

Using energy justice as a search light for gender and energy policy research: A systematic review

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Abstract

This paper develops and tests a policy framework for gender and energy justice through building on the key concepts in gender and energy policy literature. 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. Two gender-analytical frameworks are instrumental to understand the gender-energy nexus from an energy systems approach; the needs-based approach and the rights-based approach. Both approaches address social justice in energy policy, by creating awareness on the different energy needs of men and women and the rights that entitle them to equal access to energy services. The search for a just energy policy is central in the energy justice discourse. Energy justice is used as a concept, an analytical tool and a decision-making framework, based on three principles: distributional, recognition and procedural justice. Through juxtaposing the gender analytical frameworks of energy policy and the energy justice principles, a gender and energy just policy framework has been developed. This framework identifies the three engendering processes on one axis of the matrix and the three principles of energy justice on the other. This paper is the first attempt to test this framework by applying it in a systematic review of the scholarly literature on gender and energy justice. The concepts of the framework are recognized in the existing scholarly literature. However, the applicability of the framework as an analytical tool needs further analysis and evidence-based testing to be developed as a decision-making instrument for policy design.

1. Introduction

With the global commitment of the Sustainable Development Goals, access to sustainable energy for all is the challenge for energy policy-makers world-wide. Both in the global South and in the global North, energy poverty is a salient issue with a strong gender face (Clancy et al. 2017). Men and women are unequally affected by limited access to energy services and within households, different energy needs and interests are identified between men and women. Household centred literature has provided a strong evidence on the link between energy poverty in the household and women's health burdens, use of time, education, access to information, and other factors (see for example reviews by Winther, Matinga, Ulsrud, & Standal 2017 and Rewald 2017). However, the energy and gender literature gives ample attention to analysing national energy policy using gender analytical frameworks. The gender and energy literature has instead focused mainly on the household realm, where women suffer heavily the burdens of energy poverty (Clancy et al. 2017). These studies do touch upon national energy policies, but lack an analytical framework to reflect upon the impact of energy policies on gender relations (Feenstra 2002).

In the last years, the concept of energy justice is emerging in energy policy research. Energy justice is developed as a conceptual, analytical and decision-making framework around three principles: distribution, recognition and procedural (Sovacool and Dworkin 2015). The focus on justice in energy policy provides insights into the multiple sites of injustice throughout global energy systems (Jenkins 2018). This will lead the way to a more just energy policy. The energy justice discourse offers a feeding ground to include the gender energy nexus. The aim of this paper is to develop a gender and energy just policy framework based on the identification of the key concepts of a gender and energy just policy. This paper is a first attempt to conceptualize the gender and energy nexus from an energy justice perspective. On that basis, it suggests key issues in future energy policy research.

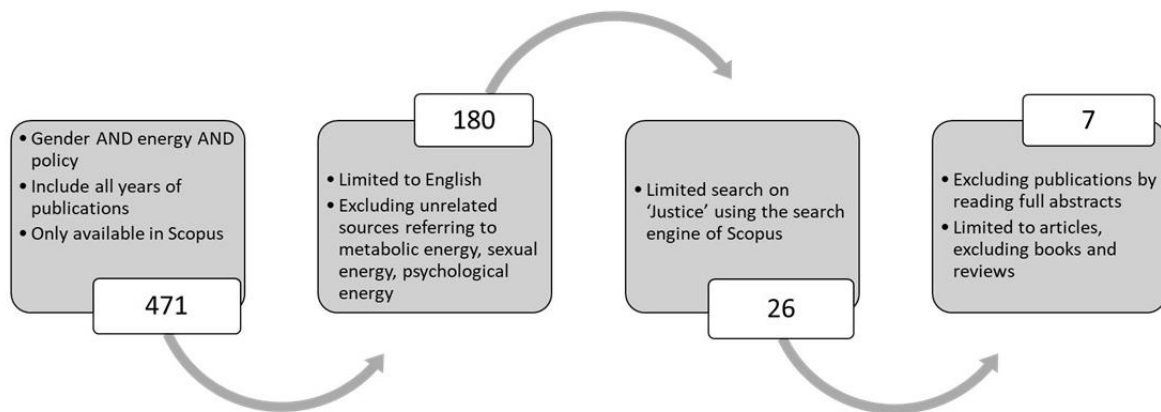
Against this background, the main research question that we seek to answer in this paper is: *Which elements of the energy justice discourse can be used to analyse the gender-dimensions of energy policy?* This question is broken down in the following sub-research questions: 1) Which gender approaches are used to analyse energy policy? 2) How applicable is the energy justice discourse for analysing energy policy through a gender lens? In order to answer these questions, we design a gender and energy just policy framework based on scientific publications and the grey literature developed by international organisations and non-governmental organization (NGOs). The main guiding references are influential international commitments, such as the First Women Conference in 1975 and the Beijing Conference in 1995, and the development of the Sustainable Development Goals. The historical development of the gender discourse is visualized as a process in which concepts are identified and engendering policy processes are analysed. In the light of the gender and energy nexus, the energy justice concept is analysed, and a first gender and energy just policy framework is designed.

2. Methodology

In order to test the applicability of the gender and energy just policy framework as an analytical tool, we carried out a systematic review of the scholarly literature on gender and energy justice. The review was limited to the scholarly and peer-reviewed publications. This was a challenge, since gender and energy justice is a heavily under-researched area. We included peer-reviewed articles, written in English, in the time frame from 1995 till July 2018. The year 1995 is chosen as a start point for gender analysis, since in this year the global Beijing Conference on Women was organized, after which many publications on gender have come out, and the gender-mainstreaming approach started to emerge (Moser 1997). The reviewed publications are selected by string-searches in the Scopus database. The

advantage of using Scopus instead of Web of Science or other search engines is that search strings are applied to three major items at the same time, namely the article title, keywords and abstracts. The first step in the string-search, included too many documents (417) that are not relevant for the gender and energy nexus in this research. By excluding all documents that were not written in English and were referring to off-topic energy use (like metabolic, spiritual, sexual, etc.), 180 articles were selected for the final step. Scopus identified 26 articles in this selection, which further included the term 'justice'. This selection was checked by reading the titles and scanning the abstracts to search the link between 'gender AND energy policy AND justice'. The full-text of the remaining (7) publications were reviewed using the policy framework on gender and energy justice. Figure 1 illustrates the search strings of the systematic review.

