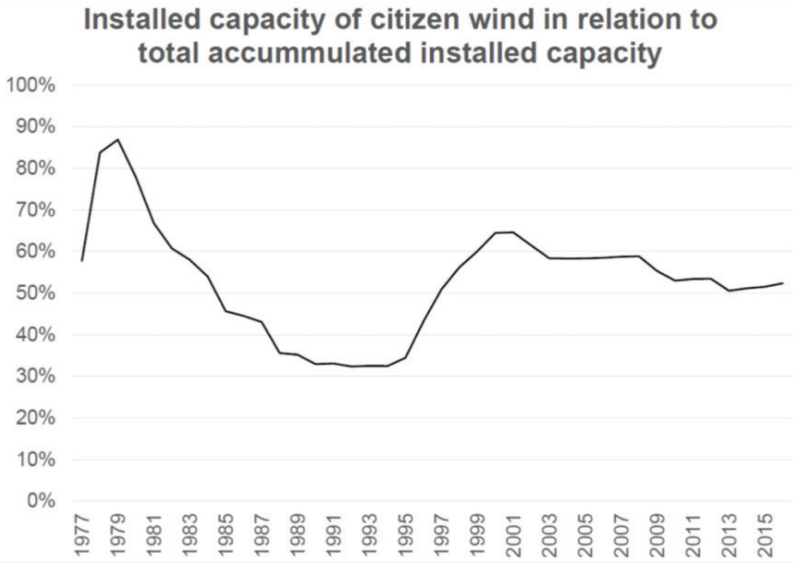
Since roughly 2003, citizen ownership has accounted for 50-60% of the country's total wind generation capacity. As of 2016 this amounted to roughly 5GW. *Individual* citizen ownership accounted for

101 Final Report of the High-Level Panel of the European Decarbonisation Pathways Initiative, November 2018, https://op.europa.eu/en/publication-detail/-/publication/226dea40-04d3-11e9-adde-01aa75ed71a1
102 Gorroño-Albizu et al, "The past, present and uncertain future," Op. cit.
103 Ibid.
104 A. Wierling, V.J. Schwanitz, J.P. Zeiß, C. Bout, C. Candelise, W. Gilcrease, J.S. Gregg, "Statistical evidence on the role of energy cooperatives for the energy transition in European countries," Sustainability, 2018, 10(9), 3339; https://doi.org/10.3390/su10093339.

between 23% and 41% of installed capacity, and *collective* citizen ownership between 11% and 30% (with the ranges being due to uncertainty over the specific form of a substantial share of citizen ownership).[105]



Source: Gorroño-Albizu et al, Op. cit.



Source: Gorroño-Albizu et al, https://doi.org/10.1016/j.erss.2019.101231

105 Gorroño-Albizu et al, "The past, present and uncertain future," Op. cit.

In 2009, the Danish Renewable Energy Act (DEA) introduced a FiT scheme for wind as well as several other renewable technologies, unleashing a new burst of investment. The DEA also introduced measures to promote the development of small-scale, grid-connected renewable energy, and a requirement that developers of new wind projects offer 20% of shares to local residents at *cost price*.[106] As a result, citizen ownership—both individually and through cooperatives—saw a new burst of growth as part of the broader surge in investment.

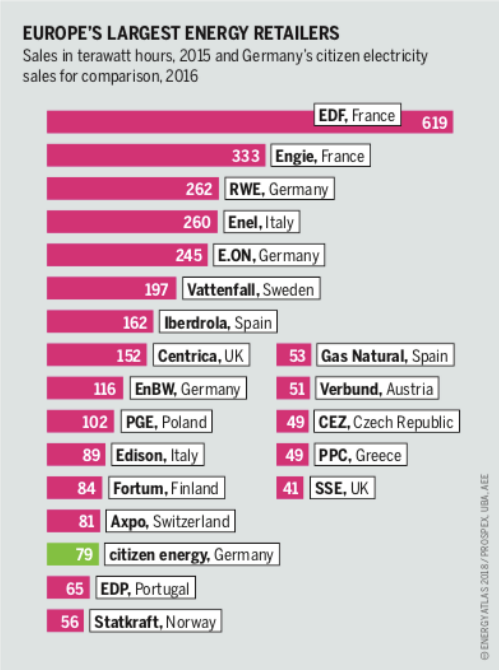
At the same time, the actual *number* of cooperatives involved in the Danish wind sector has fallen dramatically—from a peak of 931 in 1999, to well under 200 by 2015. Of the 1,109 cooperatives that were established in Denmark, just 12% of these continue to operate.[107] By 2010, only 15% of all wind turbines in Denmark were owned by cooperatives.[108]

More broadly, the overall share of citizen involvement in the country's wind sector is now declining. As of 2018, 1,711 MW of existing wind turbines were at least 15 years old.This aging segment of the country's fleet is responsible for 69% of all citizen ownership.[109] Recent changes in government policy favor large projects better suited to large investors than local citizens and cooperatives: "Beginning in 2019, onshore will be ruled by tendering processes for all sizes of wind farms, which means that cooperatives will be placed at an even greater disadvantage against large-scale developers."[110] If assets owned by large investors replace all of the aging citizen-owned capacity, the share of all citizen ownership of wind in Denmark (whether cooperative or individual) will fall to just 20% by 2023–2028.[111]

Germany

In Germany, the early 2000s saw a remarkable boom in wind and solar deployment, with substantial participation by community groups. The early years saw the formation of more than 1,000 cooperatives nationwide.[112] By 2011, more than half of total investments in renewables had been made by small investors.[113] In 2012, Germany could boast around one-third of all the world's installed solar capacity.[114] Between 2012 and 2016, according to the *Energy Atlas 2018*, total community energy ownership of renewables rose from 34GW to 42GW[115]—a rise of 23.5% over four years (although this is based on a "broad definition of community energy"[116]). In 2016, "citizen energy" in Germany provided some 79 terawatt hours (TWh) of electricity (roughly a third of power generated from renewables) placing it as the 14th largest energy supplier in Europe, not far behind Italy's second-largest electricity seller that year, and the largest sellers in both Finland and Switzerland. By the end of 2017, Germany had installed roughly 1.64 million solar arrays in total.[117]

