



# Keep it local and fish-friendly: Social acceptance of hydropower projects in Switzerland



Andrea Tabi, Rolf Wüstenhagen\*

University of St.Gallen, Institute for Economy and the Environment (IWÖ-HSG), Good Energies Chair for Management of Renewable Energies, Tigerbergstrasse 2, CH-9000 St. Gallen, Switzerland

## ARTICLE INFO

### Keywords:

Social acceptance  
Environmental justice  
Discrete choice experiment  
Choice-based conjoint analysis  
Hierarchical Bayes estimation  
Hydropower

## ABSTRACT

Hydropower is the largest source of renewable electricity in the world, but despite being a mature and clean energy technology it has also been the subject of ecological and social conflict. Literature suggests that the social acceptance of renewable energy can be increased by respecting procedural justice (fair, participatory planning processes) and distributional justice (fairly allocating costs and benefits). However, empirical evidence about how justice considerations are related to the expansion of hydropower is scarce, pre-existing studies being mostly qualitative in nature. We contribute to filling the gap in the current literature by describing in this paper how choice experiments with 1004 Swiss residents were undertaken to explore the influence of procedural and distributional justice on acceptance, relative to other attributes of hydropower projects. We find that while considerations about justice do play a role in decisions to accept, respondents in Switzerland care most about ecological impacts, and secondly about local ownership.

## 1. Introduction

### 1.1. Social acceptance of renewable energies

As the world is slowly but surely making progress in transitioning from non-renewable to renewable energy sources, there has been a surge in research on social acceptance (Fig. 1). Data from Scopus indicates that in the last decade alone 350 articles with the keyword “social acceptance” have been published in energy and environmental science journals, with an exponential increase occurring towards the end of this period. According to ScienceDirect, *Renewable and Sustainable Energy Reviews* was one of the two most popular publications for social acceptance research, as measured by the total number of articles using this keyword in 2014.<sup>1</sup> An increasing policy focus on the deployment of renewable energies has contributed to the interest in this topic. With the increasing maturity of renewable energy technologies, the challenges of the energy transition are shifting towards obtaining a “social license for clean energy deployment”.<sup>2</sup>

A widespread definition of social acceptance of renewable energy is Wüstenhagen et al.’s [66] conceptual framework suggesting that social acceptance is a three-dimensional construct, consisting of socio-political, community and market acceptance.

The objective of this paper is to (a) review the recent literature on social acceptance of renewable energies, with a particular focus on (b) social acceptance of hydropower, and (c) the role of distributional and procedural justice in explaining social acceptance. Furthermore, we build on the results of the literature review to develop a conceptual framework of social acceptance of hydropower, which we then test in a large-scale empirical survey.

### 1.2. Social acceptance of hydropower

In light of its significant potential for contributing to the global energy transition and its mixed record in terms of social acceptance, research on hydropower is surprisingly absent from the recent academic literature. In his comprehensive review of hydropower, Sternberg [55] states that social acceptance is one of the key topics to be addressed, but leaves it to further research to close the gap. From all the articles published in 2014 that included the keywords “social acceptance” in the two most important energy journals that address the issue (*Renewable and Sustainable Energy Reviews*, and *Energy Policy*) wind energy is currently the most frequently-addressed source of energy, followed by biomass (including biogas and biofuels), solar energy, Carbon Capture and Storage (CCS) and nuclear power.

\* Corresponding author.

E-mail address: [rolf.wuestenhagen@unisg.ch](mailto:rolf.wuestenhagen@unisg.ch) (R. Wüstenhagen).

<sup>1</sup> A search for “social acceptance” in ScienceDirect yields 28 articles from *Renewable and Sustainable Energy Reviews* in 2014, nearly on par with the 29 articles published in *Energy Policy* in the same year.

<sup>2</sup> <http://www.cleanenergyministerial.org/Events/CEM6/Roundtable/SocialLicenseCleanEnergy>.

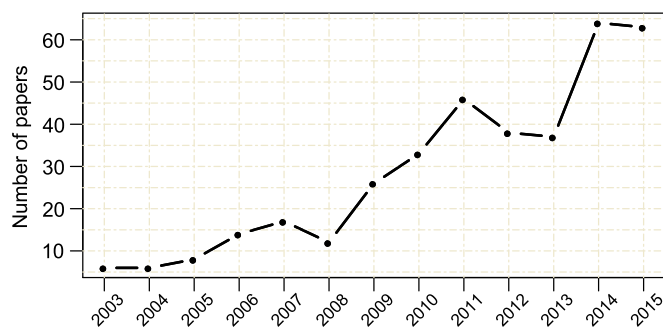


Fig. 1. Number of articles published per year with keyword “social acceptance” in energy and environmental science journals (2003–2015)

Source: Scopus.

Hydropower and shale gas, both arguably providing rich empirical contexts for studying social acceptance, appear to be relatively under-researched topics.