Figure 1: Search strings used for the systematic review on gender and energy justice



This paper has a number of limitations. In this paper, gender is defined as 'the system of socially defined roles, privileges, attributes and relationships between men and women which are learned and not biologically determined' (Khamati-Njenga & Clancy 2002). Gender is a social construct, as a consequence gender relations are a dynamic concept depending on time, space and context. Hence the gender-dimensions of energy access vary across social, cultural, economic and political context. However, since the scope of the paper is on gender and energy justice concepts, the findings based on the review are more generalized. There is an extensive body of publications in the grey domain, such as donor organizations' reports, policy briefs, governmental position papers, etc. The systematic review to test the analytical applicability of the policy framework on gender and energy justice excluded however the grey literature. Grey literature is criticised for reflecting the more normative approaches of NGOs and donor organizations to gender mainstreaming in energy policy. They are excluded since the aim of this research paper is to analyse the key concepts in the energy justice literature applicable to analyse the gender dimensions of the energy system in order to develop an analytical framework. The framework is applied to the current body of knowledge on gender and energy justice in order to identify research gaps and research themes. Energy justice and just transitions are emerging themes in energy policy research and the literature is still developing.

3. Gender and energy nexus: a global concern

In 2010, the UN Secretary General's Advisory Group on Energy and Climate Change (AGECC) launched the global initiative Sustainable Energy for All (SEforALL). The Secretary General called for commitment and action on two goals: ensuring universal access to modern energy services and reducing global energy intensity through energy efficiency measures (AGECC 2010). The SEforALL initiative has three major targets by 2030: 1) ensuring universal access to modern energy services, 2) doubling the rate of

improvement in energy efficiency and 3) doubling the share of renewable energy in the global energy mix¹. The SEforALL programme comes with the challenge to make access to sustainable energy universal, for all men and women, in the global South as well in the North. Energy poverty, the lack of access to sufficient energy resources, is a global struggle. Tully (2006) defines energy poverty as the lack of choice in accessing adequate, affordable, reliable, high quality, safe and environmentally-benign energy services to support economic and human development. It is a phenomenon both experienced in the developing world as well as the OECD countries. The gender imbalance of energy poverty is a less known and a salient issue in the global North, in contrast to the global South.

UN figures show that globally three billion people live in energy poverty without access to electricity or cooking on biomass². It may come as a surprise to many, including politicians, to find that some of these three billion energy poor actually live in Europe. Indeed, Eurostat estimated that Europe counts more than 54 million people who have difficulty paying their energy bills or have limited access to high quality energy, some even using biomass for cooking and heating³. Many of them are living in uninsulated homes, using inefficient appliances (particularly for heating, cooking, hot water) resulting in high energy bills. Energy poverty has a gender imbalance. Due to the income gap between men and women, and the demographic fact that women live longer, it is estimated that women are disproportionately affected by energy poverty (Clancy et al. 2017). From a cost-effective point of view, many may want to invest in energy efficiency, but due to the lack of finances to invest, they struggle to participate in the energy transition. Not only financially, but also legally they meet obstacles to improve their access to sustainable energy solutions. Many of the energy poor live in rented residential buildings, depending on a landlord to invest in energy efficiency. Hence, the energy transition brings energy injustice with a gendered face. Achieving access to sustainable energy for all, demands an energy just transition policy that is aware of the inequality in society and the gendered face of energy access.

In understanding the impact of energy policy decisions on gender relations, gender analytical frameworks provide insights and knowledge. The value of gender analysis in energy policy development is that the gender analytical framework seeks to understand the differentiated needs and pre-dispositions of men and women. It enables an understanding of the existing gender situation, before and after a policy intervention through assessing the impact of the intervention on the access to and control over resources (Khamati-Njenga & Clancy 2002). However, the universal applicability of gender analytical frameworks is contested. The influence of normative approaches of international organisations, activists and NGO's is recognised in the way many gender analytical frameworks are a product of co-design between academics and practitioners. The body of grey literature on gender frameworks is extensive compared to the limited academic publications. Furthermore, with a background in development studies and with a substantial research tradition with empirical evidence from the Global South, applying a gender framework to energy access may be considered unsuitable for the Global North.

Considering free market economy and non-discrimination law, the assumption is made that industrial countries have gender-neutral energy policies. In the definition of Khamati-Njenga and Clancy (2002), a gender-neutral energy policy is based on the assumption that a good policy, programme or project will benefit both male and female equally in meeting practical needs. However, the few research publications on gender and energy policy in the North, conclude the opposite (Clancy and Röhr 2003,

¹ <https://www.seforall.org/mission>

² <http://www.worldwatch.org/energy-poverty-remains-global-challenge-future>

³ <https://ec.europa.eu/energy/en/news/energy-poverty-may-affect-nearly-11-eu-population>

Clancy et al. 2017, Fraune 2016, Wiliarty 2011). As Fraune (2016) points out, women and men reveal different preferences for energy policy options, especially when it comes to energy transition and the adaptation of renewable energy. Furthermore, energy consumption is not gender-neutral (Clancy and Röhr 2003, Rätty and Carlsson-Kanyamaa 2010). Purchasing power, preferences, needs and everyday practices and routines are shaped by and shaping norms of social institutions (Fraune 2016). As stated earlier, energy poverty has a strong gender component globally and is an emerging concern for the European Parliament, which is starting to support research on gender and energy poverty in the EU (Clancy et al. 2017).