106 K. Johansen, J. Emborg, Wind farm acceptance for sale? Evidence from the Danish wind farm co-ownership scheme, Energy Policy 117 (2018) 413–422, https://doi.org/10.1016/j.enpol.2018.01.038.
107 A. Wierling et al. "Statistical evidence," Op. cit.
108 Ibid.
109 Gorroño-Albizu et al, "The past, present and uncertain future," Op. cit.
110 A. Wierling et al. "Statistical evidence," Op. cit.
111 Gorroño-Albizu et al, "The past, present and uncertain future," Op. cit.
112 L. Michael Buchsbaum, "German renewable energy cooperatives struggle as markets collapse," 19 June 2019, https://energytransition.org/2019/06/german-renewable-energy-cooperatives-struggle-as-markets-collapse/
113 Borbonus, "The German Energiewende under pressure," Op. cit.
114 REN21, Renewables 2015 Global Status Report, https://www.ren21.net/wp-content/uploads/2019/05/GSR2015_KeyFindings_ENGLISH.pdf
115 Heinrich Böll Foundation, Friends of the Earth Europe, the European Renewable Energies Federation, and the Green European Foundation, *Energy Atlas 2018*, April 2018, https://www.boell.de/en/2018/04/24/energy-atlas-2018-figures-and-facts-about-renewables-europe
116 Tounquet et al, "Energy Communities in the European Union," Op. cit.
117 Benjamin Wehrmann, "Solar power in Germany – output, business & perspectives," Clean Energy Wire, 22 Sep 2018, 15:06, https://www.cleanenergywire.org/factsheets/solar-power-germany-output-business-perspectives. See also: Clean Energy Wire, *Gross Power Production in Germany 2000-2019*, https://www.cleanenergywire.org/factsheets/germanys-energy-con-



Source: Energy Atlas 2018[118]

Of total citizen investments, 54% comes from individuals, 26% from shareholdings in renewable projects, and 20% from cooperatives.[119]

In order to put Germany's achievement in context, and assess the likelihood of its further expansion, we must review the historical policy context and dynamics.

As was the case elsewhere, an important "pull factor" for German renewables was the "feed-in-tariff" (FiT). The liberalization of the country's electricity sector in 1998, and the introduction of the German Renewable Energy Sources Act (EEG) in 2000, significantly altered the terrain on which subsequent developments would unfold. The EEG introduced the country's FiT scheme. It ensured priority dispatch for renewable generation and provided contracts that locked in revenues to producers for 20 years. These changes were supported by a broad coalition of green groups and renewable advocates, along with industry organizations from the metal and machine-building sectors.[120] However, industrial users tended to be exempt from the "renewables surcharge." In 2013, the total electricity-related privileges granted to industry added up to 16.8 billion euros. By contrast, the sum of the renewables differential passed on to households and small businesses amounted to 20.4 billion euros in 2012.[121]

sumption-and-power-mix-charts

118 Heinrich Böll Foundation et al, *Energy Atlas 2018*, Op. cit.

119 Trend Research, "Definition und Marktanalyse von Bürgerenergie in Deutschland," Bremen [u.a.], 2013, https://nbn-resolving.de/urn:nbn:de:kobv:109-opus-210754, cited in Curtin et al, "How can financial incentives promote local ownership of onshore wind and solar projects? Case study evidence from Germany, Denmark, the UK and Ontario," *Local Economy*, 2018, Vol. 33(1) 40–61, https://journals.sagepub.com/eprint/Uehz8BaZmW4FgKnR7EeJ/full.

120 Heinrich Böll Foundation et al, *Energy Atlas 2018*, Op. cit.

121 Borbonus, "The German Energiewende under pressure," Op. cit.

Policy support for renewables also increased pressure on the power utilities—especially in the wake of the financial crisis of 2007-2008, which led to a fall in both demand and revenues from electricity sales.[122] An expanding share for renewables also reduced the market share of "incumbent" companies, creating the kind of "death spiral" discussed in Part Three. The "death spiral" has thrown many incumbent companies into a precarious economic position in other parts of the world.

In Germany, the increase in renewable energy generation lowered wholesale prices through the so-called "merit-order effect." Put simply, renewables get to the front of the line, or enjoy "first priority" status in terms of selling power into the grid. And because solar and wind power tend to be produced in bursts lasting minutes, hours, or days, the wholesale prices can fall dramatically as a result.[123] E.ON, Germany's biggest utility, saw its share price fall by three-quarters from its peak, while the company's income from conventional power generation (fossil fuels and nuclear) has fallen by more than one third since 2010. RWE, the second-largest utility, saw its income fall by a third between 2010 and 2012 alone.[124] In total, utility share prices fell 60-70% between 2008 and 2013.[125]

Faced with such an existential threat, the utilities fought back. They ultimately won exemptions to some charges imposed under the EEG, leaving households to carry more of the costs associated with the program[126]—an issue to which we will return below.

As in Denmark, Germany's FiT was ultimately phased out and replaced by a system of competitive auctions. By 2015, this involved 3 or 4 bidding rounds each year for wind and solar PV. Small-scale installations were exempted from some up-front costs associated with the planning process. According to reports, this approach "resulted in a high competition in the auction."[127] For one auction round, 256 bids amounting to 2,137 MW of capacity were received; from this pool, 70 bids totaling 807 MW of capacity were accepted. Of the winning bids, 65 were from citizens' energy companies, reportedly accounting for 96% of the awarded capacity (775 MW in all).[128]

As noted by one team of authors, however, questions have been raised, about "how 'community' these successful community wind projects actually are."[129] This is because the country's latest EEG relies on a new definition for community wind projects, which requires that just 51% of voting rights be held by community members in the vicinity of the proposed project, raising the possibility that "loopholes in the law might allow large investors to misuse the opportunity offered to community actors."[130]

Cooperatives in Germany have so far fared better than those in Denmark, and many of these will

