Energy Research & Social Science 17 (2016) 119–126

Contents lists available at ScienceDirect

Energy Research & Social Science

journal homepage: www.elsevier.com/locate/erss

Original research article

Creating transitions to electric road transport in Norway: The role of user imaginaries

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ARTICLE INFO

Article history:
Received 10 December 2015
Received in revised form 28 April 2016
Accepted 29 April 2016

Keywords:
Electric vehicles
Imagined publics
Transitions
Energy policy

ABSTRACT

The aim of this paper is to study the role of user imaginaries in relation to electric cars and the role these imaginaries play in the ongoing transition towards electrification of the transport sector. We conducted interviews with a diverse group of stakeholders to explore how imaginaries of the public are constructed and how the shared expectations of a user trajectory shaped by user groups with different concerns and different expected technology developments influence policy. We identified a range of implications and influences of this shared imagination for different aspects of the development of strategies and policies related to electrification of the transport sector in Norway. Finally, we discuss how these user imaginaries, that we call imagined publics, appear to have become part of the process of sociotechnical changes and what the consequences may be for a transformation to sustainable mobility.

1. Introduction

The politics of technology involve translations between various interrelated settings ranging from the context of design to the context of use [20]. Not only parliaments and public authorities accommodate political practices, but also laboratories [18], demonstrations [21,23], markets [33], and even actual use [15,24]. People, institutions, and firms must be aligned, moulded, and disciplined to create (and accept) technological development [27]. In this article, we researched how different forms and modes of governance have been used to influence practices related to sustainable mobility in Norway, with a special focus on the introduction of the electric car. In doing so we tap into at least one of the questions that this journal aims to answer, the question of 'what different social groups are involved in the production of a particular energy system'? [27]. Further on, how people imagine energy technologies and their futures is a critical social facet of energy transitions [28,29]. Thus, the article tries to tie together different key debates in the energy studies and social science field concerning communication and persuasion (sociotechnical imaginaries), energy governance and user practices [27].

Reducing emissions from cars is of high priority and the sustainable transition of road transport by electrification is a significant tool that has been included on the agenda in Norway, in the EU, and other parts of the world such as California, in the US. Research has shown that the initial transitory phase to electromobility is dominated by the need for consistent and stable national policies where governments signal a strong national interest, create market interests, and ensure availability of vehicles [11]. Norway has certainly been through such a transitory phase and is currently considered the leading electric vehicle (EV) country in the world and the country where electric mobility is increasing most rapidly among private car users. In fact, 35% of all EVs sold in Western Europe in 2014 were sold in Norway[1] and over 18% of all new cars sold in Norway are now electric. This huge success can, to a large degree, be ascribed to Norway's ambitious policy in this area, with a wide range of different measures targeted towards increasing the number of electric vehicles (EVs) and encouraging private EV ownership and use.[2]

There has been a call to put more attention on the perspectives of technology developers and promoters as public responses to proposed developments or technologies often emerge through

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http://dx.doi.org/10.1016/j.erss.2016.04.017
2214-6296/

[1] Retrieved from http://www.elbil.no/nyheter/statistikk/3361-norge-dominerer-det-europeiske-elbilmarkedet.

[2] The most important present policies and incentives to promote electromobility in Norway are vehicle reregistration tax exemptions, the lowest annual vehicle licence fee, VAT exemptions, access to bus lanes, road-toll exemptions, reduced fares on national road ferries, free public parking with or without free charging, and charging stations [2,26]. The import of IC cars is heavily controlled through strict import regimes and purchase taxes. Consequently, although the electric car is expensive for its size and comfort class, it is considered to be a financially viable alternative in many Norwegian households.

interactions with those advocating and promoting them [7]. Research has further shown that when industrialists and policymakers make decisions, they often do so in light of an imagined public response, and the public can be quite powerful as 'an imagined public'. Imagined publics may considerably influence the strategies of industrial, scientific, and political actors [34,30]. This paper is inspired by quite recent literature in the field of public understanding of science, which deals with 'imagined publics'. In this article, we focus on the way stakeholders imagine the public, and how these imaginaries may influence the way strategies and policies aimed at increasing electric mobility in Norway are shaped. By doing so, we set out to move beyond a focus on the pure technical potential or cost-benefits that tend to dominate many policy discussions regarding sustainable transitions. Instead, we focus on studying the following: (1) the way stakeholders actively construct or imagine 'the public' or electric car users; and consequently, (2) how these constructions influence the way strategies and policies are formulated to promote the future of electric mobility in Norway.

In this way, this paper attempts to break new ground as it sets out to explore how imaginaries are given agency and how they are invoked for strategic purposes by stakeholders. Actual user needs and preferences of EV owners are analysed elsewhere (see e.g. Ref. [26]). Thus, we focus our attention on how the societal embedding of technology (in this case related to the EV) is anticipated and included within processes of policy development and deployment. Rather than being left outside of these processes, we explore how users as imaginaries are given agency through the functional and epistemic competences that are ascribed to them. In order words, we set out to study how the imagined user becomes an 'action' in the knowledge production of stakeholders in influencing practices related to EVs.

