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Collective Ownership in Renewable Energy and Opportunities for Sustainable Degrowth

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ABSTRACT

Following the renaissance of energy generation from renewable sources around the globe, it was suggested that the shift from fossil to renewable energy could potentially counter the growth orientation of economic activity. In this line of argument, small-scale technology and decentralised ownership, in the field of energy and beyond, are commonly regarded as potential precursors of a sustainable degrowth society. However, these systemic and conceptual considerations have been rarely assessed empirically. This paper wishes to address this research gap. It presents the exploratory findings of an EU-wide survey conducted in 2013 and further discusses the conceptualisation of smallscale ownership structures in renewable energy as an alternative to the community energy concept. Secondly, the paper relates the debates on degrowth to small-scale renewable energy schemes and illustrates its argument with four case studies from Wales, Italy, Spain, and Germany. These cases represent different organisational forms, diverse spatial settings, and varying national policy contexts. In its observations, this paper draws on the concept of collective and politically motivated renewable energy projects (CPE). While still mainly found in niches across Europe and essentially linked to environmental and social movements, we argue that CPE can potentially become blueprints for a turn towards a degrowth practice that will foster the democratisation of renewable energy production.

1 Introduction

The term “degrowth” generally refers to a social movement as well as to a scientific concept. It calls for an “absolute or relative dematerialisation of the economy” (Martínez-Alier 2012: 52). More precisely, “sustainable degrowth may be defined as an equitable downscaling of production and consumption that increases human wellbeing and enhances ecological conditions at the local and global level“ (Schneider et al. 2010: 512). As a political concept, it encompasses ecological, technological, and economic aspects, but also addresses issues of social sustainability and equity. Therefore, academic discussions of degrowth are linked to ecological economic theory (Kallis et al. 2012; Klitgaard and Krall 2012; O’Neill 2012) and to the concept of a social (or industrial) metabolism (Fischer-Kowalski and Haberl 2007; Martinez-Alier 2009) that analyses economic growth and the corresponding energy regime. In this regard, an alteration in the mode of a given society’s energy production is highly significant for a general shift towards degrowth. Even in a sustainable degrowth society, “certain (...) economic activities (e.g. renewable energies, shared transportation systems), and impoverished groups or regions may still selectively need to grow (...)” (Schneider et al. 2010: 512). A further field of inquiry is the degrowth movement as such and its values, forms of organisation and practices (Asara et al. 2013; DeMaria et al. 2013; Martinez-Alier 2012; Sekulova et al. 2013).

Historians commonly emphasize the connection between predominant energy sources and different paths of social and economic development (Braudel 1992; Altvater 2011). D’Alessandro et al. briefly summarized this interrelation: “fossil energy sources have fuelled economic growth ever since the industrial revolution” (2010: 538). Fischer-Kowalski

and Haberl (2007) argue that the current transition to renewables opens a window of opportunity for a “post fossil” development path beyond the trajectory of an extensive and still-growing industrial metabolism. Victor (2012) adds that this transition is imperative to a mitigation of climate change. In fact, there has been a remarkable increase in renewable energy generation across Europe in recent years (Eurostat 2013), but the emergence of degrowth societies is still only discernible in a few niches.

In an attempt to grasp energy transitions in a previous issue of this journal, Berkhout et al. (2012) have pointed to both contextual factors and an ethical motivation that support the turn to renewable energy. Beyond this general observation, small-scale energy alternatives have become a prominent field of both activism and research (Seyfang et al. 2013). In order to investigate such niches further, we conducted an exploratory survey in several European countries in 2013. Drawing on the results, this paper seeks to contribute to the debate on renewable energy in organisational and normative terms and will at the same time indicate findings that can be generalized in order to contribute to the strategic discussion on how to proceed in the transition to a degrowth society. Our argument centres on the important role that social movements and political goals play when linking energy transition initiatives to a degrowth approach. This paper further questions the assumption that alternatives to a growth society need to be local in scale, while large-scale organisations are equated with mere resource extractivism (cf. Burchardt and Dietz 2014).

2 Contextualising and defining CPE

Research on social movements often works with transdisciplinary terms. The same terms are also found outside of scientific scholarship, for instance in policy making and social movement campaigns. While degrowth is a term that is applied when talking about a social movement, it is also used when talking about energy projects (cf. Demaria et al. 2103). What is more, the public debate in several European countries calls it by many other names as well. The novelty found in the field of renewable energy usually addresses the divergence from the traditional modes of private or state corporate provision. The French “énergies partagées” (Poize and Rüdinger 2014), the German “Bürgerenergie” (Radtke 2013) as well as the British “community energy” (Walker and Devine-Wright 2008; Seyfang et al. 2013) are all terms used to circumscribe a new relation between society and its energy systems. Among these terms, the English term “community energy” has by far received most attention in international scholarly debates. A search in the journal database “science direct” revealed some 1000 results in February 2014. While researchers use the notion of ‘community’ as referring to both place and interest (Seyfang et al. 2013), empirical studies show that nine out of ten British initiatives perceive themselves as local “communities of place” (Seyfang and Smith 2013). Beyond this strong localist orientation, critics have pointed out that “community” is a term that remains inherently open to redefinitions and may even blur the issue of who benefits from community energy schemes (Bristow et al. 2012). As we have argued in another contribution (Becker and Kunze 2014), we agree with the critics that a certain localism is anchored in the term itself, so that it excludes many non-local forms from the scope of research. Furthermore, the concept

seems to be well suited for the British context, but is insufficient for international comparative research (cf. Walker et al. 2007). Other concepts drawn from legal definitions like energy-cooperatives or the German *Stadtwerk* (public city utilities) appear well defined, yet they exclude newly emerging social forms and have a similarly limited potential to compare diverging national contexts.