Given that globally energy access, consumption and services are gendered, establishing an energy system that reflects gender differences and that is aware of gendered relations in society is a tremendous challenge. Acknowledging the socially constructed and dynamic nature of gender relations, an energy policy should reflect culturally differences and social context. The national level is a suitable scale to aim for a gendered energy policy. Also within the universal declaration to provide sustainable energy for all, the call is to national governments to acknowledge SEforALL as a global commitment which requires local action and implementation (AGECC 2010). To understand the extent to which gender is being mainstreamed in SEforALL related activities, Pebbles and Rojas (2017) analysed 61 SEforALL country actions plan documents from 52 countries. Their main finding is that 82 % of these documents included gender considerations to some extent, in which women are mentioned as potential beneficiaries of activities and actions, however seldom characterised as agents of change. Only four documents identified opportunities for women to be involved in energy sector careers. This illustrates the challenge to come to a gender and energy just policy.

3.1. Gender and energy policy: a needs-based approach

Over the past two decades, extensive research has shown the mutual interdependencies between gender relations and energy policy (Clancy et al. 2012; Köhlin et al. 2011; Ryan 2014). The energy needs and interests of men are usually given higher priority in energy policy than those of women and girls (Cecelski 2004, Clancy et al 2002). A policy, programme or project failing to recognise that the needs of men and women are different is even considered gender-blind (Khamati-Njenga and Clancy 2002). A needs-based approach is the predominant framework of gender and energy research in developing countries (Cecelski 2004, Clancy et al. 2002, Clancy et al. 2012, Köhlin et al. 2011, Pachuari and Rao 2013, Parikh 1995). Women's needs are categorized in a needs-based framework around their triple role in society: as reproducers and family caregivers, as producers and as community members. This results in three corresponding needs categories: practical needs, productive needs and needs to carry out community tasks (Clancy et al. 2002). With needs come the interest of people in order to fulfil their needs. These interests can be grouped in practical interests, meeting practical and productive needs, and strategic interests necessary to participate in society. Table 1 illustrates this categorization of needs and interests with examples of energy projects. In needs-based approaches, an energy policy should reflect women's needs in order to enable them to fulfil their traditional reproductive tasks in less labour-intensive and healthier ways (Clancy et al. 2012).

Table 1: Examples of energy projects to address women’s needs and interests using the needs-based approach

Energy Form	Women’s needs and interests		
	Practical needs	Productive needs	Community tasks
	Practical interests		Strategic interests
Electricity	<ul style="list-style-type: none"> - Pumping water supplies – reducing need to haul and carry - Mills for grinding - Lighting improves working conditions at home 	<ul style="list-style-type: none"> - Increase possibility of activities during evening hours - Provide refrigeration for food production and sale - Power for specialised enterprises 	<ul style="list-style-type: none"> - Make streets safer allowing participation in other activities (e.g. women’s group meetings) - Opening horizons through radio, TV and internet
Improved biomass (supply and conversion technology)	<ul style="list-style-type: none"> - Improved health through better stoves - Less time and effort in gathering and carrying firewood 	<ul style="list-style-type: none"> - More time for productive activities - Lower cost for process heat for income generating activities 	<ul style="list-style-type: none"> - Control of natural forests in community forestry management frameworks
Mechanical	<ul style="list-style-type: none"> - Milling and grinding - Transport and carrying of water and crops 	<ul style="list-style-type: none"> - Increases variety of enterprises 	<ul style="list-style-type: none"> - Transport allowing access to commercial and social/political opportunities

Source: Clancy et al. (2002)

Analysing the gender dimension using the needs-based approach reflects the complexity of the energy system by focusing on the use and consumption of energy services. As demonstrated in Table 1, energy is an essential source for food production, water supply, lighting and transport. Women are the primary end-users and managers of energy at home, and the main suppliers of energy services in rural areas. Therefore, Makan (1995) argues for an energy policy based on an interactive process directly informed by women and men and their respective needs, interests and knowledge. In current energy policy design, there is little room for interactive processes that can reflect the needs and interests of end-users (Feenstra 2002, Clancy et al. 2017). Energy policy formulation generally seems to take place entirely at the national level, and in a top-down manner. This is partly explained by the supply-oriented focus of energy policy until the 1990s, in the aftermath of the global oil crisis the security of national energy supply was the main focus of national energy policy makers. There was no need to consult users, although citizens might have preferences about what energy services they prefer to use to meet their needs and reflect their interests (Feenstra 2002). The needs-based approach lacked enforcement tools. In search of an approach that can be used to integrate end-users needs in an energy policy, a shift from needs to rights emerged in gender and energy analytical frameworks.

3.2. Gender and energy policy: a rights-based approach

A rights-based approach is another framework to analyse gender and energy access. Rights-based approaches have been developed in the 1990s in response to the failure of development assistance to reduce poverty and inequality (Mukhopadhyay and Meer 2008, Boesen and Martin 2010). As Tully (2006) emphasises, the right to access energy cannot be seen in isolation from the realization of other basic economic and social rights. Danielsen (2012) developed a gender and rights-based framework applied to energy access as an analytical and strategic tool for researchers and practitioners. This framework recognizes access to energy as a right and acknowledges the institutional barriers women face in realizing energy rights due to unequal gender relations. Mukhopadhyay and Meer (2008) position the framework in the political process of gender mainstreaming, providing a decision-making tool for policy-makers to achieve gender-equality.

