

Energy Justice

Chairs

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Presentation 1

Gender and energy justice in urban settings

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Injustice and unequal access to energy efficiency policies is one of the reasons of the so-called 'Matthew-effect' of energy transition; those who can afford to invest in energy efficiency benefit from such policies, whereas the poor stay in energy poverty. Social inequalities and energy justice are two key emerging streams in the energy policy literature. The search for a just energy policy is central in the literature on energy justice, which is used as a concept, an analytical tool and a decision-making framework. Energy justice is based on three principles: distributional, recognition and procedural justice. Within the literature stream on social inequalities, gender has been a core concept in the analysis of social inequalities regarding the design, implementation and evaluation of energy policies. Based on the historical development of the gender and energy policy nexus, three major discourses are discerned: empowerment, gender mainstreaming and gender transformation. All these discourses identify engendering a policy as process, and have a common goal, which is to develop a policy that acknowledges the gendered difference of needs and interests. This paper aims to advance the understanding on the gender-energy nexus of energy efficiency policies in urban settings by building on these two separate, yet interrelated, streams of literature. We develop an analytical framework through incorporating the engendering processes in energy policy (empowerment, gender mainstreaming and gender transformation) and the energy justice principles (distributional, recognition and procedural justice). The framework juxtaposes the three engendering processes on one axis of a three-by-three matrix and the three principles of energy justice on the other. We apply the framework through analysing secondary data from previous case studies on urban energy policy and governance. The paper presents our initial findings from this analysis, which will be used as a basis to further develop the framework.

Presentation 2

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Most of energy justice literature rest on the assumption that there *an acceptable* normative conception of justice that could guide the development of future energy systems. That assumption is problematic because situations are conceivable with several morally defensible, yet incompatible, conceptions of justice. I call this normative uncertainty, that is, when there is no unequivocal right or wrong answer to the normative question of what justice entails. In this paper I argue that the

energy justice scholarship could benefit from a richer normative underpinning of the notion of justice by acknowledging the issue of normative uncertainties.

My argument builds on the distinction that Rawls makes between the concept and conceptions of justice. Let me illustrate this with an example. When proposing a new nuclear waste site, it is often easily accepted that we should consider the distributional impact both within and between generations. This is also often reflected in the national legislations and international agreements on nuclear waste disposal. There is, thus, an agreement about the concept of distributive justice, but different morally acceptable conceptions of what this *just* distributions entails are conceivable. Agreement on the (relevance of the) concept of distributive justice leave the questions of what levels of radiation protection we should guarantee for the present and future generations unanswered.

I define normative uncertainty in energy justice as situations in which there are different partially morally defensible but incompatible conceptions, or when there is no fully morally defensible conception of justice. I will distinguish between evolutionary normative uncertainty (when one does not know which moral norm would apply to an energy technology, because both the technology and moral views could *evolve*), theoretical normative uncertainty (when different ethical theories would respond differently to the question what justice entails), conceptual normative uncertainties (when different ethically relevant concepts that contribute to energy justice such as values could be *prioritized* or *interpreted* differently) and epistemic normative uncertainties (when there is incomplete knowledge about fundamental phenomena, or different interpretations (with different moral implications for what justice means) are possible of the same body of knowledge. This will provide for crucial insights towards normative underpinning of the discussions on energy justice.

Presentation 3

Exploring energy injustices using the capability approach and agent-based models

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Our work addresses societal resistances to deployment of energy infrastructures, in particular the smart electricity grid. Using ethics of technology as a starting point, we evaluate how new infrastructures create or resolve societal injustices.

Issues of energy justice are complex. First, they are multidimensional. Injustices may among others include disparities in health issues, security of supply and social affiliation. Second, the characteristics and structure of affected populations (i.e. the heterogeneity of individuals as well as their embeddedness into social networks) strongly affect the types of injustices that may emerge. Third, injustices are dynamic: they depend on how individuals, social networks and socio-economic environments change in time.

The capability approach is helpful to conceptualize and address the complexity of energy justice issues. Nussbaum's (2001) list of central capabilities helps to take the multidimensionality of

injustices into account, and the consideration of both resources and conversion factors (Sen, 1992) offers a way to formalize heterogeneous and socially connected populations. The capability approach is however solely a theoretical framework: the actual evaluation of injustices is left to the human mind, which is not acquainted to grasp the effects of such complexities on societal injustices.

During the conference, an agent-based model in which the capability approach is conceptualized will be presented. Agent-based models are computational models particularly suited to study the effect of heterogeneity, social embeddedness and dynamism of multiple social entities on an overall system (Epstein, 2011). The model allows the identification of injustices emerging from the deployment of the smart electricity grid.

References

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Presentation 4

Incorporating energy justice in smart grid systems

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In the transition to more sustainable energy systems, a growing share of intermittent and small-scale renewable energy sources is integrated in electricity distribution networks, allowing an increased participation of consumers and citizens in energy generation. An important enabler in this development is the implementation of smart grid systems (SGs). Systems such as smart metering, demand-side response, home energy management systems, or vehicle-to-grid can facilitate the active participation of consumers and citizens in the electricity system. SGs are therefore seen as contributing to more just and democratic energy systems, giving 'power to the people'.

Despite potentially promising contributions to justice and democracy in the energy system, it is unclear under which conditions decentral SGs support energy justice, conceptualized in the three dimensions distributive justice, procedural justice, and justice as recognition. So far, research in energy justice has focused mostly on generation and consumption of energy. With the convergence between energy and ICT systems, however, SGs affect energy justice beyond generation and consumption because of the increased use of digitally connected systems, automation, and recording and sharing of real-time data.

The aim of this paper is to explore how different aspects of energy justice are incorporated in the technological and institutional design of SGs. To study the incorporation of energy justice in SGs, we

choose a case study research design using a smart grid pilot project in the Netherlands. We investigate to what extent considerations of energy justice were included in the design of the project and study the rules that a local SG pilot project applies to create an equitable system or avoid injustices.

Thereby we conceptualize SGs as socio-technical systems in which technological innovations are intertwined with institutional changes. Both technological and institutional designs impact different aspects of energy justice. We build on literature from political economy related to energy infrastructures in order to evaluate the socio-technical design of SGs that facilitate and support energy justice and result in SGs that are both acceptable and accepted.