



# Towards a low carbon future: a phenomenology of local electricity experiments in Germany



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## ABSTRACT

A characterizing feature of the German electricity transition is that it started as a movement arising from the civil society. Initially the movement was directed against nuclear energy and later on turned into a movement favoring decentralized forms of energy production and distribution as well as local control over energy questions. Once these demands found official recognition and regulatory support, a dynamic development ensued in which a host of new actors with new ideas and strategies became involved in the field of electricity generation. Regions, cities and villages experimenting with socio-technical innovations and aiming to implement new concepts developed governance structures under high uncertainty. These governance structures mirror space-specific social, political, technological and economic constellations. Once the old incumbent actors in the field began to falter, both government and electricity providers started to stem the tide of decentralized initiatives, whose dynamic in fact has recently been seriously weakened. In order to help us better understand these developments in a more generic context, the theory of strategic action fields will be applied.

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## 1. Introduction

While the traditional form of electricity generation and supply is based on centralized structures with large-scale power plants, the objective of a strongly decentralized form of energy supply is increasingly becoming of importance. In the current existing regulatory and market frameworks in Germany and elsewhere, important technical and institutional innovations for energy transitions were and are being developed, tested and brought to application on regional and local levels. Regions, cities and villages experimenting with socio-technical innovations and aiming to implement new concepts have to develop governance structures under high uncertainty.<sup>1</sup> These governance arrangements mirror space-specific social, political, technological and economic constellations and have yet to be tested for their persistence and functionality (Joss, 2011).

In this context, the paper analyzes the development of decentralized situational governance as a basis for innovation impulses for the transformation of the electricity system in Germany. Assuming that local, urban and regional governance structures develop in conflict with the established structures of the field “electricity generation”, the paper analyzes a range of German initiatives as “strategic action fields”, within which socio-technical innovations are being developed. Based on recent theorizing by Fligstein and McAdam (2011; 2012) the paper stresses the importance of the actions of so called challenger actors, which eventually might (and in fact have), contributed with their activities to a change in the overall system of electricity generation.

Local, urban and regional initiatives are often interpreted in the literature as small experimental ‘niches’: constrained, but also enabled, by wider social and political structures and developments (Geels, 2014). Niche innovations may lead nowhere – or even serve to reinforce the status quo. Equally, however, they can have far wider implications as well. Implications which are hard to predict in advance, since they are dependent on new cognitive frames, changing economic and political power constellations and innovative measures, to become effective. Insofar it is of eminent importance to look at the (challenger) actors and their resources, the importance of their position within the field under investigation for evaluating their actions and their potential contribution to

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<sup>1</sup> In the following, we will make no distinction between local, urban and regional attempts towards developing plans for energy transitions. The decentralized character of these initiatives, which put them into opposition to the dominating centralized architecture, is the decisive common element considered important for the purposes of this study.

a transformation of the electricity system towards more sustainability.

The paper makes an important contribution to the literature by (1) claiming that the German energy transition should not be considered primarily as a steering problem of a government project, but has to be seen in a broader social context, (2) by explaining activities of local actors as being movement oriented and (3) by using a theoretical approach, the theory of strategic action fields, which has not been used so far in the relevant literature and which could be an important complement to the dominant transition approaches.

The article will proceed as follows. Section two will outline the theory of strategic action fields and locate it within the context of the transition literature. This will be followed by a discussion of some trends of decentralization in the German system of electricity generation to highlight the changing institutional context within the initiatives were forming (Section three). Chapter four will present 100% bio villages as one form of a decentralized initiative and explain some of their characterizing features.<sup>2</sup>