Rights-based approaches distinguish right-holders from duty-bearers (Mukhopadhyay and Meer 2008, Boesen and Martin 2010, Danielsen 2012). The state, international community, civil society and the market are identified as duty-bearers. They have the obligations to realize access to energy services for all. Beneficiaries of energy services are transformed into right-holders. This transformation is

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challenging the position, the relation and the outlook of the duty-bearers to the right-holders (Boesen and Martin 2010). This approach is used to analyse how gender and other social relations influence the realization of people’s right to access energy. Institutional barriers to women’s access to energy are considered as rights failures. These failures concern the lack of recognition of women’s energy needs, knowledge and contribution (i.e. recognition failures) and the unequal distribution of control over energy resources and benefits between women and men (i.e. redistribution failures). Different rights failures can be translated into rights claims and there are different governance channels where rights can be claimed (Danielsen 2012).

A rights-based approach leads the way to analyse energy access from a social justice perspective. Rights-based approaches focus on achieving basic entitlement for all, and the gender dimension adds to this framework for analysing unequal power relations amongst disadvantaged people and between social groups. The gender and rights-based framework focuses on rights failures, i.e. identifying barriers to realising rights through governance mechanisms at different levels. Danielsen (2012) analysed four decades of gender and energy in development using the gender and rights-based framework. She identified persistent rights failures in the energy system over forty years (1970-2010). The table below gives a comprehensive overview of forty-years energy and development work.

Table 2: Persistent rights failures in the energy system

Energy and development focus	Rights failures emerging over time				Rights failures continue
	1970s	1980s	1990s	2000s	
The crisis of biomass degradation	<ul style="list-style-type: none"> *Lack of recognition of unequal gender relations in the energy system *Gender inequitable access to and control over resources and benefits from energy related development interventions *Lack of recognition of women’s knowledge in energy management *Gender inequitable decision-making at all levels in the energy system and the exclusion of women from energy related decisions that affect their lives 				
The crisis of women’s time		<ul style="list-style-type: none"> *Lack of recognition of the economic value of women’s work making their labour contribution invisible in the energy system at all levels *Lack of addressing women’s total energy needs for reproductive and productive purposes 			
Poverty alleviation			<ul style="list-style-type: none"> *Gender disparity in ownership of productive assets required to access and control energy services *Displacement of women’s informal user rights to natural resources *Insufficient legal and regulatory frameworks to promote gender equitable access to energy through the market 		
Climate change				<ul style="list-style-type: none"> *Gender inequitable access to financial services resulting in unequal access to and benefits from renewable energy 	
Urbanization					<ul style="list-style-type: none"> * Gender inequitable access to modern energy in poor urban areas

Source: Danielsen (2012)

This historical overview of energy and development focus demonstrates that gender and energy issues need to be addressed as a public policy problem to overcome persistent rights failures. Since energy needs are different for each individual, many projects are only targeting individuals. However, taking a right-based approach, the scope moves beyond the individual and makes energy and development a policy concern. Overcoming rights failures, institutional change is necessary. To overcome replication of gender rights failures, energy policy should reflect on gender barriers to access to energy. Danielsen (2012) stipulates that from a gender and rights perspective, the persistency of rights failures in the energy system represents governance malfunctions in general and accountability malfunctions

specifically, particularly at national and international levels. Applying a gender and rights based approach in energy policy is a way to change this pattern. According to Danielsen (2012) gender-rights-based energy policy has a transformative perspective, in aiming to empower women and transform gender relations to be more equal. The underlying theory of change is that in order to create more equitable public, private and community-based energy governance structures and institutions, the rights content of energy policy needs to be strengthened. Citizens have rights and responsibilities in the energy system, that moves beyond the unequal power relations between individuals. This rights-based approach is the feeding ground for the application of the energy justice framework in gender analysis of energy policy.

4. Energy justice as a concept, analytical framework and decision-making tool

Concepts of justice are emerging in the climate change debate emerging from the environmental justice movement of the 1970s (Finley-Brook and Holloman 2016, Fuller and McCauley 2016, Jenkins et al. 2016, Jenkins 2018). Taylor (2000) defined environmental justice as an established movement connecting environment, race, class, gender and social justice issues. Environmental justice is concerned with the equal distribution of environmental hazards and access to all natural resources, it represents distributive and procedural justice concerns (Jenkins 2018). More recently, environmental justice is complemented with climate justice, in which connections between climate change and human rights are seen as central (Fuller and McCauley 2016). Out of these two justice approaches, energy is separated out of the wider range of topics concerning the environment and climate change and evolved in the energy justice concept (Fuller and McCauley 2016, Jenkins 2018).

Energy justice began to receive attention in the academic literature since 2013, but the social justice dimension of energy policy has been used by practitioners working in NGO's in the development sector earlier (Heffron and McCauley 2017). The first academic framework of energy justice was referred to as a triumvirate of tenets – distribution, procedural and recognition justice to be applied throughout the energy system (McCauley et al. 2013). Sovacool and Dworkin define energy justice as *“a global energy system that fairly disseminates both the benefits and costs of energy services, and one that has representative and impartial energy decision-making”* (Sovacool and Dworkin 2015, p. 436). Energy justice as a research framework questions in its broadest form the cost and benefits of the energy systems. Justice dilemmas are in the forefront including concerns about material infrastructure of energy technologies, access and cost of energy services and intergenerational equity. When energy justice is applied to policy research, central concepts are energy production and energy consumption in terms of procedural decision making and distributive outcomes (Fuller and McCauley 2016).

