



Original research article

## Between grassroots and treetops: Community power and institutional dependence in the renewable energy sector in Denmark, Sweden and the Netherlands



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### ARTICLE INFO

#### Keywords:

Grassroots initiatives  
Renewable energy transition  
Institutional change  
Conditions of possibility

### ABSTRACT

The speed and progress of transitions towards renewable energy systems varies greatly between European member states. Among others, these differences have been attributed to the emergence of grassroots initiatives (GIs) that develop radical ideas and sustainable practices. The goal of this paper is to understand the differences in the emergence of GIs for renewable energy in relation to the institutional characteristics of Denmark, the Netherlands and Sweden. We analyze the possibilities of GIs to emerge and act within three dimensions: the material-economic, the actor-institutional and discursive dimension. We conclude that conditional factors lie within the material-economic dimension in terms of the biophysical conditions, the structure of the economy, energy dependency and the energy market. Within the actor-institutional dimension, we conclude that the presence or absence of fossil fuel incumbents, such as regional utilities, strongly influence the possibilities of GIs. Within the discursive dimension, openness for alternative discourses proved to be enabling for GI-activities, as well as democratized knowledge production. In addition to these conditions of possibility, GIs can also act despite dominant institutions, albeit limited. Finally, GIs need a strong network with knowledge institutes, technology developers and political parties in order to achieve institutional change that enables GIs to flourish. Without institutional space, GIs remain subjected to the dominant power-relations, and cannot exert much influence upon the energy system.

### 1. Introduction

The internationally shared political aim to move towards a sustainable and carbon neutral society calls for transformations of socio-technical energy systems worldwide [1]. In the European Union, there are concerns about member states' deviation from renewable energy action plans, different speeds and forms of the energy transition, and a lack of long-term consistency of policies. The energy transition is also hindered by administrative and technical barriers to renewable energy (RE) growth, which are often difficult to remove [2]. Despite concerted attempts within the EU to manage the RE transition, change is thwarted by vested interests, institutional lock-in and existing path dependencies in the energy sector [3].

To enable more radical changes in the energy transition, observers have emphasized the potential of 'grassroots initiatives' for developing

radical new ideas and sustainable practices [4,5]. Grassroots initiatives (GIs) are open and dynamic bottom-up activities that seek to provoke changes that go beyond or against the orchestrated paths of transition, but are self-organized and transformational. GIs include local and regional initiatives, established by groups and communities that aim for more durable energy systems in their direct environment. This includes NGOs and community organizations, but also collaborations with local authorities and businesses that are thinking and working 'out of the box' [6].

Although the potential of GIs has been acknowledged [7] attention from science and policy makers towards GIs has been fairly instrumental, selective and inconsistent. Academic attention towards the role of GIs has been dominated by case study approaches [8–13]. These studies focus mostly upon the individual characteristics of GIs, their performance and their role, how the performance of GIs could be

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improved by strategic niche management (SNM) [14,15] or by intermediaries [11,16]. However, comprehensive overviews of the development of GIs at the national or international level are scarce [17,18] [cf. 17,18] and much of the actual potential of GIs remains untapped [4,6,19].

To understand the current position and potential of GIs, it is crucial to study the origins and developments of GIs, the existence and appearance of GIs and their possibility to influence or adapt to their institutional environment. Therefore, we take an institutional approach to GIs, focusing on the effects of rules [18], resistance or support at the regime level [20,21] and strategies of GIs [12]. The central question of this paper is: *what are the conditions of possibility that enable GIs to flourish, and how do GIs in turn exert influence upon these conditions?* These conditions are categorized into material-economic conditions, actor-institutional conditions and discursive conditions.

To answer the research question, this paper explores the institutional setting of GIs across European countries, specifically Denmark, the Netherlands and Sweden, which are chosen because the three countries have very different development paths of GIs. In Denmark, GIs have been relatively successful [22–24], but recent developments have created a less supportive environment [25]. In the Netherlands, GIs were relatively uncommon until the late 2000s, but the establishment of GIs has accelerated since 2010 despite seemingly unfavorable institutional circumstances [18]. Third, Sweden provides an environment where (local) welfare state institutions are very active in renewable energy, taking up tasks that would be the domain of GIs in other countries and hence reducing the number of GIs.