Two approaches to empirically investigating social acceptance of hydropower can be identified in the academic literature. The first stream of research addresses the social acceptance of hydropower using a case study approach, often in remote areas or developing countries ([3,21,26,27,28,37,52,51,67]). These papers provide rich evidence about the challenges involved in implementing hydropower in economically underdeveloped areas. Similarly to the findings of case studies about the social acceptance of other energy sources (e.g. [16]), these studies tend to conclude – sometimes based on qualitative empirical evidence, sometimes arguing from a normative perspective – that greater participation of local communities in hydropower projects can be positively correlated with social acceptance.

A second research direction concerns environmental valuation studies [56] which are designed to quantify the (external) costs and benefits of hydropower (or other uses of water resources) and their associated impacts on the local environment [15,4,63]. What can be learned from this stream of literature is that respondents value an intact environment to varying degrees, and that negative impacts on the environment can to some extent be compensated for in monetary form. However, the empirical validity of findings from the environmental valuation literature has been the subject of extended debate [12,42]. While some researchers critique the experimental methods used by environmental economists for employing decision situations that are remote from the real life experiences of respondents, there has arguably been some progress in increasing situational realism [5]. One particularly promising innovation is the introduction of choice experiments [11,17,23,25,59] which obtain a richer account of respondent preferences than more direct methods soliciting willingness-to-pay for environmental resources.

### 1.3. Environmental justice and social acceptance

One key learning from a decade of social acceptance research is that ‘monetary-compensation-for-environmental-damage’ approaches that underlie traditional contingent valuation studies are overly simplistic. Instead, it has been shown that social acceptance of energy projects is closely interlinked with environmental justice and its two main dimensions, procedural justice and distributional justice [16,20,38].

#### 1.3.1. Procedural justice

Procedural justice refers to the “how” of environmental decision-making. Research in social psychology points out that outcomes are more likely to be accepted if the processes that lead to these outcomes are perceived to be fair – an issue that has also a long-standing tradition in legal research [57]. Lind and Tyler [31] identified a number of principles that constitute procedural justice. Processes, they argue, should for example be consistent, accurate, and representative [62].

Procedural justice is closely linked to trust [20]. A key driver of perceived procedural justice, and hence potentially social acceptance, is participatory planning and decision-making [32,35,43,44,66]. Participation can also take the form of financial participation in a renewable energy project, a factor that has been shown to not only foster social acceptance [39] but also physical well-being of local inhabitants in the case of wind turbines [46]. Carefully designed institutional frameworks can increase perceived procedural justice, which is the idea behind public participation in environmental impact assessments [45].

While it is common sense that a high degree of procedural justice is a desirable objective for renewable energy project developers, implementing the principles of procedural justice in reality requires addressing trade-offs. Non-trivial questions include delineating the boundary of stakeholders to be involved in the process [40], as well as how early and to what extent participation should be organized to be fair and manageable at the same time [62].

#### 1.3.2. Distributional justice

In contrast to procedural justice, distributional justice deals with the “what” of environmental decision-making. People are more likely to accept an outcome if the costs and benefits are fairly allocated. When it comes to renewable energy projects, the costs can include monetary costs, but also non-monetary factors such as negative impacts on flora, fauna and landscape. Similarly, the benefits can be either tangible (e.g. revenues from power generation) or intangible (e.g. contribution to local, low-carbon energy supply). Fairness considerations with regard to the distribution of costs and benefits can apply to the relationship between renewable energy project developers and an affected local community, but can also play a role among members of the community (e.g. distribution of royalties between landowner and other inhabitants; [16,62]).

Similar to procedural justice, a set of principles can be identified that determine distributional justice. The three most prominent principles are equity, equality and need [54,62]. According to the equity principle, outcomes should be proportional to inputs provided by different project stakeholders. The equality principle suggests that everyone should have an equal share in an outcome, while the needs principle suggests that those in need of the benefits should get a larger share. Applying these principles to distributional justice in the context of renewable energy projects is not a straightforward proposition, as different stakeholders of the project may have different views on what is fair, and even an individual may prefer different principles for the distribution of different types of costs and benefits [22], to the extent that some observers conclude that distributional justice is “in the eye of the beholder” [60]. When it comes to hydropower, a traditional instrument to support distributional justice is the Swiss water resource tax (*Wasserzins*), which is a mandatory benefit sharing scheme between hydropower operators and the municipalities and cantons whose waterways they use, and has first been introduced in 1918 [34].

While it appears plausible that there is some positive correlation between environmental justice and social acceptance [16], project developers and policymakers need to know to what extent this is the case if they are to conduct effective planning: greater participation and benefit-sharing may positively affect social acceptance, but they also come at a cost.

#### 1.4. Research context: swiss hydropower

This paper describes research that was designed to appraise the influence of procedural and distributional justice on social acceptance relative to ecological impacts and other features of a hydropower project. In terms of our methodological approach, we used choice experiments because they allowed us to test, simultaneously and in a realistic setting, how various attributes of a hydropower project influence the decision to accept. We conducted our research in

Download English Version:

<https://daneshyari.com/en/article/5482705>

Download Persian Version:

<https://daneshyari.com/article/5482705>

[Daneshyari.com](https://daneshyari.com)