As Sovacool and Dworkin (2015) stipulates, the concept of justice is more important for what it *does* than for what it *is*. It is a tool with multiple functions, reviewed by observing its effects on actual decisions. Energy justice exists as a *conceptual* tool uniting usually distinct justice concerns, additionally energy justice has an analytical and a decision-making function. As an *analytical* tool for researchers, in striving to understand how values get built into energy systems or to resolve common energy problems. As a *decision-making* tool to assist energy planners and consumers in making more informed energy choices (Sovacool and Dworkin 2015, Jenkins 2018). Energy justice as a decision-making tool is developed around eight core principles including: availability, affordability, due process, transparency and accountability, sustainability, intra- and inter-generational equity and responsibility (Sovacool and Dworkin 2015, Sovacool et al. 2016). Sovacool and Dworkin (2015) drafted out of this decision-making framework a preliminary energy justice checklist used by both practitioners and researchers to design an energy just policy and to assess existing energy policy on its justice awareness. Despite the efforts in developing the energy justice into tools for decision-makers, energy justice remains an academic concept with little adoption in the activist discourse to embed justice in policy

(Jenkins 2018). Heffron and McCauley (2017) highlight that little reflection is given to the energy justice frameworks of how these transfer into practice and whether energy justice becomes a delivered outcome throughout practice. At the same time, with the growing body of literature on energy justice, the intention to apply justice concepts is emerging (Jenkins 2018).

Can energy justice be used as a universal concept? With the climate change challenges combined with the global commitment to provide access to sustainable energy for all, there is a growing attention on the ethics of energy decisions and behaviour linked to energy supply, demand and consumption. As Jenkins and McCauley (2015) point out, energy justice is a field in development lacking empirical examples outside fuel poverty and the dichotomy between the developed and the developing world. There is a need for contextualising the abstract concepts of energy justice. Discourses of justice are not static and do not map equally across the world. Jenkins and McCauley (2015) argue that while energy justice is a global concern, its contextually and culturally-embedded solutions should be acknowledged. The contextual dimension of energy justice is identified by Fuller and McCauley (2016) within spatial and temporal dimensions of energy justice activism. Their empirical work demonstrates that energy justice activism are temporary interventions in the energy system focused on production or consumption, rather than considering the energy system as a whole.

4.1. The gender dimension of energy justice

Conventionally social science research on energy is criticized for approaching energy issues as matters of national security, economic competitiveness or environmental degradation, but not as a matter of social justice (Sovacool et al. 2016). Energy justice as an emerging theme, recognising the ethical dimension of reallocation of societal outcomes of the energy transition (Miller 2014). Social justice focuses on two elements: procedural and distributional justice. Procedural justice refers to the questions of representation and participation, distributional on the distribution of energy transformation's benefits and constraints (Miller 2014; Sovacool et al. 2016). Sovacool et al. (2016) applies the lens of procedural theories of justice to analyse governance and decision-making processes in energy transition research. Within procedural justice three key elements are identified: recognition (Who is recognized as an actor?), participation (Who gets to participate in decision-making processes?) and power (How is power distributed and manifested in decision-making arenas?). Applied to the energy justice concept, the evaluative and normative contributions of energy justice are summarized in Table 3.

Table 3: the evaluative and normative contributions of energy justice to policy design

Tenets	Evaluative	Normative
Distributional	<i>Where</i> are the injustices?	How should we <i>solve</i> them?
Recognition	<i>Who</i> is ignored?	How should we <i>recognise</i> ?
Procedural	Is there fair <i>process</i> ?	Which new processes to <i>develop</i> ?

Based on: Jenkins et al. (2016)

All these three tenets can be applied to the gender and energy nexus. The recognition that energy needs are determined by gender relations is, as described earlier, the central element of the needs-based approach in gender and energy research. Participation and power relations have both a very strong gender dimension, since gender relations are in essence unequal power relations between men and women leading to unequal participation of men and women in decision-making processes (Moser 1997). A gender and rights-based approach is concerned about the enforcement of rights and the representation of interest of both men and women. Procedural justice moves beyond the question of equal representation in decision-making, although that is still a challenge at all decision-making levels and especially for national parliaments. As Fraune (2016) points out, women are underrepresented in energy transition policy in Germany. For example, the German government organizes public

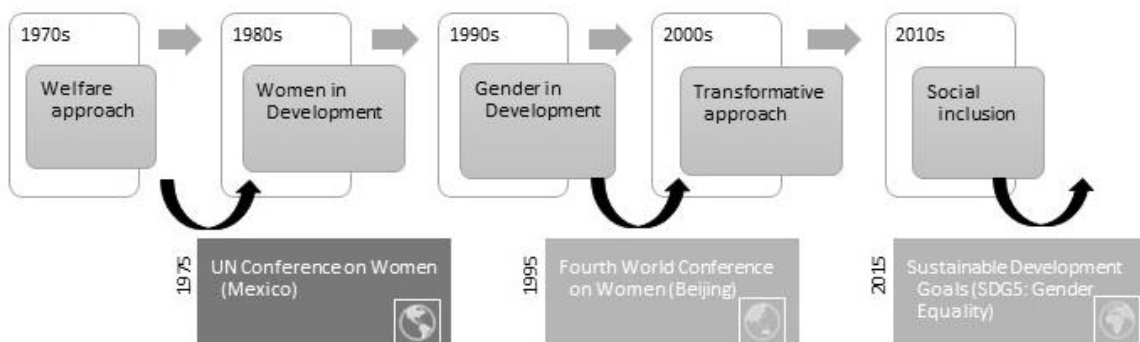
participation through citizens' dialogue sessions to enhance public acceptance of the energy transformation, but men were significantly overrepresented (Fraune 2016).