Because of the imprecise features of the term “community energy” and the all too narrow character of legal concepts, we instead use a purely analytical (and not empirically derived) term and heuristic tool, namely collective and politically motivated renewable energy projects (CPE). We developed the concept from a literature review as well as from our own empirical study. A more detailed description of CPE can be found in another article (Becker and Kunze 2014).

Here, we will employ the same working definition: collective and politically motivated renewable energy projects (CPE) have an agenda of political aspirations, which goes beyond the mere generation of electricity or heat from renewable sources. These aspirations are embedded in an organisational structure that emphasises participation and makes use of collective legal ownership, a collective benefit allocation mechanism, or collective decision-making processes. Importantly, participation here refers to genuine forms of participation and citizen power, as laid out by Arnstein (1969), and not to forms of superficial or directed participation. In other words, the participation and ownership structure of CPE must be based on the inclusion of its normative goals.

In CPE, the participation through ownership and general normative orientations are closely linked. We do not refer to CPE as social corporate responsibility or mere greenwashing programmes (Prasad and Holzinger 2013). The latter tend to state ambitious ecological goals, which are often unattainable given the structure of the specific organisation. We therefore define CPE to have a “participatory and ownership structure” that allows for the inclusion of its goals. We do so mainly because we share the scepticism within the degrowth literature, which addresses the problem that the profit motive and growth imperative in only-for-profit private enterprises will always dominate and may even completely prevent such efforts, or else limit them to marginal improvements or mere PR strategies (cf. Schneider et al. 2010). Whatever the codex of corporate responsibility for companies like Enron might be, we would not define it as a CPE, simply because a structure of ownership and participation that grants large capital fractions seeking maximum revenue a dominating position will turn the mentioned normative goals into an issue of communication strategies. The normativity that we understand to be a foundational element of CPE projects instead links them to other projects of heterogeneous economic practices and spaces (White and Williams 2012). Suitable arrangements, which we found in the field of renewable energy, were cooperatives, municipal ownership, and - in the case of Machynlleth or the German village Feldheim (Kunze and Busch 2011) a very local and broadly distributed private ownership. In one case, the German town Zschadraß, a complicated construction of non-profit and profit associations made it possible to channel revenues from a wind turbine into the local school and kindergarten instead of using it as a way to pay public debts (Kunze and Becker

2014). A new analytic definition therefore appeared more suitable than a restriction to cooperatives or public ownership.

The normative goals of alternative energy projects typically comprise at least one of the following issues: an overall reduction of energy consumption, the protection of biodiversity, sustainable agriculture, a transition town agenda or, closely related, more social equity and the empowerment of disadvantaged social groups. When an ongoing transition is combined with far-reaching normative goals, they are primarily devoted to a “politics of possibility,” which seeks to utilise the restricted room to manoeuvre to achieve gradual change (Beveridge et al. 2014). The strong normative impetus of CPE thus distinguishes them from purely profit-oriented organisations (Jeong et al. 2012). Though CPE are not necessarily non-profit organisations, they are at the very least not-only-for-profit organisations, which are “more attuned to both environmental and social equity concerns” than conventional only-for-profit enterprises (Johanisova et al. 2013: 10). The shared similarities and intersections with the literature on social entrepreneurship (Alvord et al. 2004; Lautermann 2013; Mair and Marti 2006) is an issue that necessitates further inquiries. Obviously, CPE face several challenges, beginning with the problem of realising their aspirations instead of simply listing them in the statutes. The four case studies to be discussed in this article were selected from a larger number of successful projects, although there are of course plenty of failed projects to be found as well.

With regard to the discussion on ownership of energy utilities and other sectors (Cumbers 2012; Hall et al. 2013; Moss et al. 2014), it is important to note that in our analysis, ownership will not be limited to the dichotomy between state and cooperative ownership. A

thus defined legal form of property alone does not guarantee the pursuit of a social and ecological transition. As Cumbers (2012: 165) argues, public or collective forms of ownership can, however, serve as a means to achieve wider goals, such as local community control, distributional justice, environmental sustainability and improved participation. In contrast to conventional private corporate ownership, public and collective ownership opens up possibilities for the social and ecological transformation that degrowth is calling for, though it does in no way automatically guarantee the implementation of such goals (cf. Christman 1994). When considering the evolution of energy projects as they outgrow their local niches (cf. Späth and Rohracher 2014), the CPE concept appears applicable because it does not rely on notions of localism or smallness. We in addition hope to highlight who in fact owns and benefits from renewable energy, and from energy transitions in general (cf. Shove and Walker 2007).

3 Identifying CPE: the Research Methodology

Despite the existence of very detailed national and European databases, which record various collective renewable energy projects (RESCoop network, French CLER, German kommunal-erneuerbar, Italian Legambiente map, among others), and a significant amount of internationally published research on community energy in the United Kingdom, comparative empirical research on the variety of unconventional renewable energy endeavours in Europe is still virtually non-existent. While conflicts about renewable energy installations (Devine-Wright 2011; Jegen and Audet 2011) and tariff-policies (Kelly 2007;

Mabee et al. 2012; Nolden 2013) have been well studied internationally, the dissemination, location, motivation, and interaction of unconventional renewable energy projects remain under-studied fields of research.