122 EEA, *Renewable energy in Europe 2018*, Op. cit.
123 Borbonus, "The German Energiewende under pressure," Op. cit.
124 The Economist, "How to lose half a trillion euros: Europe's electricity providers face an existential threat," Briefing, 15 October 2013, https://www.economist.com/briefing/2013/10/15/how-to-lose-half-a-trillion-euros
125 WirtschaftsWoche, May 6, 2004, cited by Geels et al, "The enactment of socio-technical transition pathways: A reformulated typology and a comparative multi-level analysis of the German and UK low-carbon electricity transitions (1990–2014)," Research Policy, Volume 45, Issue 4, May 2016, Pages 896-913, https://www.sciencedirect.com/science/article/pii/S0048733316300087
126 Geels et al, Op. cit.
127 The Beam, "Has Germany Proven That Auction Schemes Can Work For Community Energy?" CleanTechnica, September 14th, 2018, https://cleantechnica.com/2018/09/14/has-germany-proven-that-auction-schemes-can-work-for-community-energy/
128 Vasilios Anatolitis, Marijke Welisch, "Putting renewable energy auctions into action – An agent-based model of onshore wind power auctions in Germany," Energy Policy, 110 (2017) 394–402, http://dx.doi.org/10.1016/j.enpol.2017.08.024
129 The Beam, "Has Germany Proven That Auction Schemes Can Work…" Op. cit.
130 Ibid.

presumably continue for some time as existing long-term contracts remain in place, but the future beyond that is very uncertain.

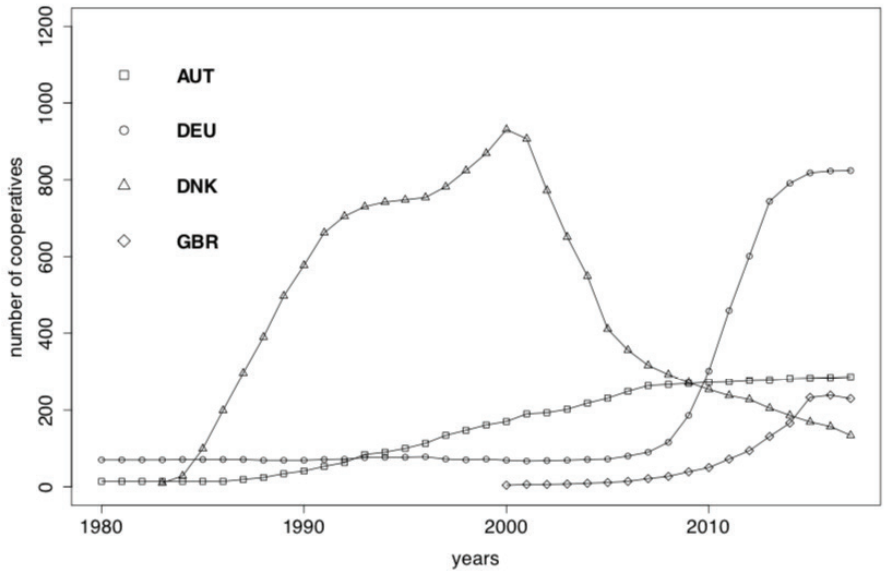


Figure 1. Number of energy cooperatives in Austria (AUT), Germany (DEU), Denmark (DNK) and Great Britain (GBR) for a given year. Source: database compiled by authors, for original sources see Table 1 and methods section.

Source: Wierling et al, Op. cit.

For onshore wind in particular, the situation in Germany has become quite grave. According to one account, "The accelerating downward pressure on onshore wind energy expansion in Germany is paralyzing the industry. Community-owned renewable producers have been hit hardest, and elbowed out of the few markets that remain."[131] With just 194 megawatts of new onshore wind capacity installed during the first five months of 2019, "expansion has plummeted to the lowest level since the beginning of the *Energiewende*" while in Germany's largest and most industrialized state, North Rhine Westphalia, "wind energy expansion is in free-fall, slumping an alarming 95 percent."[132]

Recent policy changes have also hit community solar projects hard. According to the latest annual survey of energy cooperatives by the main German cooperative auditing association, DGRV, reductions in support for roof-mounted solar PV systems have led to a sharp fall in willingness among cooperatives to invest in solar projects, from 71 percent in 2018 to just 54 percent in 2019.[133]

The United Kingdom

In the UK, early efforts to promote the deployment of renewables beginning in the early 2000s favored large players over local and community projects. The introduction of a Renewables Obligation

131 Buchsbaum, "German renewable energy cooperatives struggle as markets collapse," Op. cit.
132 Ibid.
133 Deutscher Genossenschafts- und Raiffeisenverband e. V., Annual survey of energy cooperatives, 2019, https://www.dgrv.de/weben.nsf/web/annualsurveyenergycooperatives

(RO) in 2002 was based on a "technology neutral" system of trading the RO credits (ROCs). This meant that large-scale projects such as onshore wind and landfill gas enjoyed advantages over smaller ones (through economies of scale). This was because larger projects were, "easier to manage for utilities with deep pockets."[134] Small-scale producers such as cooperatives and citizen groups as well as smaller independent commercial producers "raised concerns about this discrimination and proposed 'bands' for different RETs," but officials rejected their proposals, arguing that "governments should 'not pick winners' but leave technology choices to the market."[135]

In 2007, the UK government signed on to the EU's "20-20-20 targets." This included a target for 20% renewables in energy consumption by 2020. The subsequent adoption of the 2008 Climate Change Act legally committed the UK to an 80% GHG reduction by 2050, and a 34% reduction by 2020. The FiT was introduced in 2010, "with the aim of allowing distributed generation and empowering people by giving them a direct stake in the transition." It also "made distributed energy projects more profitable with relatively low risk by allowing stable returns on the investments." In addition to the FiT, community energy in the UK has also benefitted from key tax breaks, allowing for income tax refunds of 30-50% of investments. This was designed to support the deployment of small- and medium-scale renewables (below 5MW).[136]

These policies led to a flurry of local and community energy initiatives, and a rapid rise in the number of cooperatives in the period 2010-2015.[137] According to a 2016 report from the Institute for Public Policy Research (IPPR), more than 5,000 community energy groups had been formed in the UK. These "have benefited localities by reducing energy bills, investing in energy efficiency, providing advice to those in fuel poverty, creating jobs, and contributing over £23 million to community benefit funds."[138]

