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Collaboration and Competition in Local Energy Transitions: A Case Study

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Abstract: Cities and towns in Europe increasingly pursue low carbon transitions. Actors from different social spheres such as politicians, entrepreneurs, and scientists are involved in these local transitions processes. However, comprehensive research on these processes that takes the various social spheres and their interactions into account barely exists. This paper contributes to filling this gap by presenting an empirical study on the energy transition processes in the city of Emden (Germany). Based on document analysis and 37 narrative interviews with local actors involved in energy transition processes, it emphasizes the collaboration and competition between actors from different social spheres. The material shows an increasing engagement in energy transition processes, which can be attributed to the benefits various actors can generate from their activity in the transformation processes, such as political votes, power, economic profits, publications and research funds, credibility, and moral legitimacy. Despite seeking different types of benefits and engaging in dissimilar operational logics and fields of activity, actors from different spheres tend to complement each other in their transition activities. Thus, actors from each sphere assume specific functions in the local energy transition: politics take favorable decisions for local energy transition; businesses “materialize” energy transitions in the form of wind farms and energy efficiency measures; civil society agents act as moral watch dogs; science provides scientific expertise to transition projects. While the local activity is mostly marked by collaboration, there is also competition for the dominant positions in local energy transitions processes. Conveying high legitimacy and sphere-specific benefits to actors (e.g., votes, economic profit) as well as the potential to shape local transitions processes, actors compete for leadership roles and seek to brand themselves as pioneers of Emden’s energy transition. The rising attractiveness of local energy engagement as well as the collaboration and competition between actors indicate the emergence of a local “energy transition”-arena, which constitutes a social field in which actors from different social spheres collaborate in energy transition activities and struggle for dominant positions.

Keywords: urban energy transition; actors; functions; social spheres; competition; arena

1. Introduction

Social science research on sustainability transitions has expanded so much in recent years that today it forms its own research field. Different theoretical approaches exploring the dynamics of transitions have emerged in this field, and of them, the Multi-Level-Perspective (MLP) and Technological Innovation Systems (TIS) have particularly thrived (cf. [1]). Each approach assumes a specific perspective. MLP distinguishes between three levels of analysis: landscape, regime, and niche (cf. [2–8]). As dominant socio-technological configurations constitute regimes that tend to block potentially challenging innovations, protective niches allow for the experimentation with socio-technological alternatives. Niches and regimes are framed by landscapes, the institutional context that is not affected by short term variations on the level of regimes or niches. Landscape changes as well as niche dynamics may exert pressure on regimes and initiate transformations in dominant socio-technological configurations. The Technological Innovation Systems (TIS) approach, in contrast, draws a functional perspective on the development and diffusion of new technologies (cf. [9–11]). It identifies and explores specific functions in this process, such as the development and diffusion of knowledge, entrepreneurial experimentation, resource mobilization, and legitimization. The empirical analysis of the functions enables the identification of supportive and obstructive factors at different stages of the technological innovation process.

Despite exploring sustainability transitions from different perspectives, the two approaches share two characteristics that hamper their application to local transitions: (a) a disregard for the local and regional level and (b) a focus on (socio-)technological innovation. Implicitly focusing on socio-technological developments on the national and global level, prevalent theories tend to disregard the spatial dimension of transitions and particularly the local and regional dynamics [12,13]. Moreover, the aforementioned theories and related empirical studies center on the emergence and dissemination of technological innovations, significantly extending our knowledge of the conditions under which new sustainable technologies emerge and successfully spread. However, the technological focus of transitions research obstructs a more encompassing understanding of ST processes that takes the interplay of actors from various social spheres into account. Drawing encompassing pictures of sustainability transition processes that explore the interplay of actors from various spheres only appears feasible in small-scale regions, where researchers can identify all relevant actors involved in the given transition process and their interactions. Accordingly, local spaces such as cities, towns, and small regions may serve as empirical cases for generating more encompassing pictures of the complex interplay of actors in the course of transition processes.

As cities and towns in Europe increasingly pursue low carbon transitions, seeking more sustainable modes of energy production, consumption, and

distribution, there is rising research on transitions in these spaces (cf. [14–20]). Although this research usually indicates that different types of actors are involved and that their interplay is paramount for the intended transformation processes, little is known about said interplay. As most research focuses on single projects and/or specific types of actors in cities and towns, we lack an understanding of how the local actors relate to each other in energy transition processes and organize their interplay.