This paper offers a comparative analysis of the three countries, based on a longitudinal reconstruction and analysis of the development, conditions of possibility and influence of GIs in each country. We build upon the seminal work of Jamison et al., who compared the rise of environmental GIs in Denmark, the Netherlands and Sweden and extend their work towards renewable energy and contemporary times [26].

The next section outlines our theoretical approach and offers a more elaborate sketch of the used methodology. In section three, each case is presented. Section four consists of an elaborate comparison between the countries and section five discusses the main conclusions briefly as the main points have been elaborated in section four.

## 2. A co-evolutionary institutional perspective

Following other co-evolutionary approaches [27,28], our perspective recognizes the evolution of systems and the effect their evolutions have upon other co-evolving systems. Because this paper deals with the understanding of the role of GIs within a regulated energy system, we introduce and distinguish three dimensions, based on the impact these dimensions have on GIs [see also 18,29]. The material-economic dimension, the actor-institutional dimension and the discursive dimension constantly evolve and influence each other. For example, institutions are being shaped in co-evolution with actors, and institutions simultaneously shape actors [12,28,30–32]. This study takes a co-evolutionary institutional perspective, in which institutions are defined as the *'rules of the game'* [33] including formal and informal rules, which coordinate governance and in turn can be altered through interaction [34]. Whether or not actors can participate and have access to decision-making or to material-economic resources is defined by institutions, e.g. access to energy markets or institutions of political decision making [35].

Institutional structures are consolidated forms of interaction of networking activities, or social conditions to which agents seek to take strategic action. Through these actions, institutional structures are being created, enforced or altered, transforming the existing institutional setting. Such a co-evolutionary understanding enables us to analyze the changes and interactions of material-economic configurations with actor-institution configurations, in relation to an

understanding of power relations and the use of knowledge [31,36]. The institutional structure offers 'conditions of possibility': while it does not cause the emergence of GIs, it may provide institutional characteristics that enable GIs to develop activities or influence the institutional structure.

The paper focuses on the actor-institution configuration related to the emergence of the network of GIs in the field of renewable energy. Focusing on the mutual influence between GIs and their institutional environment requires an analysis of change processes in the institutional structure. To operationalize these 'conditions of possibility' we introduce three concepts as heuristic tools to create three levels of analysis, described in the next three sections.

### 2.1. The material-economic dimension

The material-economic dimension includes the biophysical conditions that enable energy production, transport and use, such as the presence of fossil fuels, the potential for renewable energy production and the geographical challenges for energy infrastructure. The availability of these resources creates (international) patterns of trade and dependency, and we therefore look at the energy mix as well as import and export patterns and the structure of the consumer market, including common practices for heat and electricity provision (e.g. history of district heating, central or decentral grid). This also includes grid infrastructure, ownership and access. The material-economic dimension also encompasses the demands for energy and resource dependency, such as e.g. energy intensive industries. The biophysical and economic circumstances provide conditions that allow or prevent GIs from acting in the energy system.

### 2.2. The actor-institutional dimension

This dimension focuses on the dynamic relationship between institutions, actors, and (formal) regulations, in order to gain more insight in the relations between GIs and other actors and the 'rules of the game'. It includes actors involved in energy, including energy policy and ownership of energy production, storage and infrastructure facilities. Maintaining a multi-level perspective of governance, we include relevant actors, platforms, networks, formal and informal institutions from the national and sub-national levels. Moreover, we look at the rules which shape the interactions between these actors, including possibilities and voids for GIs that may differ among countries and regions. These rules include historical governance traditions, the access of GIs to policy making and implementation processes, openness to change, and more formal regulative aspects [12,32,37].

### 2.3. The discursive dimension

The discursive dimension acknowledges the importance of discourse in the institutional structure. This dimension analyzes how GIs are embedded in the (dominant) discourses that are present in the institutional structure, relating to both the content of discourses and power relations. This provides insight in the mobilization of GIs and how they align with dominant discourses, resist or alter them. The content of discourses refers to dominant ways of thinking, ideas and ideologies about renewable energy and the position and legitimacy of GIs. These discourses can be contradictory or complementary and provide a certain degree of legitimacy for community action and for the energy transition in general, and may align or conflict with the motivations and ideas of GIs themselves. The discursive dimension is clearly linked to the actor-institutional dimension through a notion of power. This discursive power, or the dominance of certain ideas about 'how things are done', is visible in political, social and economic interactions and influences the hierarchies and (mutual) dependencies between actors and their access to formal power and resources.

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