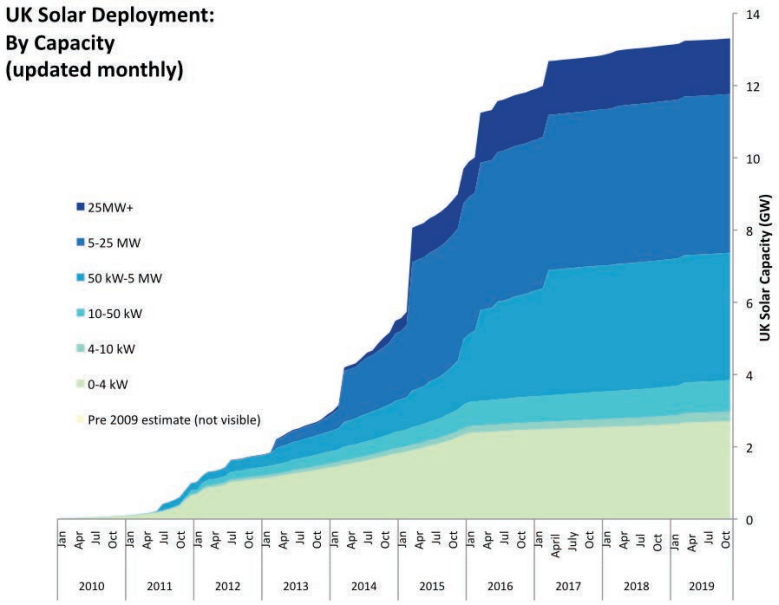
But these 5,000 initiatives accounted for just 60MW of renewable generating capacity in 2016. By 2018, this total more than tripled, to 188MW (121MW for England, Wales and Northern Ireland, and another 67 MW in Scotland, the latter mostly wind-based).[139] But this is still a miniscule quantity (0.4%) of the country's 46.9 GW of total renewable generation capacity, and an even smaller share of total generation capacity from all sources.[140]

A look at UK solar in particular also gives a sense of how local and community projects fit into the overall energy system. According to the most recent data from the UK Government, by November 2019, the UK had a total of 13,306 MW installed solar capacity. That total reflected an increase of just 1.5% (201.5 MW) from one year prior. Growth for solar at all scales was slowing as a result of the ending of the FiT scheme at the end of March 2019.[141]

Of the UK's total installed solar PV capacity, nearly 45% is attributable to just 459 large installations of 5MW or larger. Most local and community projects are much smaller (below 4kW). These account for

134 Geels et al, Op. cit.
135 Geels et al, Op. cit.
136 A. Wierling et al. "Statistical evidence," Op. cit.
137 Ibid.
138 Laybourn-Langton, *Community and local energy: Challenges and opportunities*, Op. cit.
139 UK Energy Research Centre (UKERC), The Evolution of Community Energy in the UK, September 2018, http://www.ukerc.ac.uk/publications/evolution-of-community-energy-in-the-uk.html
140 UK Department for Business, Energy & Industrial Strategy, "UK Energy Statistics, 2019 Q3," https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/791297/Press_Notice_March_2019.pdf
141 UK Department for Business, Energy & Industrial Strategy, "Solar photovoltaics deployment," Update Version 19 December 2019: November 2019 Solar PV stats published, https://www.gov.uk/government/statistics/solar-photovoltaics-deployment

just 20.3% (2.7 GW) of the country's total installed solar PV capacity.[142] And since all UK solar provided less than 4% of the UK's total power generation in 2018, the contribution of a million or so small installations falls well short of 1% of the country's power generation capacity.



Source: UK Government BEIS, https//www.gov.uk/government/statistics/solar-photovoltaics-deployment

According to a September 2018 report from the UK Energy Research Center (UKERC), the UK's FiT, played a major role in incentivizing community energy (and renewables generally).[143]

In 2011, expressing concern about rising FiT-related costs, the Office of Gas and Electricity Markets (OFGEM, the national regulator)[144] reported that £1.1 billion in taxpayer subsidies was paid to producers of renewable energy in 2009-10. Of this, about £522 million was for wind power.[145]

The rising cost of subsidies was not the only problem identified by OFGEM. In 2009, the regulator warned that replacing the country's aging generation capacity and meeting the UK's carbon targets would require £100 billion of capital investment over a 10-year period.[146] Both OFGEM and the Government therefore concluded that energy market reform (EMR) was needed. They argued that without reform the UK risked a major capacity crisis over the medium to long term. In other words, there was not enough investment in the energy sector to guarantee that retired capacity would be replaced. Something therefore had to be done to address the investment deficit.