This article is based on an exploratory survey from 2013 (Kunze and Becker 2014) as well as a first interpretative article (Becker and Kunze 2014). Some of the premises of this study are introduced here in order to offer a better understanding of the selection process of the presented cases. The survey explored the renewable energy landscape in the European Union (and also included Norway, but excluded Cyprus, Luxembourg, and Malta) with the goal to locate ‘best practice projects’ in terms of their political goals and collective organisation. A set of analytic criteria was set up to identify existing and emerging projects. The criteria included participative democratic practices, forms of collective ownership, a commitment to ecological and degrowth goals, the creation of local employment, and tax income. The research was designed as a two-tier process. The first step consisted in identifying and outlining suitable projects within the EU, which met the defined criteria. We were especially interested in identifying emerging projects and thus focused on projects and countries that have not yet been well studied. We therefore paid comparably less attention to German energy-villages, well-established Danish and Dutch wind cooperatives, and geothermal power (Jennsen 2013; Olesen et al. 2004; Hisschemöller and Sioziou 2013; Schreuer and Weismeier-Sammer 2010). The second step consisted in reducing the sample to a small group that ideally suited our criteria. The excluded group entails projects that were rather vague in their ambitions, or still on the way to realising them. Some were also still in the phase of planning their respective projects.

We first assembled a very broad list with more than 100 possibly suitable projects within the EU-27. We did so by using the existing online data-bases as our main resource. We complemented the list through an online research, in which we used relevant key words derived from the already known cases and corresponding literature, always using the case's respective language. Since already existing projects nearly always leave traces on the Internet, there is a good chance of finding projects of a certain size using this method. Furthermore, most of these projects are mentioned in several databases, meta-pages, or journalistic articles, so a second source was usually available. For two countries, Greece and Bulgaria, we found evidence for the existence of CPE, but could not verify whether they were merely PR show cases or actual collective and political endeavours. Two researchers equipped with the necessary language skills assumed the responsibility for the inquiry in these countries. In countries with many potentially suitable projects, we compiled extensive lists with projects, names of locations and relevant attributes. Those countries were: Belgium, France, Germany, Italy, the Scandinavian countries, Spain and the United Kingdom. For projects conducted in French, Italian, Spanish as well as in Swedish, Norwegian, Danish and Finish, we found four social scientists with the required language skills, who assisted in the case selection and helped to conduct interviews.[1]

The reduction of cases took several weeks, a phase during which we sharpened our criteria and accordingly modified the list of projects in close collaboration with the four

[1] Those were: Gerry Billing for Scandinavia, Dr. Carla Detona for Italy, Dr. Mihaela Vancea for Spain and Irune Penegaricaño for France.

assisting scientists. This selection was based on the degree to which our criteria were met as well as on the auxiliary condition of displaying geographical and organisational diversity. Our sample was selected so as to represent various forms of ownership and different spatial contexts. In addition, it displays a broad range of innovative approaches in the pursuit of politically motivated aims. In France we, for instance started out with 43 potential cases, which we then reduced to the four most interesting and most fitting. After further inquiry, we in the end decided to present one French case. In Spain, we selected one out of only four existing projects, both because we tried to cover more than the usual countries and also because this one case contributed to the qualitative variety of the overall study. As explained above, we wanted to incorporate more than the usual solar and wind cooperatives.

The study's second tier involved the in-depth analysis of documents and further compiled phone interviews with experts from the sixteen selected projects. A particular emphasis was put on the exclusive use of projects that are already being implemented. In order to ensure the validity of this criterion, we critically questioned the projects' self-presentations during the expert interviews. The sample was diverse in that it ranged from cooperatives and community energy projects to extraordinarily active and participatory municipalities to squatted housing projects.

Country/ Sample	sample size in first extensive list	First sample for document inquiry	reduced sample for in-depth interviews	Selection for this article
Italy	38	Cooperatives: Retenergie Public utilities: Dolomiti Energia Towns/Regions: Asti, Morgex	Retenergie	Retenergia
Belgium	4	Cooperatives: Social Green, Vents du Sud	Vents du Sud	
France	43	Cooperatives: Bocage Energie Project (Britanny), Parc Eolienne de Beganne Towns: Loos-en-Gohelle, Ungersheim	Ungersheim	
Germany	28	Cooperatives: FairPla, Windstark Public Utilities: Berlin Towns/Regions: Atterwasch, Lüchow-Dannenberg region, Turnow, Zschadrass, Others: Lieberose Heather	FairPla, Berlin, Atterwasch, Zschadrass, Lieberose Heather	Berlin
Greece	3			
Norway	Scandinavia: 16	Public Utilities: Akershus Energi Others: NUFU Project of Trondheim University	NUFU	
Sweden	Scandinavia: 16	Others: Hilda Quarter, Malmø	Hilda	
Hungary	2	Village: Told	Told	
Spain	4	Cooperatives: Guerilla Solar group, Somenergia Others: Can Pascual Community	Somenergia, Can Pascual	Somenergia
Wales	UK: 12	Cooperative: Machynlleth, Awel Amen	Machynlleth	Machynlleth
Scotland	UK: 12	Towns: Moffat Can Project, Gigha, Lewis	Gigha, Lewis	
Bulgaria	4	Other: Project Boukari, village Shipka		
Portugal	1	Village: Rural community Moura		

Table 1: Reduction of the sample in the course of the research process

4 Case Studies

This paper presents only four case studies of a larger sample, which represent the spatial diversity of CPE and illustrate degrowth-related features particularly well. These cases are one Welsh community energy project, two nation-wide cooperatives in Spain and Italy as well as a city utility project in Berlin. In keeping with the aims of the larger project, we explore their significance for degrowth ideas and practices.