Fraune (2016) argues that research on gender and energy evolved parallel but more or less unconnected to social science research on energy. This is remarkable since both scholarly streams investigate the relation between individuals and energy policy within their context depending on time, geographical location and governance structures. Some research is done focusing on women's representation in energy related occupations, with an emphasis on industrialised countries (Fraune 2016; Ryan 2014; Sovacool 2014). As Fuller and McCauley (2016) suggest, using an energy justice frame creates the opportunity to overlay specific normative claims of justice with questions about energy in a whole systems approach. In their empirical work on energy justice framing was used as an advocacy tool among activists, and they observed that normative claims relied heavily on identifying vulnerable groups in a static and visible way. Their conclusion is that there is a scope for a more dynamic representation of injustice in relation to the wide proliferation of energy issues (Fuller and McCauley 2016). When using the energy justice framework applied to the gender and energy nexus, a gender and energy just policy framework can be developed.

4.2. Towards a framework for engendering the energy policy processes

In an attempt to analyse gender and energy policy through an energy justice lens, the need for an analytical framework is emerging. A framework is used to reflect how a problem is defined, the kind of questions to be asked in any analysis, and the type of solutions likely to be proposed to solve the problem. Khamati-Njenga & Clancy (2002) define a framework as a system of ideas or conceptual structures that help understand the social world. They stipulate the importance to recognise that a framework is based upon certain assumptions about the nature of the social world. More than one framework can co-exist to analyse a particular problem, because people make different assumptions about a particular situation. Frameworks compete with each other and often one framework is used more at a particular point of time. As Ostrom stipulates, 'given the multiple languages used across disciplines, a coherent institutional framework is needed to allow for expression and comparison of diverse theories and models of theories applied to particular puzzles and problem settings' (Ostrom 2007, p.23). To start developing a gender and energy policy framework, we first identify the main concepts in gender and policy frameworks in general. Since the 1970s, the development of gender approaches in policy development resulted in several gender frameworks. Often these frameworks were developed as aftermaths of UN conferences, aiming at international commitment for gender equality. Figure 2 gives an overview of the historical development of gender frameworks.

Figure 2: historical development of gender frameworks and international commitment



The historical development of gender policy and planning frameworks is marked by three global milestones (figure 2): 1) the First Global Conference on Women in Mexico in 1975, 2) the Fourth Conference on Women in 1995 and 3) the 'Transforming our World: the 2030 Agenda for Sustainable Development' of 2015 in which 17 Sustainable Development Goals are identified of which SDG5 is achieving Gender Equality⁴. In parallel of these global milestones, many countries have their own milestones in gender policy development whether it is breakthroughs in legislation or a first female president. The most relevant development for national gender policy are the UN declarations like the Platform for Action in 1995 and the Sustainable Development Goals (Feenstra 2002). All nations that rectify these UN declarations are part of the global commitment to implement locally.

We start the historical overview in 1970, the year in which the publication of Boserup (1970) recognized women's contribution to the economy through agricultural production. In the 1970s the development of feminist research was rapidly growing and penetrating the political process. Academics, practitioners and activists were engaged in the dialogue on women's rights, leading to the first UN Conference on Women in Mexico in 1975 (Moser, 1995). The UN Decade for Women focused on women's empowerment in taken a women-only approach. When recognizing the importance of gender relations, the social constructed relation between men and women, the focus shifted to gender mainstreaming. In the last ten years, social inclusion discourses acknowledge intersectionality, which moves beyond the binary distinction between men and women. Intersectionality approach acknowledges that the differences in age, education, nationality, ethnicity, race, disabilities, social class, religion, marital status, etc. equally influence the access of women and men to resources, their needs, interests and rights. Based on the historical overview of Figure 2, two conceptual frameworks are discerned. The gender and policy spectrum (figure 3), in which the six stages of engendering a policy are identified, is visualised as a circular model evolving from one stage to the other. Figure 3 represents the engendering policy processes as three steps starting from an empowering process, towards a mainstreaming process into a transformation process.

Figure 3: Gender and policy spectrum

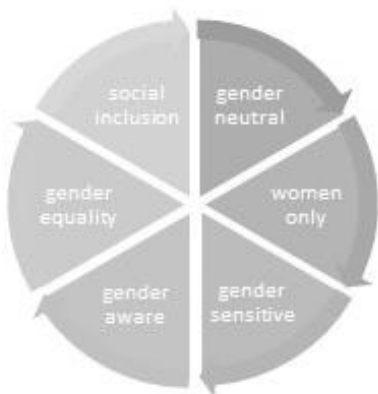


Figure 4: engendering policy processes



Figures 3 and 4 both acknowledge that engendering a policy is a process, in which not all actors involved are in the same stages. As Figure 3 illustrates, a genderizing policy could start from a gender-neutral position. In a gender-neutral policy, there is no distinction between men or women and general terms like 'households', 'citizens', 'consumers' are used. When starting the engendering process several stages can be identified to reach gender equality. A women-only approach will, as Figure 2 demonstrated for the 1970s and 1980s, result in empowering policies and a focus on women's rights. At a certain point in the process, women are no longer seen in isolation and a sensitivity for gender

⁴ Paragraph 54 of the United Nations General Assembly Resolution A/RES/70/1 of 25 September 2015

relations emerges. This is the start of a gender mainstreaming process in which gender-aware policies are developed aiming at gender equality. In 1995, the Beijing Platform for Action endorsed governments to achieve gender equality and the empowerment of women through gender mainstreaming of their policies (Feenstra 2002, Walby 2005). Gender mainstreaming is defined by the UN Economic and Social Council (UN 1997, p.28) as follows:

Mainstreaming a gender perspective is the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality.

As stated in the definition above, gender mainstreaming is a process with multiple stages, each having its own obstacles for implementation. Several scholars have identified different stages as summarized in Table 4.