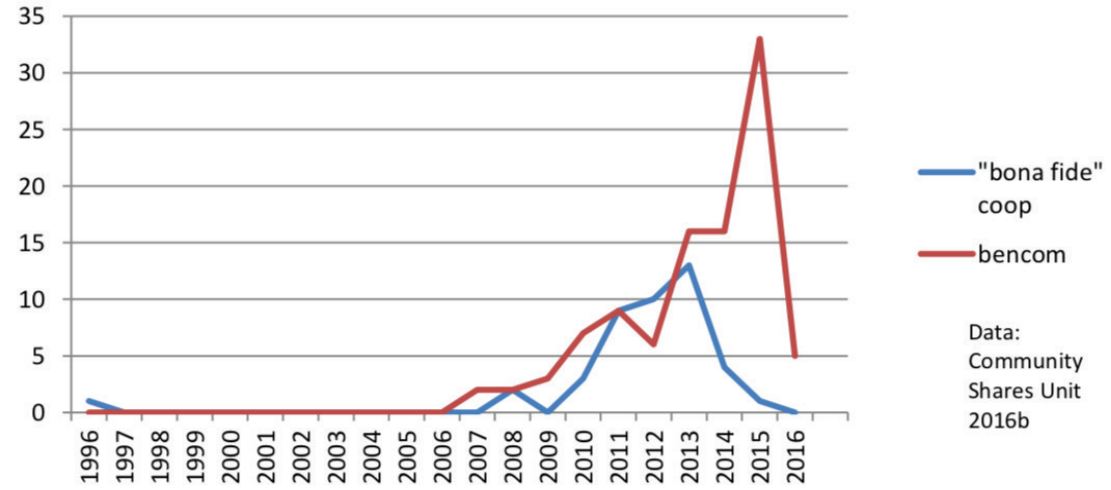
142 Ibid.
143 UKERC, *The Evolution of Community Energy in the UK*, Op. cit.
144 According to the European Commission, "the regulator will need to ensure effective and non-discriminatory access to the transmission and distribution networks for electricity and gas. The regulator controls tariffs in order to prevent unduly high tariffs. Regulators often also have other tasks which relate to the efficient functioning of the market and ensuring competition, as well as the protection of consumer interests." See: European Commission, *Questions and answers,* MEMO/07/362, Brussels, 19 September 2007, http://europa.eu/rapid/press-release_MEMO-07-362_en.htm
145 Patrick Hennessy, "101 Tories revolt over wind farms," *Telegraph*, 04 Feb 2012, http://www.telegraph.co.uk/news/politics/9061997/101-Tories-revolt-over-wind-farms.html
146 OFGEM, "Press Release: Action Needed to Ensure Britain's Energy Supplies Remain Secure," Wednesday 3 February 2010, https://www.ofgem.gov.uk/ofgem-publications/76371/ofgem-discovery-phase-ii-draft-v15.pdf.

But why was there not enough investment? According to OFGEM, one of the problems was "increased risk" alongside "the uncertainty in future carbon prices" (i.e., the carbon price under the EU ETS had failed to change investment patterns) along with the fact that "short-term price signals at times of system stress do not fully reflect the value that customers place on supply security."[147] In other words, the entire power generation sector—from the incumbent fossil-powered and nuclear utilities to the newcomer solar and wind companies—was saturated in risk. Investors would need to be pulled back into the energy sector, and that meant eradicating risk for all suppliers.

The subsequent scaling back or removal of the FIT in the UK marked a major setback for community energy. According to the Renewable Energy Association (REA) the ensuing years became "the most challenging time the nascent renewable energy industry has ever faced."[148]

The full impact of the closing of the UK's FIT scheme is still to be seen. But there has already been a sharp fall in the creation of both traditional cooperatives and "community benefit societies" ("bencoms"). The latter became a preferred mechanism for organizing community renewable energy projects in the UK following a 2014 legal requirement change for cooperatives. This led to a brief period in which the creation of cooperatives plummeted while bencoms surged. Even this provided no immunity to the bencoms against the effects of the elimination of financial supports (FiTs, tax breaks, etc.), and the surge collapsed.[149]

Figure 4.3 Registrations of community energy cooperatives over time[8]



Source: UKERC[150]

147 Department of Energy & Climate Change, "Policy paper: 2010 to 2015 government policy: UK energy security," Appendix 5, https://www.gov.uk/government/publications/2010-to-2015-government-policy-uk-energy-security/2010-to-2015-government-policy-uk-energy-security#appendix-5-electricity-market-reform-emr

148 UKERC, *The Evolution of Community Energy in the UK*, Op. cit.

149 According to UKERC, the shift in preference from cooperatives to bencoms, "was linked to the Cooperative and Community Benefit Society Act 2014, which stipulated that the members of cooperatives should be able to participate directly in the business of the Society. Following this, the Financial Conduct Authority began refusing to register energy groups as cooperatives (Vaughan 2014). As clarified in subsequent guidance from DECC (2015), given that most community energy groups sell any energy they generate to the national grid rather than directly to their members, this meant that community energy groups had henceforth to register as community benefit societies, to which no such member participation rule applied. Further points about charitable tax status being open to community benefit, but not cooperative, societies, also drove the rise of 'bencoms'." See: UKERC, Op. cit.

150 UKERC, *The Evolution of Community Energy in the UK*, Op. cit.

In Scotland, as of early 2015 there were twelve commercial renewable energy projects operating that involved some kind of community investment. Seven of them had participation of local development organizations and five had participation of cooperatives. Most are onshore wind farms; the rest being biomass. According to one account, taken together these projects "account for just over 21 MW of current operational Scottish community renewables capacity."[151] By way of comparison, at the start of 2019, Scotland had 11.0 GW of installed renewable electricity capacity.[152]

Local projects today are also finding it difficult to access the financing necessary to bring projects to fruition. According to one study commissioned by the Scottish Government's Onshore Renewables and Community Energy Team, a major reason for this is community investment "usually necessitates debt finance and the repayment of debts before any revenues become noticeable for community members."[153] For some communities, access to finance has proven to be "an insurmountable hurdle." Given the difficulties and risks associated with large loans, some have "preferred to accept community benefit payments and receive a guaranteed income without the risks that community investment involves."[154]

The difficulties facing community investment have also led to calls to "diversify the number of shared-investment models available." This has led to some recent growth in co-operatives in Scotland, where the needed capital is put up by individuals rather than community groups. While this option "can eliminate the need for debt finance," it also limits participation to "those individuals with sufficient savings to invest," which could "potentially undermine social cohesion if some community members are benefiting whereas others are not."[155]

Spain

Like Germany, Denmark, and the UK, Spain has also witnessed serious and sustained efforts to advance both local and community control over energy and the shift away from fossil fuels.

Electricity prices for big consumers in Spain are lower due to government concern that electricity should not be a factor that will adversely affect the competitiveness of Spanish companies.