4.1 Collective Localism: Machynlleth in Wales

The small Welsh community is a place where environmentalist tradition becomes highly visible at a variety of ecological organisations, notably at Ecodyfi, a foundation that is devoted to eco-tourism in the region, and at the Centre of Alternative Technology (CAT), an ecological think-tank laboratory that projected the UK's first "Alternative Energy Strategy" as early as in 1977 (CAT 1977). This institutional setting renders the place amenable to community energy (interview 4). Machynlleth's local network was already experienced in attracting externally funded projects and knew how to communicate with the community's inhabitants (interview 4). Inspired by the first energy cooperatives in England and the longer standing tradition in Denmark the community set up Wales' first collectively owned wind turbine in 2003. In order to prevent conflicts over changes in the landscape (cf. Francis 2013) and also as a way to lower the financial burden, a used small-scale 75 Kilowatt turbine was imported from Denmark. It was financed through the "Renewable Energy Investment Club," which sold shares to the city's inhabitants. After a fragile start,

the local demand for shares finally exceeded its supply (ibd.). At a later point, in 2010, a larger 500 Kilowatt wind turbine was set up.

The wind-energy project in Machynlleth implicitly followed a degrowth agenda. The overall aim consisted in providing locally produced electricity, a goal that was accompanied by the attempt to also have an impact on the population's life-style regarding energy consumption. The turbine provided most of the energy that the Centre of Alternative Technology needed. As indicated on the project's web page, whenever a surplus was produced, some local households in the community were also supplied. Ownership was organised in a dispersed way, and profits were also designated to benefit the community. At least a third of the revenues were donated to a fund, whose goal it was to support all local households in their effort to save energy, for instance by applying to government programmes that would pay for more effective house insulations (ibid.). The project further aimed for changes in the population's behaviour and in reducing its overall consumption. These goals were, for instance achieved by way of providing energy-saving lamps for free and in addition educating the town's population on the issue (interview 4). In essence, the project combined local financial participation with energy sufficiency. It has been declared as a best-practice example that has inspired many subsequent CPE in the UK (interview 4; cf. Seyfang et al. 2013; Walker et al. 2010).

Machynlleth also ideally exemplifies the localist peculiarity of most British and European CPE. In general, these projects form a network of niches that developed as the result of a horizontal learning process inspired by local best-practice examples, which were then exported and translated to other, more or less similarly conditioned places (Kunze and

Becker 2014). However, their coupling with local communities bears difficulties in terms of a possible scaling-up. It can, on the contrary, be observed that an intrinsic motivation to expand beyond the scope of the community is often lacking (cf. Seyfang and Smith 2007). Machynlleth was not only successful with regard to its community-based character, but also in terms of implementing political ideals of greening energy consumption and putting them into practice.

4.2 Transcending Localism: Somenergia in Spain and Retenergie in Italy

In this section, we will discuss two relatively young Southern European cooperatives that developed from regional to almost national structures by attracting a large share of new members outside of their original places of foundation: the originally Catalan cooperative Somenergia and the Northern Italian Retenergie, which was founded in Piedmont. Somenergia has realised five larger photovoltaic plants (1168 kilowatt hours annually) and a biogas plant (2.2 gigawatt hours annually). It further intends to set up Spain's first citizen-owned wind turbine. Retenergie has set up 7 small and medium size photovoltaic plants with a total capacity of 470 megawatt hours annually.

The Italian Retenergie emerged out of an environmental association that sought to professionalize its energy activities and in 2007 decided to do so in the organisational form of a cooperative (Interview 2). The Catalan/Spanish Somenergia was established in 2010 in the academic milieu of the University of Girona (Interview 5). Even from an international perspective, both examples' political determination is regarded as

outstanding, which is why they make excellent showcases for CPE. From the very beginning on, they were committed to an environmentalist and strictly participatory codex. For Somenergia, the core values entail the political and financial participation of all members, autonomy and independence of local groups as well as the education of and collaboration with social movements in energy matters (Somenergia 2013). Retenergie appears even more determined, listing many environmental concerns in its statutes, including “respecting the soil.” They are committed to the exclusive use of non-agrarian land for energy generation (Retenergie 2009). Furthermore, the “environmental impact” of their facilities is minimised by solely projecting small and medium size wind and solar power plants (ibid.). Further goals of Retenergie include an ethical finance policy and a general reduction in consumption. The listing indicates that the two cooperatives were not only initiated to generate energy, but also to propagate a set of social and environmental values that are of central importance to the degrowth discourse (cf. interviews 2 and 5).

