



Original research article

## Trouble at the end of the line: Local activism and social acceptance in low-carbon electricity transmission in Lower Franconia, Germany

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## ABSTRACT

Germany is planning a 4GW electricity grid superhighway (EGS) called Suedlink to bring wind power from the north to the southern states of Bavaria and Baden-Württemberg, via a large under-used distribution hub near Schweinfurt, in Lower Franconia. Strong local objections to this project were investigated in an empirical study in the affected regions of Lower Franconia using document research, semi-structured interviews and public event attendance. Much existing literature on acceptance of EGSs problematizes local objectors as barriers to necessary progress, but several recent studies frame objectors as important participants in socially and technologically advantageous governance. Using a grounded theory approach, this study found intense concern that Suedlink, by terminating in Lower Franconia, would compete unfairly with Lower Franconia's own renewable electricity production, threatening the local economy and the delicate threads that maintain a Lower Franconian way of life against increasing challenges. Local actors also brought technical critique to the appropriateness of the EGS for its stated objectives and the government's apparent claim that it would only transport renewable energy. The study's findings support the approach of framing local actors as essential participants in energy governance who could improve planning and outcomes if more effective processes of consultation are devised.

## 1. Introduction

This paper investigates issues of public acceptance of an electricity grid superhighway among renewable energy stakeholders in Lower Franconia, a cultural<sup>1</sup> and geographical region in Germany where the grid superhighway is to terminate and give out its electrical load.

Germany is committed to deep reductions in CO<sub>2</sub> emissions from energy consumption by 2050, in a wide-ranging program of technological development called the 'Energiewende' (energy transformation). A significant part of this is decarbonizing and de-nuclearizing electricity production. The precise configuration of different sources of generation, their eventual proportions, and suitable paths to achieve these are subject to ongoing discussion and debate [1,2]. In broad terms the aim is to phase out nuclear power by 2022 and depend heavily on renewable electricity sources, mostly wind and photovoltaics, with input from hydroelectric and biogas. This is to be supplemented with small amounts of conventional electricity to fill sudden, short-term and medium-term gaps in renewable electricity generation, within an intelligent grid that optimizes supply and distribution in time and space, driven economically by a real-time electricity auction market, with

improved international electricity sharing and a more rational and adequate grid distribution system [3].

A significant aspect of modernizing the grid will be the construction of long distance, high-voltage, high-capacity transmission lines – called 'electricity grid superhighways' (EGSs) in this paper. Industry and other heavy electricity users are often long distances from the main sources of electricity production as nuclear power is phased out. Further, renewable electricity from wind turbines fluctuates intensely, so transmission will increasingly need to be able to vary between sources, which may be far apart geographically [2,3].

This study explores acceptance issues in relation to a planned EGS known officially as 'Suedlink' and popularly called 'Stromtrasse A7'. The Federal government's stated plan is that Suedlink will bring excess renewable electricity from northern Germany, which is rich in wind (and coal-fired) electricity, to the southern states of Bavaria and Baden-Württemberg, terminating at a large, currently under-used distribution hub at and around Grafenrheinfeld, the site of a now-defunct nuclear power station, just south of Schweinfurt, in Lower Franconia. Two further EGSs are to be built to carry electricity from wind and coal-rich regions of eastern Germany, via the state of Thuringia, to central and

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<sup>1</sup> The word 'culture' has a range of meanings in social science historical studies and everyday language. Here it is used in the sense of: the set of customs, traditions, language(s) and values of a society or community, such as an ethnic group or ethnic sub-group.



Fig. 1. The geographical position of Lower Franconia in the northwest of Bavaria, with a schematic of the planned route of Suedlink (Stromtrasse A7).

southern Bavaria [3,4].

The size and capacity of these EGSs represent a major turning point in Germany's Energiewende, which is largely represented by hundreds of thousands of small, decentralized renewable electricity sources widely distributed throughout the country. Suedlink will transport 4GW, the equivalent output of 3 medium-sized nuclear power stations, from Wilster near Brunsbüttel on the North Sea coast, to the grid hub at Grafenrheinfeld, (see Fig. 1). For the German government Suedlink is an intrinsic part of the Energiewende [3] so it is vitally important that this development gains public acceptance [4].

Issues of public acceptance of Suedlink within Lower Franconia surfaced repeatedly during an empirical study on wider effects of the Energiewende in Lower Franconia, conducted in spring 2017 [1]. The topic of Suedlink was so prominent in written and spoken discourse that the research team decided to pursue an extra, focused investigation on acceptance issues in relation to it.

Some of the major issues emerging in the study seemed at odds with findings in existing literature on acceptance of EGSs (see reviews in [1,4]) and to intersect more consonantly with issues of participative

governance [5]. It was therefore considered whether there might be linkages between these approaches. Also, because existing literature did not provide a conceptual framework that would do justice to the empirical material, it was decided to analyze the empirical data using a 'grounded theory' approach [6]. Grounded theory means framing the empirical results in terms of major themes that emerge within the study, rather than in terms of an existing interpretive framework. This can enable due weight to be given to findings that do not fit well with what is already known or deeply assumed. Issues and potential pitfalls of using grounded theory are discussed briefly in the Methods section.

A further important characteristic of this study is that the local region where it took place includes the location where Suedlink will terminate and give out its electricity supply. Hence, local people might not only be reacting to the possible inconvenience of an ESG passing through their territory, but also to the sudden increase in electricity supply, from outside the region, that will occur when Suedlink is commissioned.

The rest of this paper proceeds as follows. Section 2 explains the Federal government's rationale for Suedlink and outlines key features of

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