Attractive FiTs in Spain led rapid growth in wind deployment from 2002-2012. Almost 23GW of wind capacity was installed, a roughly 1000% increase over the 10-year period. For solar, the government had anticipated that 500MW of new capacity would come online. The FiT actually led to deployment of seven times that amount: 3.5GW of new solar capacity. But with that additional capacity, the "tariff debt" thus incurred also grew dramatically. The FiT did not account for all of the 26 billion Euro "tariff debt," but austerity policies pursued by the government made renewables a target for cuts in subsidy support. As a result, the government needed a 2012 cash infusion from the European Stability Mechanism to the tune of 100 billion Euros.[156]

151 Claire Haggett et al, "Supporting Community Investment in Commercial Renewable Energy Schemes: Final Report," January 2015, https://www.researchgate.net/publication/270897088_Supporting_Community_Investment_in_Commercial_Renewable_Energy_Schemes_Final_Report
152 UK Department for Business, Energy & Industrial Strategy, "UK Energy Statistics, 2019 Q3," https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/853598/Renewables_Q3_2019.pdf
153 Haggett et al, "Supporting Community Investment in Commercial Renewable Energy..." Op. cit.
154 Ibid.
155 Ibid.
156 Bruno Estrada López, "Energy transformation under the pressure of austerity: the case of Spain," in Béla Galgóczi, ed.,

In October 2012, rising prices for domestic electricity in a context of low wages and increasing unemployment led thousands of small consumers to join together to form a Consumers Association to participate in an energy auction. Membership reached approximately 400,000. In subsequent years, popular engagement around energy has continued.[157] By 2015, building on the popular anti-austerity movement "15-M" and a wave of progressive municipal election victories, citizen-led initiatives were making bold efforts to assert greater citizen participation in energy. They did this to combat rising electricity prices, tackle energy poverty and systemic inequalities, and make aggressive moves towards increasing the share of renewables in the energy mix.

New municipal electricity companies have been set up in cities such as Barcelona, Pamplona, and Palma de Mallorca, and there have been determined efforts to strengthen opportunities collaboration and shared learning across municipalities.[158] In the words of one researcher, "Hundreds of cities are now also contracting renewable energy cooperatives, such as Som Energia and GioEner, with some municipalities agreeing to pay the electricity bills for the poor families in their area."[159] In Barcelona, the new energy retailer set up by the new governing citizen council has launched a system of tariffs to promote self-sufficiency and efficiency, and is now serving an estimated 20,000 households.[160]

These efforts must be recognized as among the most impressive and inspiring efforts anywhere in relation to reclaiming energy to public and democratic control. But it is also essential to view them in context. These efforts currently stand on the periphery of the Spanish energy system, and they have run up against major structural impediments. Among these, significant policy changes in recent years—enacted in part due to the considerable financial pressure the country has faced—have earned the country headlines calling it a "Case Study in How Not to Foster Renewables," with reports that these policy shifts have led to annual drops in revenue for the renewable energy industry of 30% per year in recent years, leading to 75,000 job losses since 2008.[161]

Against that challenging backdrop, cooperative energy efforts have especially struggled. Participation in public bidding requires expertise and resources that are beyond the reach of most cooperative and community-based efforts. Additionally, most contracts have technical requirements for solvency and financial guarantees that they cannot meet. Representatives of these projects are reportedly urging the government to issue smaller tenders aimed specifically at local and community efforts. According to one researcher, achieving the critical mass necessary for serious penetration of the country's existing energy markets is currently beyond the reach of local projects and small producers.[162]

Europe's energy transformation in the austerity trap, European Trade Union Institute, 2015, Op. cit.

157 Ibid.

158 Lavinia Steinfort, *The Future is Public: Working Paper 13*, Op. cit.

159 Ibid.

160 Ibid.

161 Jason Deign, "Spain Is a Case Study in How Not to Foster Renewables," GreenTechMedia, May 05, 2017, https://www.greentechmedia.com/articles/read/spain-is-a-case-study-in-how-not-to-foster-renewables

162 Iñaki Heras-Saizarbitoria et al, "The emergence of renewable energy cooperatives in Spain: A review," Renewable and Sustainable Energy Reviews, 94 (2018) 1036–1043, https://www.sciencedirect.com/science/article/abs/pii/S1364032118304854

Part Five: A Crisis Within a Crisis

In the preceding sections of the paper, we have attempted to both highlight and explain the current crisis of community energy in Europe, and what this means for the transformative vision that many of its advocates claim on its behalf. We have also pointed out that the EU's recognition of the role of citizens and communities in the transition does not alter the fact that the Clean Energy Package is attempting to further consolidate neoliberal policy, and have argued that this will continue to constrain what non-profit community energy initiatives can achieve.

But it is important to recognize the current problems of community energy as "a crisis within a crisis." Recognizing and understanding this complex crisis can help community energy advocates and their social allies redefine priorities and frame a new set of arguments. A "public goods" approach can help systematize and generalize the positive gains community energy has to offer, but that cannot be realized under the current neoliberal "energy for profit" model.

The policy shift away from the Feed-in Tariff towards competitive auctions started in the EU and quickly became the policy of choice as countries sought to build up their renewable energy capacities. At the same time, controlling the kind of escalating costs the FITs required compelled Europe to slam the brakes on transition to renewables.

This policy shift has had a serious impact on the growth of residential solar PV and onshore wind. The auctions themselves meant that growing competition for contracts among larger renewable energy companies led to "dive bidding" by renewable energy developers, falling profit margins, and a dramatic loss in investor interest. This is the main reason why the EU, which was until recently well on course to meet its 2020 target for energy use generated from renewable sources, is now unlikely to do so.

The seriousness of the situation both in the EU and globally has been discussed in other TUED working papers and publications, so only the main points will be reiterated (and updated) here.