In both Spain and Italy, an environmentally oriented, collective endeavour targeting energy generation has proven highly successful despite the financial and economic crises. In the spring of 2013, Somenergia reported a gain of 100 new members per week (interview 5). According to Somenergia’s spokesman Mario Rosello, the cooperative experienced an inflow of members even “in a setting of decreasing trust in traditional institutions and financial crisis” (ibid.). New members were either unhappy with their energy suppliers or were already experienced in the cooperative economy and thus wanted to include energy as an additional field (ibid.). By the end of 2013, both cooperatives listed member groups in different parts of their respective countries, reaching out as far as Tuscany and

Andalusia. It follows that both organisations clearly transcended their founding communities of Girona and Racconigi and even their provinces of origin, Catalonia and Piedmont. Retenergie is the smaller of the two, counting 600 members. Somenergia already counted 18,000 members in late 2014 (cf. interviews 2 and 5). Both cooperatives rely on models with two possible forms of membership: firstly, one can become a member by acquiring one share. The smallest share for Reternergie holds a value of 50 Euro. For Somenergia, the 100 Euros that are required to buy a share can even be paid in instalments. Secondly, both also rely on “investment members” that deposit amounts that are higher and which they need in order to finance the implementation of new facilities.

The spatial expansion and continuous growth of these two initiatives posed new challenges in terms of their internal participatory structure. Both cooperatives developed a federalist structure consisting of central boards and local sub-units that are granted a varying degree of autonomy. In Retenergie, the integration of the different “nodes,” as local groups are called, is realized through a direct representation within the Advisory Board (interview 2). At Somenergia, the local groups exist independently and autonomously choose their focus of activity, i.e. education, project development, or anti-fossil energy campaigns (interview 5). They are incorporated through the ‘General Assembly,’ which is held once a year. In spite of counting 18,000 members, equal voting is conducted by way of using video streaming for a digital assembly. That way travels expanses and the related emissions are minimised. In both cases, innovative organisational structures have met arising internal challenges and thus manage to secure collective ownership in and through participatory processes.

The cooperatives' ability to maintain their environmental and degrowth agendas is more challenging to assess. In the case of Somenergia, we found that all consumer-members are supplied with energy saving measures. Each member gets a monthly energy bill that indicates the difference between individual and average electricity consumption. This information is expected to increase the awareness of potential further savings and to thus motivate changes in individual consumption patterns. In addition, there are various groups that educate members on how to save electricity (Interview 2).

Because members of both organisations are not only co-owners of already installed plants, but often also investors, the growing membership numbers in turn creates pressure to also grow in generation capacities. That the rapid growth could cause difficulties to stay in line with the statutes became evident at a Retenergie General Assembly where the Executive Board presented plans to invest in wind power in the South Italian region Apulia. This proposal was rejected outright by the assembled members. Instead, a working group was initiated and instructed to compile ecological criteria for investment in wind energy (interview 5). Although no comparable incident occurred at Somenergia, the importance of internal debate is here evident as well. Somenergia portrays itself as a forum for political debate that transgresses beyond energy issues. Its homepage features various blogs and wikis, formats that members use to discuss issues ranging from degrowth to feminism to Catalonian identity. This example illustrates the extent to which political motivation is animated by internal debate and a participatory structure.

4.3 Generalising Collective Energy in Urban Spaces: the Berlin Energy Roundtable

Compared to the case studies discussed above, Berlin's case differs in three specific ways. It first of all denotes a turn to the urban space. With around 3.5 million inhabitants, Berlin is not only a major city, but the social and technical complexity of both its energy provision and its network operation obviously also require measures of a different size (Moss et al.: 2014). Secondly, the objectives were here not limited to the development of one particular organisation, but aimed at a general regulation of energy. Thirdly, the attempt to introduce a collective ownership pattern provoked an extensive political debate regarding the future of the city's energy system, particularly because it not only contested the city council's reluctance to debate its energy policy, but also because it questioned the status quo, namely a corporate mode of energy provision (Becker et al.: 2015). Although the attempt to install a highly participatory and 100% green public energy provider failed in November 2013, the case of Berlin provides useful insights into the question of scaling-up and the urbanization of CPE and degrowth ideas (interview 3; observation). We thus decided to include the case as an exception, despite the fact that it does not fully meet the criteria because it has not been successfully implemented.

As in many German cities, Berlin's long-term contract (usually spanning two decades) for the concession of the electricity network will expire at the end of 2016. As a consequence, the city council will have to decide the future concessionaire and determine the contract's time-span. Currently, the network is owned by the Swedish state enterprise Vattenfall – infamous in Germany for its somewhat unpopular nuclear power plants, lignite mining near Berlin, and the lignite power plants it runs within the city. The social movement that called

for a new, participatory power utility (Bürgerstadtwerk) was spurred significantly by the population's growing dissatisfaction with the fact that a fossil and solely profit-oriented enterprise still operates the German capital's electricity network at a time when Germany is struggling to complete the energy transition (Gawel et al. 2013). A social movement coalition formed as early as 2011 in order to push for a re-municipalisation of the grid and consequently rethought the entire energy supply. This coalition, called the "Berlin Energy Roundtable" (Energietisch), encompassed a wide range of actors from large environmental organisations, small NGOs and leftist activist groups to anti-gentrification initiatives and professionals from the field of renewable energy (interview 6). In an attempt to oppose the city's government, it successfully collected over 220,000 signatures, a number high enough to bring forward a referendum on the re-municipalisation of the energy network and the foundation of a new, participatory public utility. Had it been successful, the referendum would have elevated the proposal to the status of a binding law. The referendum was held on November 3, following an intense advertising and mobilisation campaign, which was organised by volunteers and widely covered by the press. However, hopes for a crucial change were disappointed as the required quorum of 625,000 affirmative votes was missed by only 21,000 votes (Berlin Election Officer 2013). Nevertheless, a moral victory was won: a vast majority of 83 per cent of those who voted were in favour of the proposal in question.