This article addresses this research gap by exploring the interplay of actors from different social spheres in the energy transition processes of the German city of Emden. Placing a particular emphasis on the collaboration and competition between local actors, it raises the question whether the local activities indicate the development of a specific social field related to the local energy transition.

The study is based on an empirical investigation of Emden's energy transition process. In order to explore this transition process, different methods have been applied: (a) Document analysis: documents related to the process such as municipal plans, websites of local actors, and press reports were gathered and analyzed. (b) Narrative interviews: the author of the article conducted 37 qualitative semi-structured interviews with actors from different social spheres (civil society, finance, industry, intermediaries, municipal administration, politics, religion, science), who are involved in the local energy transition process. The interviews included questions about their main projects in the local transition process, the evolution of their activities in this field, and their relationships with other local actors.

The paper is structured as follows: The first section describes the main results of the research on Emden's energy transitions focusing particularly on collaboration and competition between local actors. The second section discusses whether the energy transition process leads to the emergence of a social field and portrays further research possibilities.

2. Emden's Energy Transition: Between Collaboration and Competition

Emden is a small harbor city of around 50,000 inhabitants in Northwestern Germany. The city's economy is marked by the shipping industry, its big manufacturing site of a German car builder, and increasingly by the wind energy industry. In the last decades, Emden's economy has experienced a transformation from its historically very strong shipbuilding sector towards the wind energy sector. With the decline of the shipping industry, several wind energy businesses have emerged (see also [18,21]).

The initiation of Emden's energy transition was characterized by solitary projects of single actors. The first project, which marked the beginning of Emden's energy transition, is the installation of a windmill at the local water works in 1987. For the moment, the attempts to create a local energy transition remained mainly restricted to

the public utility company and, perhaps to a minor degree, to actors in local politics and the city administration, who reinforced the projects of the public utility company.

In the 1990s and early 2000s, the number of projects, actors, and collaborations involved in the local energy transition drastically expanded. Due to a new legislation regarding renewable energy and rising social awareness about environmental change, engagement in energy transition became more profitable for many actors. Accordingly, more and more local actors from different social spheres such as businesses, political parties, and scientists started dedicating themselves to energy transition. By pushing energy-related projects, political actors realized that they could generate public recognition and employment in addition to gaining votes. Similarly, businesses saw new business opportunities related to the energy transition. For instance, businesses located in Emden's harbor discovered renewable energy, in particular offshore wind energy, as a promising business field: hit by downturn in its traditional business area, a local shipbuilding company re-orientated its business activities and started to construct windmill towers and platforms for offshore wind farms. Other wind energy businesses emerged in the harbor, while longstanding companies sought to integrate the new business opportunities into their strategies (e.g., transportation of employees and material to offshore wind farms). The local energy transition spread and became increasingly palpable. Large wind farms emerged in the outskirts of Emden, solar panels were installed in the city of Emden, public buildings were refurbished to low energy standards, and education programs and energy saving competitions at schools, as well as programs to increase the share of cycling and public transportation, were being implemented.

Given the strong commitment of the city to the low carbon transition and its ambitious climate targets—10% reduction of CO₂ emissions every five years and a 50% cut of the total CO₂ emissions from 1990 until 2030 [22]—alongside the implementation of numerous projects, and the engagement of numerous local actors, Emden is described as a pioneering city in Germany's energy transition [18,23,24].

Actors from various social spheres are involved in the local energy transition processes and implement a rising number of transition projects in Emden. Many of these projects are only feasible because of the collaboration of actors from different social spheres. For instance, the energy education "E-Spas" program at all public grammar schools in Emden is based on the cooperation of the city administration, local schools, the public utility company, and the local ecology center. Another example is the construction of the public utility's wind-farm at the site of a car manufacturer: local banks provided loans for the wind farm; the city administration handled the application procedures in a favorable manner; local politicians in the city council supported the construction politically; and the car manufacturer granted access to its site. A crucial alliance is that of three main actors: the mayor, the CEO of the Stadtwerke Emden (SWE), and the entrepreneur. Backed by their organizations

(public utility, governing party and municipal administration, and the consulting business), these three actors design and undertake various projects, spurring the local energy transition process (see also [18,23]). Although their interests and positions on sustainability may differ, they seek to balance their interests and undertake projects that fit their common interests.