The Global Impact of the Policy Shift

Global investment in renewable energy continues to fall far short of what is required to meet the Paris climate targets. It remains stuck at levels roughly one-third of the $1-trillion per year that have been called for by leading policy voices in order to limit the risk of dangerous levels of warming.[163] Total investment in new capacity for 2019 came in at roughly $282.2 billion, down some 12% from the record-high figure of $325 billion reached in 2012.[164]

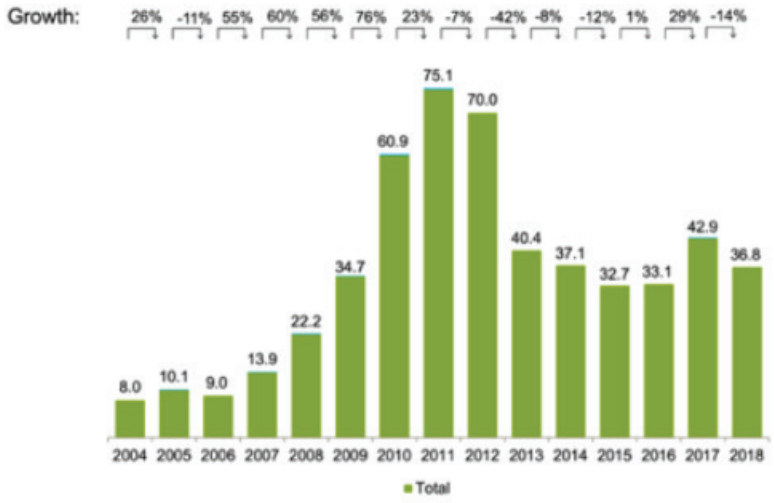
Within these overall worrying investment trends, it is also important to understand what is happening with small-scale renewable energy projects in particular. According to one major study, "More than

163 Simon Torkington, WEF, "We must reach peak carbon emissions by 2020, says former UN climate chief," 11 Apr 2017, https://www.weforum.org/agenda/2017/04/we-ve-got-three-years-to-hit-peak-carbon-and-prevent-devastating-climate-change/. See also Ceres' "Clean Trillion," which "highlights the need for an additional $1 trillion per year in clean energy investment to limit global temperature rise to below 1.5 degrees Celsius and avoid the worst impacts of climate change"; https://www.ceres.org/initiatives/clean-trillion

164 BloombergNEF, "Late Surge in Offshore Wind Financings Helps 2019 Renewables Investment to Overtake 2018," January 16, 2020, https://about.bnef.com/blog/late-surge-in-offshore-wind-financings-helps-2019-renewables-investment-to-overtake-2018/

four-fifths of investment in renewable energy capacity in 2018 took the form of utility-scale projects of more than 1MW in size." That means less than 20% are "small-scale solar systems of less than that capacity – some of it in the hundreds of kilowatts, serving businesses or small localities, and some of it in the single-digit or tends of kilowatts, serving individual households." And for the small share of total renewable energy investment in small-scale distributed capacity, there is no evidence of a growth trend: "What emerges is the lack of an obvious trend – this category of capital spending peaked in 2011 at $75.1 billion, fell to $32.7 billion in 2015, rallied to $42.9 billion in 2017, and then fell 14% last year to $36.8 billion."[165]

FIGURE 32. SMALL DISTRIBUTED CAPACITY INVESTMENT, 2004-2018, $BN



Represents investments in solar PV projects with capacity below 1MW

Source: UN Environment, Frankfurt School-UNEP Centre, BloombergNEF

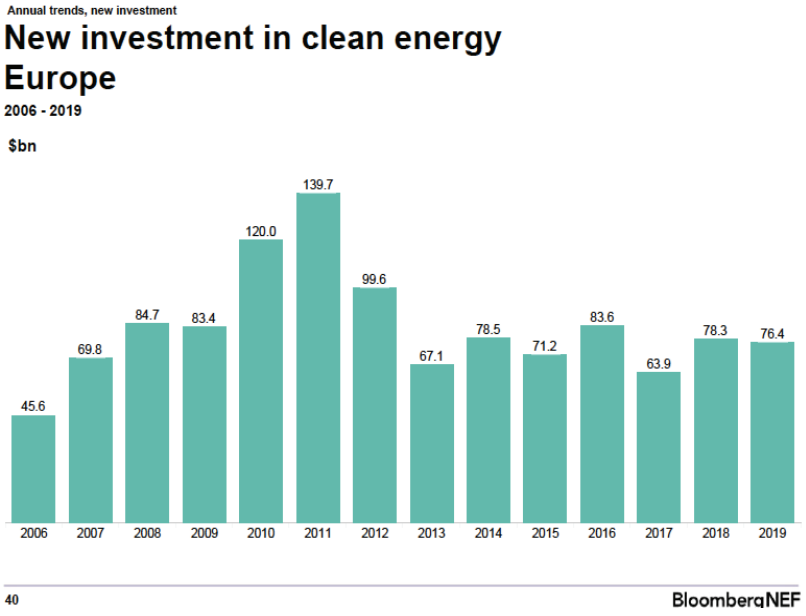
Europe's Icarus Act

In Europe, the move from Feed-in Tariffs to competitive bidding led to a precipitous fall in investment levels from 2012 to 2017. And although Europe's investment levels rose again in 2018, they fell again in 2019 and are still far lower than during the 2008-2012 period.[166]

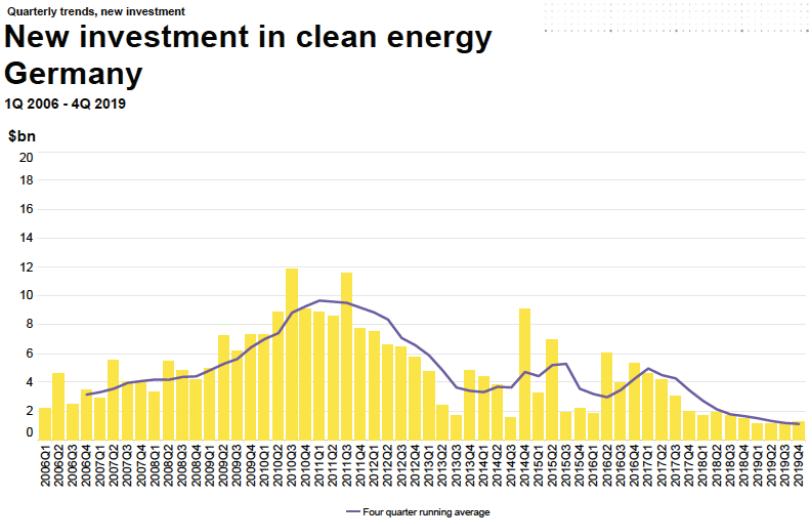
But wind has seen a dramatic drop in new installations. 2018 was the lowest year for new onshore installations since 2008. The growth in offshore wind also went into reverse, new installations in 2018 were 16% down on 2017. Germany's wind installations were down 49% on 2017's levels. In 2018 gross annual wind installations in the EU-28 were 10.1 GW. According to Wind Energy Europe, "This is the lowest amount since 2011, and reflects regulatory changes that European Member States have under-