The submitted concept envisioned a number of stipulations, which would have made the future power utility reliant on a strong participatory approach. These stipulations included, first of all, public meetings on a local level, the public availability of core documents, and

an extended steering board. The latter would have by one third been made up of members of the city council. The second third would have been made up of the utility's employees, and the final third would have been elected directly by Berlin's citizens (Berliner Energietisch 2012). Secondly, the concept made an "ecological orientation" mandatory, meaning it would have relied 100% on renewable energy. In addition, and in line with the degrowth idea, the reduction of overall consumption was named as a "central business objective" (ibid.). Thirdly, the proposal called for "social arrangements" in tariff policies, which would have aimed to prevent energy poverty (cf. Interview 3).

In contrast to conventional municipal utilities (cf. Hall et al. 2013), Berlin's collective ownership would have been mediated through state ownership, which would have been modified through the new participatory provisions. The Berlin case study thus marks a contrast to the previously presented examples in that the attempted establishment of a new form of participatory collective ownership was, in itself, a political project. It aimed to achieve a legally binding result by mobilising the power that a direct democracy grants its citizens. In addition, the combination of participatory measures, socio-political ambitions, and accentuated environmental and degrowth goals subsumed a wide spectrum of social movements under the mantle of a common and concrete political project.

5. Discussion

5.1 Renewable Energy and Degrowth

The four case studies that this article presents were selected to show how renewable energy can contribute to the practice of degrowth. The case studies further illustrate how the emergence of new forms of social organisation can accompany the transition of the energy system towards a steadily increasing share of renewables. When discussing how these findings couple CPE and degrowth and relate it to the wider context of the European energy markets, we will, however, also come across limitations in terms of their transformative potential.

First of all, renewable energy is burgeoning in Europe; most of all newly installed power generating capacity is based on renewables (Eurostat 2013). Yet in what way does that contribute to degrowth? For a given society (that does not face far-reaching systemic changes), one of the goals of degrowth is a “decoupling,” that is a reduction in the throughput of energy and material that nevertheless allows the sustenance of a comfortable quality of life (cf. Fischer-Kowalski and Haberl 2007). A reduced per capita consumption rate of energy would thus be a first step towards a degrowing social metabolism. Renewable energy is always a contribution to a less destructive mode of production as it, in comparison to fossil energy, reduces the ecological impact of generating one unit of energy (D’Alessandro et al. 2010; Schneider et al. 2010). However, by providing the basis for a social metabolism that is bound to grow, all energy production (renewables are here no exception) is inseparable from the growth paradigm inscribed in

the latter (Fischer-Kowalski and Haberl 2007). What is more, debates on energy efficiency and rebound effects indicate that the effective reduction of material throughput rests on a complex set of factors (Wiedenhofer et al. 2013).

Of all factors, we believe ownership and a general political motivation in renewable energy projects to be most crucial for a wider transformation. We believe this to be the case because most renewable energy plants implicitly fit into the growth paradigm. In Europe, the majority of these plants is financed by corporations and institutional investors (Haas and Sanders 2013). This implies that a large part, if not the majority of renewable energy production exclusively follows profit maximisation when replacing fossil power plants and does not do so in order to challenge the growth and acceleration logic of capital accumulation (cf. Altvater 2011). Thus, only a minor part of renewable energy is produced by organisations that pursue a degrowth agenda. Even among collective projects, we found that degrowth policies only accounted for a small fraction of our sample. And yet the existence of CPE does certainly demonstrate the possibility of degrowth as a political project in the context of renewable energy production. The extent to which single projects or accumulated CPE networks have an effective impact on industrial metabolisms, both in and beyond their locations, must be determined by further research (cf. North 2010). What we can ascertain at this point is that strong social movements and effective participatory provisions help to develop CPE as alternative and heterogeneous approaches within the energy sector.

5.2 CPE and Social Movements

Some scholars engaged in degrowth debates have emphasized that broad cultural and political changes would be a necessary precondition for the likeliness of successful degrowth reforms to increase (Kallis 2011). In a related field, research on collective institutional entrepreneurship has shown that social movements can be potent forces when it comes to shaping new social institutions in the aftermath of (successful) social struggle and political conflicts (cf. Rao et al. 2000). Demaria et al. (2013) have stated that when moving from idea to practice, a degrowth agenda requires the fusion of a movement and an organisational model. Can CPE function as such a new organisational model, which, driven by a social movement, could potentially implement degrowth principles in the crucial sector of energy?

CPE include long-standing legal formats like cooperatives or city utilities. Plus, they build on a long tradition of partly public, partly collective, and sometimes political, organisational models. In a few countries a combination of these various elements already emerged in the 1980s, especially in the Danish and Dutch wind cooperatives. While not wanting to neglect these forerunners, we find that some of their attributes differentiate them from today's CPE. Most obviously, there is a quantitative difference. Today we find CPE in many countries across Western Europe (in contrast to post-Socialist Eastern Europe with very few CPE). The introduction of feed-in-tariffs in various countries has substantially lowered the entry barriers for small initiatives, which has made it easier for them to set up their own businesses (Couture and Gagnon 2010; Nolden 2013). Secondly, the idea of a thorough socio-ecological transition that incorporates sustainable degrowth as one important

element has inspired many social movements across the continent, including the transition town movement in Europe's North, the città-slow movement in the South, the development of local and organic agriculture and many other, usually local, initiatives. The convergence of these organisational models with a growing social and ecological movement has fostered the dissemination of CPE projects. The increasing popularity of ideas closely related to degrowth further accelerated the rapid dissemination of many small, most often local initiatives for renewable energy.