Despite seeking dissimilar types of benefits and engaging in unlike operational logics and fields of activity, actors from different social spheres (businesses, politicians, scientists, ecological activists, etc.) tend to complement each other in their transition activities. Thus, actors from each sphere assume specific functions in the local energy transition: politics support the process with favorable political decision-making and contacts; businesses “materialize” energy transitions in the form of wind and solar farms and energy efficiency measures; banks provide specific loans for building retrofitting and the implementation of solar panels; civil society acts as a moral watchdog by voicing public protest and/or support; the local university trains future professionals in the area of energy efficiency, provides scientific expertise to transition projects, and conducts research projects together with local partners. Each social sphere contributes with its specific competences to the process. Accordingly, collaboration between actors from different social spheres is an essential feature of Emden’s energy transition.

However, apart from collaboration, the local energy transition process is also characterized by competition. Over time, three different approaches to the energy transition process evolve in Emden: the *opportunistic vision* regards the energy transition mainly as a vehicle for generating profits (in the form of political votes, economic gain, scientific recognition, etc.). Many local businesses and some political actors take an opportunistic stance. The *counter-position* to this is the *environmentalist view*, which strives for ecological conservation. The ecological party, citizen initiatives, and environmental organizations assume the environmentalist position. Finally, there is a *position* that balances between the two aforementioned positions, seeking to promote environmental sustainability, but highlighting at the same time its benefits. Some business actors, such as local entrepreneurs and public utility companies, employees from the city administration, and researchers, tend towards this middling position. Actors seek to promote their vision of energy transition and struggle for public visibility and impact with their visions and projects. Accordingly, local businesses, the city administration, political parties, etc. launch public campaigns portraying their involvement in the local energy transition.

Struggling for public visibility and impact, some actors become more influential than others. Given its strong engagement and visibility, the public utility SWE enjoys a high reputation and is seen by the vast majority of interviewees as the central player in Emden’s energy transition. The SWE invests strongly in wind farms, promotes energy efficiency among Emden’s population, and creates strong alliances

with other powerful actors in the city. Holding a dominant position, SWE defines, to some extent, the predominant understanding of the local energy transition and the pathway of the transition process. It promotes a vision that balances between the opportunistic and environmentalist visions of the transition, focusing strongly on onshore wind energy production and energy efficiency.

However, other actors challenge the powerful position of the SWE and the predominant transition pathway. In 2008, the Danish power company *DONG energy* planned to construct a coal power plant in Emden. The plans were supported by some political and business actors, who regarded it as an opportunity to create employment and saw the potential of changing the prevalent energy transition pathway. However, the plans were met with strong objections from the population and some of the key actors of the local energy transition. Accordingly, these actors subsequently mobilized against the construction of the coal power plant, resulting in massive citizen protests in Emden's city center. In the end, *DONG energy* renounced its plans.

The preservation of the established energy transition pathway could be regarded as a further step in the petrification of the SWE's powerful position. Nevertheless, potential competitors such as the local university of applied sciences voice ambitions to become a leading figure in the local transition process. Consequently, competition about the pioneering role in Emden's energy transition is likely to thrive. Moreover, competition between local actors in the energy transition also relates to their interest in specific renewable technologies: while some actors linked to the onshore wind businesses in the region have vested interests in promoting onshore wind energy and portray offshore wind energy as inefficient, business actors related to the harbor and some politicians see their interests served by offshore wind energy (e.g., business opportunities in transportation of staff and material to offshore wind farms) and promote this technology within the region. Accordingly, apart from being marked by collaboration, Emden's local energy transition is also characterized by competition among the actors engaged in the local transition, as they follow different interests and visions.

3. Discussion: Emden's Energy Transition as a Social Field?

The rising levels of collaboration and competition may indicate the evolution of a particular social field related to the local energy transition process. To determine whether Emden's energy transition process has the characteristics of a social field, the concept of the social field has to be outlined.