This paper is based on an analysis of interviews with different types of stakeholders involved in the implementation phase of EVs in Norway, such as national and local authorities, governmental and non-governmental organizations, EV manufacturers and distributors, private enterprises, and energy suppliers. However, before we move to the analysis, we will briefly discuss earlier research on imagined publics and how that research defines the way publics are imagined and how such imaginaries influence policies, actions, and strategies. The article then goes on to describe data and methods, before moving on to the analysis of stakeholder imaginaries of different EV user groups. This is followed by a discussion about how these imaginaries are related to and follow a broader socio-technological trajectory of electric road transport and subsequently, how they lead to an imagined electric mobility transition pathway. The article concludes with a discussion of implications of this shared imagination for the development of strategies and policies related to electrification in Norway and beyond.

2. Imagined publics and their consequences

The public is often powerful as an idea and not only as a participating agent. The concept of imagined publics gives life to 'shared repertories and expectations amongst actors in technical-industrial networks', expectations that are often projected and internalized into both organizational practices and/or working practices [34,p. 943]. Walker et al. [34] argue that feedback processes and longer-term development of such shared repertoires and expectations mean that 'the public', as constructed and imagined, will potentially be present at multiple stops along the evolving trajectories of technology development and deployment. Next, we will look at some of these stops in relation to the deployment of EVs.

Another related concept that is fruitful for our study is the concept of the 'imagined layperson' (ILP), defined as the 'conceptions of laypersons as they are manifested in the products and actions of experts' [19,p. 151]. This concept has been useful in describing typical situations where experts produce solutions or advice (i.e. strategies or policies) that can assist laypeople, and it also describes situations in which they must consider the layperson's world and estimate what may be relevant to them. As experts often do not have direct access or contact with relevant laypersons, the laypersons or users often are *imagined*. These ILPs that are integrated into the expert's work may be implicit, they may differ from 'real' laypersons, and they are often imagined with limited competence and possibilities of action. Thus, imagined users are functional social constructs, and as an imagined public, they need not be explicit nor do they necessarily bear any resemblance to real users [19].

Maranta et al. [19] have argued that experts construct and thus address ILPs in various ways: as individualized ILPs, as representative ILPs, or as generalized ILPs. Generalized ILPs would most closely represent the 'imagined public' because they are addressed as collectives rather than individuals or representatives of particular social groups. In the following analysis, we will investigate to what extent stakeholders in electric mobility issues imagine laypeople or users as individuals, as representatives of particular social groups, or as a collective.

In the analysis, we will examine the way stakeholders in the transport sector form strategies by equipping imagined laypeople with certain capabilities and social functions. It is recognized that stakeholders imagined publics may be influential in the sense that they influence technology design and that both scientists and engineers are known to include imagined publics in the design of technology [35,1]. Less focus has been given to the fact that stakeholders may also, and often will, include imagined publics or laypeople in the design of policies or strategies. This means that imagined publics may also influence the implementation of technologies. In this respect, imagined publics are also driving expert's interactions with the public [19] as well as policies, strategies, and choices of action related to technology implementation processes. This means that imagined publics may have a political impact and can be seen as a virtual form of public participation [17].

To our knowledge, imagined publics related to EVs and sustainable mobility have not been directly addressed by earlier studies. There are, however, a few studies on imagined publics related to renewable energy from which we may draw insight. Several studies based on interviews with actors within the renewable energy industry and policy development arena have found that their interviewees imagined the public to be generally supportive of renewable energy technologies; however, they expected the public to be resistant to specific renewable energy developments, in line with the NIMBY concept ('not in my backyard', see e.g. Refs. [10,34,30,17]. Other studies have shown that the public has typically been imagined as knowledge-deficient, ignorant, and oppositional with irrational concerns rooted in emotions or self-interest [4,8,5,22]. These kinds of imaginaries have thus led to engagement strategies that are particularly concerned with educating the public, as well as moderating emotions [17].

Turning to electric mobility, what can we draw from these earlier findings? On one hand, we know from earlier studies of renewable energy that the NIMBY concept, the knowledge deficit concept, and the imaginary of the resistant public have been quite widespread imaginaries among stakeholders (although there is also research on more ambivalent imaginaries, see e.g. Ref. [17]. On the other hand, we could also expect stakeholders to have a more positive imaginary of the public – expecting the public to be supportive of the electric car as they may see it as a new climate friendly technology, therefore viewing the public as 'green customers'. However, the EV obviously deviates from the often large, area-consuming renewable energy developments in many ways. The EV is also closely linked to another well-known technology – the internal