5.3 Political Goals and Participation

In order to define the CPE concept, we have combined two possible characteristics of an organisation: a political motivation and a collective endeavour that has been put into practice. From a methodological perspective, we have chosen this combination to firstly delineate the motivation of the actors that establish CPE initiatives, and secondly as a way to identify suitable projects by way of their collective formal structure. For further-reaching conceptual discussion, three points are noteworthy: First, not all collective organisational forms in renewable energy are inspired by degrowth ambitions. Even further, collective ownership does not guarantee that an organisation pursues further political goals. An example here is city utilities that just follow a business strategy that is not distinguishable from private enterprises (Wissen and Naumann 2006). Second, the collective character cannot be defined in terms of numbers. The smallest collective we studied in our survey was a squatted farm in Catalonia with about 20 members; the biggest was the cooperative

Somenergia with approximately 14,000 members. Collectivity should thus be understood in terms of its effective participation and its impact on relevant decision-making processes within the organisation (cf. Arnstein 1969). In this respect, we highlight the organisational creativity that leads to remarkable social innovations, such as those observed in the cases of Somenergia and Retenergie. Essentially, these projects contribute to a democratisation of the economy (Cumbers 2012; Scheer 2012).

Furthermore, we understand the political and normative goals of CPE as inseparable from their collective approach to issues of ownership and decision-making. On the one hand, this observation can be related to the discourse on cooperatives as a “type of enterprise potentially less vulnerable to a one-sided focus on maximizing returns on (potentially spurious) production, growth of production and the scale of its operations” (Johanisova and Wolf 2012: 565). On the other hand, it proves helpful to distinguish approaches that overstate from those that downplay the specific character of public or cooperative enterprises (Cumbers 2012). Here, public or private ownership is not the only decisive factor. In practice, it may prove more important that CPE members retain their factual decision-making power so that they can, for instance, keep an eye on normative goals beyond returns, such as degrowth. As already mentioned, CPE can be not-only-for-profit organisations, so that generating a turnover may become an additional motivating factor. While CPE can become one possible way to put a specific political agenda into practice, it can essentially not be ensured that they do not gradually develop into only-for-profit models (ibid.). Although the organisational form enables CPE to exist, it is up to the involved members and/or social movements to provide and maintain the political

ambitions. Further research would be necessary to shed light on the long-term evolution of CPE.

5.4 From Local Niches to Scaling up and Selective Growth

In some countries, the liberalisation of electricity markets and the introduction of feed-in-tariffs were enabling factors for the establishment of CPE (Couture and Gagnon 2010; Nolden 2013). It should be noted that these transitions rarely had the explicit goal of bringing about something like CPE. While Denmark and Scotland offer well functioning funding programmes that explicitly address small collective businesses (cf. Cumbers 2012), in other countries, autonomous developments in niches led to the de-monopolisation of the energy markets and general feed-in-schemes for renewable energy. As a consequence, CPE can be regarded to offer a market alternative today. How they will, however, in the long run react to possible market pressure remains to be seen.

It surely is encouraging that the restriction of CPE to local islands and small niches appears to be a thing of the past. Most CPE have emerged at the local level in a certain town or region (Seyfang and Haxeltine 2012; Kunze and Becker 2014). Yet in recent years, some have left these local breeding grounds and expanded to the regional or national level. Such a development can even be observed in countries like Spain, which have only recently begun the transition to renewables. Furthermore, the Spanish Somenergia shows that a rapid expansion of CPE is possible. In doing so, it highlights the potential of organisational learning. Even though Spain lacks a strong tradition in energy cooperatives

and had nearly no CPE before, Somenergia grew from a local to a national scale in only three years. In addition, the communication among local projects indicates that processes of networking and horizontal learning are underway (Seyfang et al. 2014).

These upscaling tendencies obviously signal a certain disconnection from the place of the installed technology and the residence of its owners. People invest jointly in places that are most suitable to them. This is often a necessary precondition, as Somenergia's attempt to set up Spain's first cooperative wind turbine exemplifies. Here, resources, in terms of organisational capacities and finance, had to be pooled in one place. While this clearly creates the risk of triggering extractivist and land-grabbing tendencies (Franco et al. 2010), we uphold that not only the technology application spreads, but also membership and ownership. We did not study the precise allocation of shares with regard to the shareholder's place of residence. But from the perspective of a theoretical analysis, it could be argued that the chance to make larger investment in the cooperatives and to thus also earn larger shares of its profits will probably be distributed along the already existing lines of financial inequality (Yildiz et al. 2015). The existing structure of social inequality in a given population is thus reproduced rather than thoroughly transformed by CPE (cf. Kunze 2012: 107f.). What CPE do certainly achieve is a certain exclusion of big institutional capital, which is nearly always accompanied by a disconnection of place and ownership. In that line of comparison, CPE are one step towards Ivan Illich's technology of human size (Illich 1973).