Although defined in different ways by researchers, social fields are usually associated with some specific characteristics. Fligstein and McAdam [25,26] summarize some of the most prevalent features of social fields in their theory of *Strategic Action Fields*. They define fields as meso-level social orders in which actors

interact with knowledge of each other under a set of common understandings about the purposes of the field and its rules. Accordingly, fields are marked by the presence of several actors that follow a similar purpose and/or are dedicated to a similar subject. As they are taking each other into account, these actors mutually more or less know their activities and positions. Furthermore, there is action on the field: actors try to improve their positions and shape the field. In the course of the power struggles, the relationships are not only marked by competition, as some actors may also form alliances to compete others. Finally, the competition on the field results in the evolution of power inequalities: having gained a certain status within the field, some actors—defined by Fligstein and McAdam as “incumbents”—will assume a leadership position and have a particularly high potential of shaping the dominant pathway within the field. By contrast, actors that are less powerful but strive for the leadership constitute “challengers”, as they seek to undermine the powerful position of the incumbent(s).

The aforementioned elements become manifest in Emden’s energy transition: although the actors are primarily related to distinct social fields (e.g., economy, politics), they are all dedicated to a similar subject: the local energy transition. As Emden is a small city, actors involved in the local energy transition are usually aware of the other actors involved in the process and their activities. Additionally, actors compete and collaborate with each other. They compete over shaping the local transition process and often build coalitions among each other. Over the course of activities, hierarchies emerge: the SWE dominates the local energy transition, whereas other actors seek to challenge its influential position. In total, Emden’s energy transition manifests the general characteristics of a social field.

As fields develop unique characteristics, so too does Emden’s energy transition field show some particularities. The most striking characteristic is perhaps that it is marked more strongly by collaboration than by competition; whereas other transition processes are marked by strong conflicts between proponents and opponents of low carbon transitions (cf. [27,28]), in Emden, there is little conflict and a high level of cooperation between local actors. As Fligstein and McAdam [26] point out, some fields are rather based on collaboration than competition.

Another peculiarity of Emden’s energy transition field is that it conveys actors that are primarily committed to other social fields such as businesses, politicians, and scientists. Standing in between different social fields (e.g., political fields, economic fields, and scientific fields) that follow particular logics and generate diverging notions of and interests in the energy transition, it constitutes a social arena that allows for negotiating and aligning these notions and interests. As such, the field assumes the role of coordination structure. Despite the seemingly coordinated contributions of the numerous actors involved, Emden’s energy transformation process is not managed by any encompassing governing body. Instead, the field

appears to overtake this function: bringing these multifarious actors together within a shared social space, the field facilitates the communication and coordination between them. Mutual awareness of actors involved in the process, collaboration, competition, social networks, hierarchies, and to some extent the emergence of shared rules and understandings substitute a more organized coordinative structure in the case of Emden's energy transition. A specific field approach to sustainability transitions would have to highlight the coordinative function of social fields.

Furthermore, the case indicates that the local dynamics of collaboration and competition between different actors are crucial for the pathway of the local transition. Accordingly, the study of sustainability transitions needs a stronger focus on the interplay of different types of actors. Research in this direction could, for instance, explore and compare the dynamics of collaboration and competition in different urban transitions to determine typical patterns of this interplay.

Apart from comparative research on the dynamics of collaboration and competition in urban transitions, there is a need for theoretical approaches unfolding these dynamics. While existing approaches such as MLP and TIS have strongly contributed to explaining the evolution and diffusion of socio-technological innovations on the international and national level, specific theoretical approaches for the encompassing study of local transitions are, so far, missing. Theoretical approaches analyzing transitions at the local level would have to place an emphasis on agency and take the various types of local actors, their heterogeneous interests, and interplay into account. As this field approach focuses on the analysis of actors, their interests, and their interplay, it could constitute a valid contribution to this theoretical endeavor. However, to identify its potentials (and its flaws), and to further develop it for the specificities of local transitions, more research applying it to local transitions is necessary.

So far, there are only a few applications of field theory to sustainability transitions (cf. [27,28]). Further research may explore whether and under what conditions social fields develop in local transition processes. It may turn out that fields compensate for the absence of a governing institution, as they serve as a coordination mechanism. Moreover, research may also explore the benefits and limitations of a field perspective on sustainability transitions. As this perspective does not necessarily focus on the development and dissemination of particular technologies and takes various types of actors into account, it seems to allow for a more encompassing perspective on sustainability transitions than predominant transition approaches. Furthermore, as it avoids the regime/niche-dichotomy of the Multi-Level-Perspective, it may also provide a more dynamic and less structured approach to transition processes.

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