Table 4: Examples of gender mainstreaming processes, including an example on engendering energy projects

Walby (1997)	Moser and Moser (2005)	Rees (1998)	Clancy et al. (2002) (table 1)
Equal treatment of women	Adopting the terminology of gender equality and gender mainstreaming	'Tinkering'	Meeting women's practical energy needs
Positive actions for women	Putting a gender mainstreaming policy into place;	'Tailoring'	Energy services including women's productive role
Gender mainstreaming	Implementing gender mainstreaming.	'Transforming'	Reflecting women's strategic energy interests

However, gender equality might not even be the ultimate goal in engendering policy. With the recent aim of many donor organisations, like the EU, gender equality should be considered the starting point towards social inclusion using a gender transformative policy⁵. Transformation approaches focus on power relations that influence the distribution of resources between people. An intersectionality scope is used by looking at the differences between people beyond the binary distinction of men and women. Transformation occurs when people exercise agency and take action by shifting the institutional structures that shape their choice and voice and ultimately their lives and futures (Alsop et al. 2006, Eerdewijk et al. 2017). However, when social inclusion is pushed too far, the differences between social groups and more specifically between gender relations are no longer taken into account. This brings us back to the starting point of the gender and policy cycle: gender neutrality. Therefore, engendering policy can be visualised as a circular process.

5. The analytical framework for a gender and energy just policy

Taking the engendering policy process as a starting point for engendering energy policy, the question is whether the three stages (empowerment, mainstreaming and transformation) can be recognized in energy policy. In the search of having both needs and rights of men and women reflected in an energy policy, the energy justice framework provides sufficient anchor points. Analysing gender needs and gender rights to energy services, the challenge of distributional, recognitional and procedural justice can all be identified. The challenge is to combine the gender frameworks with the energy justice framework in an attempt to develop a gender and energy just policy. The different stages of the engendering policy process are recognized as the principles of the gender and policy framework. When

⁵ The EU Lisbon Treaty (2009) aims at social inclusion within the EU.

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combining those with the tenets of the energy justice framework the matrix in Table 5 can developed as an analytical framework for gender and energy just policy. The cells give policy examples.

Table 5: Policy framework for gender and energy justice *with examples*

Engendering process \ Energy Justice	Distributional justice	Recognition justice	Procedural justice
Empowerment	<i>Women's access to energy services</i>	<i>Recognizing women's energy need</i>	<i>Give women a voice in interactive energy policy formulation</i>
Mainstreaming	Equal distribution of energy services for men and women	Acknowledging the gender difference in energy services	Equal rights for men and women in energy access
Transformation	<i>Special energy prices for the energy poor</i>	<i>Acknowledging vulnerable energy consumers</i>	<i>Stakeholder consultation and citizens participation in energy policy design</i>

The applicability of a framework as a conceptual, an analytical and a decision-making tool needs testing, analysing and research. Within the scope of this paper, not all functions of the instrument can be tested. Nevertheless, a first test of the analytical applicability of the conceptual framework is done through a systematic review of gender and energy justice scholarly literature. An attempt is made to put the analysed literature in the matrix of Table 5. As mentioned in the introduction, the body of literature on gender and energy justice is currently very limited. However, the seven peer-reviewed articles analysed provided the following findings, summarised in table 6.

Table 6: Gender and energy just policy research review (chronological and alphabetical)

Authors	Year	Engendering process	Energy justice principle	Wordcount			
				Gender	Women	Girl(s)	Female
Palmer-Jones and Jackson	1997	empowerment	recognition	74	124	1	10
Gaard	2001	empowerment	procedural	6	45	0	2
Wickramasinghe	2003	empowerment and mainstreaming	recognition	56	101	0	0
Galvin	2015	mainstreaming	distributional	14	12	0	65
Willow and Keefer	2015	empowerment	recognition and procedural	70	143	0	17
Bartiaux, Vaneschrick, Moezzi and Frogneux	2018	very weak, energy poor focused	all three are mentioned, focusing on recognition and distribution	9*	1**	0	0
Kumar	2018	empowerment	distributional	21	23	30	30

*limited to gender disaggregated data and references ** in the title of a cited reference

Starting with the two oldest publications included in the review (Palmer-Jones and Jackson 1997, Gaard 2001), we observe that they both demonstrate the activist motivations of the environmental justice literature, in which energy justice is mentioned as an element of a broader environmental and ecological scope. On the one hand, Palmer-Jones and Jackson (1997) recognize the gendered division of labour concerning energy-intensive human work in which women are taken the heaviest burden. Their concern is that innovative approaches to poverty alleviation and sustainable development is labour-intensive, unsustainable and not improving gender-equity. Gaard (2001), on the other hand,

takes an ecofeminist standpoint against the emerging problems of water pollution and energy production by hydro-power dams. According to her, 'ecofeminism illustrates the way in which gendered, cultural assumptions about water, power and human relations have led to creating a water-power infrastructure that perpetuates environmental sexism, environmental racism, and environmental classism' (Gaard 2001, p. 157).

In the third publication, Wickramasinghe (2003) focuses on health issues related to biomass energy use in the domestic sphere, arguing that women are disproportionately affected, reporting physical exhaustion, psychological deterioration and ill-health related to their role in the biomass energy cycle from collection to end-use. 'The gender differentiation of activities and their health repercussions gives rise to the need for a wider debate on social justice for women's health, their rights over resources, and also occupational and workplace security' (Wickramasinghe 2003, p. 51). All three publications before the presentation of the energy justice concept in academic literature (McCauley et al. 2013) take a more environmental justice approach towards energy justice issues. All three also represent a women-only approach in engendering processes, which is also indicated by high word counts for 'women' as compared to 'gender'. This women-only approach combined with gender-sensitivity resonates with the empowerment focus in the aftermath of the Beijing Conference in 1995.