165 Frankfurt School-UNEP Centre/BNEF, Global Trends in Renewable Energy Investment 2019, https://www.unenvironment.org/resources/report/global-trends-renewable-energy-investment-2019
166 Ibid.

taken since the review of the European State-Aid Guidelines. This has led many countries to introduce auctions since 2016, creating a new environment for permitting and project development; resulting in a slowdown."[167]



Source: Bloomberg New Energy Finance, January 2020[168]



Source: Bloomberg New Energy Finance, January 2020[169]

The dynamics described above are not confined to Europe. Following the lead of countries in Europe, China took steps in mid-2018 to reduce its FiT support, which prompted an immediate crisis in the

167 Wind Europe, Wind energy in Europe in 2018: Trends and Statistics, February 2019, https://windeurope.org/about-wind/statistics/european/wind-energy-in-europe-in-2018/
168 BloombergNEF, "Late Surge in Offshore Wind Financings..." Op. cit.
169 BloombergNEF, "Late Surge in Offshore Wind Financings..." Op. cit.

Chinese solar sector, and led industry observers to slash growth forecasts for the year by as much as one-third.[170] According to UNEP/BNEF, China invested $88.5 billion in renewable energy in 2018 and remains the world's leading investor, but its investment in clean energy that year was down 38% from 2017 because of these policy changes.[171] Investment in solar in particular fell by more than half (53%) to $40.4 billion.[172]

The Political Crossroads

One thing that has become clear in recent years is that although liberalization of energy systems and markets may have *theoretically* opened the door to allow "a thousand flowers to bloom," the soil waiting outside that open door has proven to be arid—and already populated by predators. For a considerable period, environmental groups have seen large energy interests—whether public or private—as the main enemy of a sustainable future. Many community energy advocates seem to have accepted this analysis, and thus have come to see even public utilities as among the main obstacles standing in the way of a people-driven energy transformation. For this reason, many have supported policies aimed at challenging the "monopoly" position of all large players by tilting the playing field in favor of smaller ones.

But what if the real enemy all along was the privatization, marketization, and liberalization of the system itself? This process turned electricity generation into a commercial battleground. This forced even formally public companies to behave as commercial actors, concerned about market share, revenue streams, and delivering dividends to shareholders. Why would these interests embrace renewable energy when to do so would intensify their own "death spiral"? And why would policymakers perpetuate the "death spiral" by continuing with expensive FiT subsidies? They know that the power generated by the large incumbents will be needed for perhaps another decade or two—including, crucially, to power any conceivable transition to a sustainable new energy system.

A comprehensive reclaiming of energy systems, anchored in a public goods approach, could put an end to the "death spiral." It could ensure that public investments both serve the broader public interest and meet climate goals. The EU's Clean Energy Package does none of this; it aims to take Europe further along the same thorny and precarious path. If this is allowed to continue, "community energy" as it is currently defined will likely all but disappear.

Drawing the Lessons and Strengthening the Movement

As social movement allies, there is a need for us to collectively assess the current state of the energy transition and the role of citizens, communities, and municipalities in that transition. Reclaimed utilities will also have a role. When they are no longer private companies seeking returns, they will be public entities whose workers and managers can have a real say in how decisions around the energy transition are made.

170 Zhang Shidong in Shanghai and Eric Ng, "Chinese solar power stocks plunge as government moves to contain industry size," South China Morning Post, 4 Jun, 2018, https://www.scmp.com/business/companies/article/2149131/chinese-solar-power-stocks-plunge-government-moves-contain. See also, Travis Hoium, "China Just Dealt a Massive Blow to the Solar Industry," The Motley Fool, Jun 6, 2018, https://www.fool.com/investing/2018/06/06/china-just-dealt-massive-blow-to-solar-industry.aspx.

171 Frankfurt School-UNEP Centre, Global Trends in *Renewable* Energy Investment 2019, Op. cit.

172 BloombergNEF, "Clean Energy Investment Exceeded $300 Billion Once Again in 2018," January 16, 2019, https://about.bnef.com/blog/clean-energy-investment-exceeded-300-billion-2018/

Most of the environmental groups that share trade union concerns normally express a healthy skepticism of "the market." But the difficulties faced by local energy initiatives operating within commercial markets seem to have been either badly misjudged or simply ignored. Claims about the actual achievements and potential role of decentralized generation in "disrupting" existing energy systems and in driving the energy transition seem mostly oblivious to the enormous technical challenges that a full decarbonization based on renewable sources must confront. These are not challenges we can afford to ignore. Nor are they challenges we can afford to assume market-driven processes will deliver, no matter what "policy signals" get sent.

In contrast, a non-market, "public goods" approach to the energy transition could create genuine space for community level engagement in energy-related decisions. Such an approach can promote energy conservation and efficiency while ensuring that everyone has sufficient energy to live in dignity and work productively. Such a framework offers the best possible vehicle for broad-based and sustained involvement of individuals, communities, cities, and regions in the formidable challenges of the energy transition. It can also help sustain already existing efforts to strengthen local, community, and municipal control over energy. But it means breaking with the entrenched, neoliberal commitment to "competition at any cost," to private ownership of most energy resources (whether by citizens, communities, cooperatives or companies). It requires a break from the insistence that power generation resources provide us not only with affordable electricity, but with revenues as well.

For trade unions, TUED has proposed that the current impasse of investor-focused climate policy means our movement needs to be more forceful about a global public goods approach, and to develop a transformative politics around Just Transition. This offers a framework for energy planning that begins with a comprehensive reclaiming of energy systems to public ownership and an ending of the "energy war" between different private or marketized public interests. Current levels of investor risk means that there is no possibility of achieving ambitious climate goals based on the current for-profit model. A global public goods approach can provide a framework for a genuine and sustained community-level involvement in the various tasks of decarbonization.

The current situation means that a political reassessment is in order. We hope this paper will help trade unions and others carry out that assessment with a fuller understanding of the reality, and the challenges ahead.

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