A second upscaling trend is the urbanisation of CPE. Many, if not most alternative organisations in renewable energy developed in rural regions. These rural areas offer

sufficient space for wind turbines or, for instance, for bio-mass cultivation. At the same time, they are a political field that appears easier to manage and possibly change in the course of doing so (e.g. Kunze and Busch 2011; Seyfang and Haxeltine 2012; Seyfang et al. 2013). In the past few years, CPE's spill-over into the cities has become clearly visible in Germany where quite a number of minor and major cities plan to switch to formats that are similar to CPE and feature publicly owned utilities that provide renewable electricity at an affordable price (cf. Hall et al. 2013). In Berlin, a strong commitment to a reduction of consumption per capita was part of the proposed model. Interestingly, the Berlin Energy Roundtable was originally set up by different social and ecological movements (interview 3).

This shows that in order to have a significant impact on the entire social metabolism, CPE have to grow beyond the niches in which they emerged (cf. Späth and Rohracher 2014). To enable a shift towards a degrowth society, some sectors, like renewable energy, still have to grow considerably before they can fully replace destructive industries like the fossil generation of energy (Schneider et al. 2010: 512; Latouche 2009; D'Alessandro et al. 2010). Further growth of CPE can be part of a degrowth project as it tackles one core condition of the growth economy – taken it successfully disables the resistance of incumbent stakeholders. If CPE successfully realise these degrowth ambitions, they will contribute to a lower general energy consumption from which every energy customer gains. A selective growth of CPE as one favourable part of the economy could thus initiate a degrowth of the total need for energy. And it would in addition lead to a replacement of fossil with renewable energy.

A crucial question beyond these theoretical considerations deserves further inquiry: to what extent can different forms of CPE realise their degrowth ambitions? Not surprisingly, we found evidence for a gap between aspirations and practice, even in the exemplary case studies. National laws that regulate the energy market according to a maximising principle are, for instance, one major constraint. Another is a possible internal transformation of CPE when they have to adapt to the given policy and economic framework, realising that they cannot fulfil all of their ambitions. Further research here could develop policy tools for energy market mechanisms that suit a degrowth instead of a growth logic.

Finally, these reflections on CPE raise the question of how to possibly contribute to an overall transformation of the market-based and profit-dominated social system, i.e. the reality of capitalism. CPE are not new forms when compared to the long tradition of cooperatives, local self-organisation, and other forms of heterogeneous economic practices based on mutuality, reciprocity and cooperation (cf. White and Williams 2012, Gibson-Graham 1996). There are, at the moment, reasons to be optimistic: CPE may even be what Ernst Bloch once called a “concrete utopia” (Bloch 1964). However, since “concrete utopia” is not synonymous with illusion, we would like to caution against naïve optimism. As David Harvey pointed out, alternatives like CPE are limited in time and scale. They first of all usually blossom during crises of the regular capital system and they are secondly often limited to local niches, lacking an expansionary mechanism (Harvey 1989: 238f.). Müller concludes that “capital, in short, continues to dominate, and it does so in part through its superior command over space and time, even when opposition movements

gain control over a particular place for a time" (2006: 144). These observations raise the question how alternatives to the growth logic of capital could be global and local at the same time, so that they would be suited for upscaling and expansion (cf. North 2005). In short, to adapt the givens of the global political economy, alternatives should be neither only local nor placeless and global, but instead "multi-scalar" (Müller 2006: 146). We believe this to be a question worthy of further study focussing on particular cases of CPE, and/or comparing CPE projects to alternative eceonomic practices in other sectors. Through their existence, CPE embody a certain transformative potential.

6 Conclusion

This paper introduced the idea of collective and politically motivated renewable projects (CPE) as a heuristic tool to broaden the debate on small-scale renewable energy. Unlike the notion of community energy, CPE are neither restricted to the local level nor the British legal context. They combine collective forms of ownership and decision-making with explicit political aspirations, with a degrowth orientation being one possible aspiration. These projects can be seen as degrowth initiatives because they seek to reduce the per capita energy consumption and integrate ecological principles into their business practice.

CPE combine the technological ability of decentralised renewable energy production with social movements and a democratising business model. While often pursuing a course of self-sufficiency and democratic organisation, many of them reflect the important conjunction of degrowth, autonomy, and democracy (Asara et al. 2013). By trying to

influence consumption patterns, they fuse the fields of consumption and production (D'Alisa and Cattaneo 2013; Lorek and Fuchs 2013). What is more, they delineate new forms of organisation that chiefly result from purposeful agency, which has set alternative ideas into practice (Latouche 2009; Rao et al. 2000). They further exemplify the difficulties, constraints, and contradictions of niche degrowth projects (Schwartzman 2012), which often struggle to survive in a hostile environment. Because they are politically motivated projects, they finally often link degrowth to other social movements (Martinez-Alier 2012). Such projects continue to emerge across Europe and as a consequence the debate on degrowth can benefit from a careful look at these specific sites of renewable energy production.

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List of Interviews

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Interview 2) with Marco Mariano, President of Retenergie, by Carla Detona, by phone, 13 May 2013 and Interview with Anna Maria Mariano (President of Solare Colletivo) and Pino Tebano (Solare Colletivo), Solar Colletivo is a closely associated organisation of Reternegie, interview by phone, 11 June 2013

Interview 3) with Stefan Taschner, Berlin Energy Roundtable, by Sören Becker, Berlin, 27 August 2013

Interview 4) Machynlleth, by Conrad Kunze, 24 April 2013

Interview 5) Somenergia, by Mihaela Vancea, 2 May 2013

observation) Both authors lived in Berlin during the last year of the Energietisch and got a first-hand impression. Conrad Kunze visited two of its meetings as a participant.