The four more recent publications present a relatively solid analysis of the energy justice framework and in the light of the Sustainable Development Goals representing an awareness on gender relations. However, all of them focus on energy consumption, tackling climate change and improving energy efficiency. Access to sustainable energy for all is the main focus of these publications. In the publications of Bartiaux et al (2018), Galvin (2015) and Kumar (2018) energy poverty is the main concern of injustice in energy policy. Energy use and energy consumption of vulnerable consumers and marginalized societal groups is the engendered approach in these researches. Only Kumar (2018) specifically focuses on the gendered division of energy needs and the gender inequality regarding energy services and resources. Lacking in her analysis is the omission of a gender transformative approach, which is more in line with recent gender research. From an energy justice perspective, the publication by Willow and Keefer (2015) is remarkable, as it follows a rather ecofeminist approach towards environmental justice concerns over shale energy. They argue that women who are opposed to shale energy are called to political action motivated both by personal and political arguments. From an energy justice perspective, both recognitional as well as procedural justice are essential inputs to ensure distributional justice.

Within the systematic review, only the publication by Bartiaux et al. (2018) was found in Scopus using both the keywords 'gender' and 'energy justice' and 'energy policy'. Bartiaux et al. (2018) apply the energy justice nexus to analyse systematically unequal access to energy services from a capabilities approach. Through a quantitative survey, a new statistical index is developed to prove the systematic relation between access to energy and potential capabilities deprivation instead of a casual relation. Although, this publication is using the full energy conceptual framework developed by Sovacool et al. (2014) the gender dimension is limited to sex-disaggregated data to categorize household consumption. Bartiaux et al. (2018) imply that female-headed households are more represented in energy-poor households, but continue their analyses in a rather gender-neutral way not explicitly mentioning the gendered dimension of energy poverty. By doing so, the analysis remains at the household level not explicitly examining the gender relations within households. Taking a household level approach in analysis is contested, due to the fluidity of households in western societies. With many single-headed households, separated couples, part-time caregiving responsibilities for children or elderly family-members, the standard household entity of a male/female couple with two kids is no longer the standard. Clancy et al. (2017) therefore advocate for an energy poverty policy that moves

beyond the front-door, taking into account the gendered relations within households. So even though, the Bartiaux et al. (2018) use the whole energy justice framework, the engendering policy process is not taken into account.

6. Discussion and Conclusions

The main research question that we seek to answer in this paper is: *Which elements of the energy justice discourse can be used to analyse the gender-dimensions of energy policy?* To answer this research question, two sub-research questions were formulated. The first sub-research question is: *Which gender approaches are used to analyse energy policy?* The answer is given through a historical overview of genderizing policy approaches starting with the women’s empowerment movement in the 1970s to the recent social inclusion policy. In the aftermath of major international conferences, the gender discourse developed. The different steps are visualised in a gender spectrum (Figure 3), reflecting the evolving character of a genderizing policy process. Three main engendering policy processes are identified: empowerment, mainstreaming and transforming (Figure 4). In the light of this gender policy spectrum, the gender and energy nexus is researched. Within the gender and energy discourse, two approaches are reviewed in this paper. Both the needs-based approach and the rights-based approach, reflecting the gendered dimension of energy needs and energy interests. Both approaches search for gender justice, meaning a gender-equal energy system. A gender-just energy policy should reflect this gendered dimension.

In parallel to the gender and energy research, the energy justice framework developed in the social energy discourse. This emerging research field, brings principles of justice and ethics to the energy policy table. Energy justice is built upon three main tenets: distributional justice, recognition and procedural justice. This comes very close to the needs-based and rights-based approaches in gender and energy development. The strength of the energy justice framework is the triple function as conceptual, analytical and decision-making tool. This acknowledge that creating an energy just policy is a process. Combined with the three elements of genderizing policy process (empowerment, mainstreaming and transformation), a matrix is developed as a framework for a gender and energy just policy.

The second sub-research question of this paper is: *How applicable is the energy justice discourse for analysing energy policy through a gender lens?* A systematic review of the existing scholarly peer-reviewed articles on gender and energy justice is carried out using the analytical framework of the gender and energy justice matrix. As the summary of the review results show (see Table 7), all the concepts of gender and energy just policy matrix are recognized in the existing body of knowledge of peer-reviewed articles.

Table 7: Gender and energy just policy matrix: Summary of the review results

Energy Justice Engendering process	Distributional justice	Recognition justice	Procedural justice
Empowerment	<ul style="list-style-type: none"> • Willow & Keefer 2015 • Kumar 2018 	<ul style="list-style-type: none"> • Palmer-Jones & Jackson 1997 • Wickramasinghe 2003 	<ul style="list-style-type: none"> • Gaard 2001 • Willow & Keefer 2015
Mainstreaming	<ul style="list-style-type: none"> • Galvin 2015 • Kumar 2018 	<ul style="list-style-type: none"> • Wickramasinghe 2003 	<ul style="list-style-type: none"> • Gaard 2001
Transformation	<ul style="list-style-type: none"> • Bartiaux 2018 	<ul style="list-style-type: none"> • Bartiaux 2018 	<ul style="list-style-type: none"> • Bartiaux 2018

Research on this topic is too limited to test the analytical applicability of the framework based on the first literature review that we carried out within this paper. Testing the gender and energy just policy framework needs empirical evidence and further development of indicators to assess energy policy on

gender and energy justice. As the next step for testing the framework, a more comprehensive review, in which both gender and energy policy publications are analysed (not limited to energy justice) and the grey literature is included, will be applied. Although the systematic review presented in this paper is a solid representation of perspectives from both the Global North and the Global South, the North-South nexus in gender and energy research could be further explored. This would also contribute to the gender and energy justice matrix beyond analytical use but as a decision-making tool for policy design. When the underlying hypotheses of the policy framework for gender and energy justice are tested in policy analysis of existing energy policies the full potential of the matrix will have been tested. Given the such limited research on gender and energy justice, there is a lot of room for improvement of the gender and energy just policy framework. This paper is a first attempt and in doing so, and an invitation for further elaboration and testing of the framework.

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**=included in the systematic review*