## 2. Transitions and the theory of strategic action fields

The fact that local and urban governments are increasingly adopting energy related policies that aim at a transformation of the electricity supply system is widely acknowledged (Hodson and Marvin, 2010). Nevertheless, the relevance of the spatial scale of these initiatives generally remains implicit or underdeveloped in transition approaches (Bulkeley et al., 2011). This negligence might have two reasons: on the one hand, especially sociological approaches do have the tendency to underrate the role of spatial proximity, because they usually assume that closeness in social space is paramount. On the other hand, a lot of the transition literature is explicitly technology oriented, takes as its point of departure a specific technology, and studies its pathway towards success or failure, being more oriented towards analyzing institutional elements of technological innovation systems than the actual, process related conditions of development. Technical innovation can contribute to order and persistence as well as enable radical change and modify social relationships and structures (Dolata, 2013) indicating a tension between technical innovations and social embeddedness, which constitutes the hybrid character of energy systems and therefore frames the starting point of socio-technical research on transformation. Energy systems and influencing factors on the transformation process are an important object of the socio-technical research on transformation (cp. Bergek et al., 2008; Coenen et al., 2010; Geels, 2002, 2004; Geels and Schot, 2007; Kern and Smith, 2008; Rotmans et al., 2001; Rohracher, 2007; Smith et al., 2005). Regions and local communities are usually considered more passively as seedbeds, but not as originators of powerful transition oriented initiatives. This, however, need not be the right way to look at it – both empirically and theoretically. The example of the development of solar technology in Germany has amply shown that the initiative for experimenting with and developing this technology came from certain local and/or regional pockets in opposition to developments on a more central level, be it the federal or state level or in opposition to the incumbent actors in the field of electricity supply (cp. Dewald and Truffer, 2011; Fuchs and Wassermann, 2012).

Theoretically, we will argue that a sociology in the tradition of Max Weber is first of all interested in understanding and explaining social action. Institutions, technologies etc. become of importance when they affect social actions. Social actions always take place in a specific „local context“. Social actions are influenced by the specific local context in which they take place and can only be understood with reference to this specific field context in which they are performed. Space, however, is not an independent category to be abstracted from the „games real actors play“. Abstract categories like cities, technologies etc. are only becoming relevant once actors refer to them, take them under consideration in their calculations (cp. Scharpf, 1997). An important part of the literature treats abstract concepts as constraints for the activities of groups and persons. This is an odd approach (cp. Martin, 2011). As structuralist approaches, field theory based approaches and other theoretical traditions in the social sciences stress, institutional elements become only relevant once they are enacted – in this sense they are structuring action but are not necessarily constraining it.

Usually studies based on the multi-level perspective (e.g. Geels and Verbong, 2007; Geels, 2005, 2010) identify dynamic processes, characterized by the existence of path-dependencies and lock-in phenomena as well as by interdependencies between technical and social change processes (Elzen et al., 2004; Raven and Verbong, 2010; Rip and Kemp, 1998). Trajectories of persistence thereby hinder change and are hence very interesting for analyzing the reluctant withdrawal from fossil path-dependencies. However, there is a lack of actor orientation, as well as a lack of studies on area focused strategies and innovation resources (Markard and Truffer, 2008; Kemp et al., 2001). Even though the innovation niches which are in the focus of analytical works were attributed to local characters, the spatial embedding of innovation processes and the dynamics of innovation there, negotiation processes and the “battle of the systems” is neglected (Monstadt, 2009; Hodson and Marvin, 2010). This may very well be the consequence of highlighting abstract functions and systems designed by the researcher and not looking closely enough at what actual people are aspiring, who are engaged in advancing specific strategies.

Looking at the way local initiatives organize, which results in what we will call situative governance, forces us to engage with the driving forces aiming to create a new governance structure. Insofar it is a call to look at the “roots of local policy responses to climate change” (Burch, 2011), which still awaits satisfying answers.

Field theory approaches claim that all fields, which come into existence, relate to an identifiable problem and develop a specific social structure. One important element of this social structure is that actors can be distinguished, which command over a different amount of resources, varying strategies and are occupying different positions within the field. Sometimes a distinction is made between members and challengers in a field, Bourdieu distinguishes dominating and dominated actors, and the most widespread distinction is those between incumbent and challenger actors. By definition, incumbent actors possess a dominating role within a field, command more resources and are better able to steer the developments in a direction supporting their status. Insofar it seems obvious that incumbent actors usually will not have much interest in undermining their own position, changing the rules of the game in a way that would put their very position at risk.

This seems to get in conflict with a line of reasoning in transition research, which claims that incumbent actors could be instrumental in bringing about transitions, especially on the local level. Smith et al. (2005) e.g. argue, that there would be a need to further develop regime endogenous transition perspectives, where the transition process is conceptualized as the result of incumbent regime actors (local/urban governments) making conscious and

<sup>2</sup> The article is based on preliminary empirical results of two on-going projects. The Helmholtz association and the state government of Baden-Württemberg finance one, the second one is funded by the German Federal Ministry for Research and Education.

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