

Gendering practices and policies in the South: lessons for improved equity and sustainability in Pakistan's domestic energy sector

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Abstract

Various studies have shown that energy access, consumption and efficiency are inextricably linked to gender, and that sustainable energy transition targets cannot be met without considering women's energy needs. However, policies in the Global South focus primarily on improving energy access without considering the diversities of demand. This paper aims to investigate the gendered nature of energy practices and policies in the Global South, particularly in relation to the experiences and expectations of energy sector professionals in Pakistan. Specifically, the concept of energy justice is drawn upon within a gender-based practice theoretical framework, based on a preliminary analysis of 21 semi-structured interviews with professional experts from Pakistan's energy sector. This study reveals a distinct divide of national energy policy and regulatory mechanisms between on-grid infrastructure development in urban/suburban areas, and off-grid rural communities to which access remains limited and unregulated. Analysis reveals different degrees of gender disparities between urban and rural contexts, as well as intersectional differences in energy practices of urban and rural women. Apart from distributional injustices, lack of recognition and participation in energy access play a significant role: women's distinct energy needs and domestic practices remain marginalised in energy policy and planning due to lack of disaggregated data, context specific socio-cultural meanings and norms, and women's underrepresentation in the energy sector planning and policy. Equitable access to energy remains a chal-

lenge as professionals continue to differentiate between access to energy and its demand in domestic practices, resulting in a disconnect between 'gender-neutral' policy objectives and on-ground gender-biased energy outcomes. This study highlights the need to reconcile the divide between energy provision and the understanding of its demand, along with more just and gender-sensitive energy and planning policies for more equitable distribution and improved well-being.

Introduction

The active role of women in the sustainable development of future energy systems, transitions, and efficient demand management has become well-established in recent years (ENERGIA, 2019; Köhlin et al., 2011; UNDP, 2013). Although gender equality is one of the United Nations' 17 Sustainable Development Goals (SDGs), gender is also recognised as a cross-cutting theme across all the SDGs, as per the argument that focusing on gender equity and women's empowerment is imperative to the successful achievement of all sustainability targets. Yet, energy policies in many countries of the South continue to remain 'gender-neutral' (Clancy, 2016; Govindan et al., 2020), thereby focusing primarily on improving energy access without considering the diversities of demand. This leads to unequal differential impacts in how men and women access, consume, are affected by, and/or benefit from energy practices, policies and services (ENERGIA, 2019; Guruswamy, 2011).

Further, most energy policies in the Global South rely on improving energy access through techno-economic frames of efficiency (e.g. Abdelnour and Saeed, 2014), based on consumer choice and agency (e.g. Moeen et al., 2016). There is limited

focus on energy provision that tackles issues of inequity and justice (Lacey-Barnacle et al., 2020) and addresses the differential needs for energy that emerge and evolve as a result of socio-material patterns of consumption (Shove et al., 2012). Further, little attention is given to how these intersect with socio-cultural norms and various gendered energy-related practices (Govindan et al., 2020; Pachauri and Rao, 2013).

This paper aims to investigate the gendered nature of energy practices and policies in the Global South, particularly in relation to the experiences and expectations of energy sector professionals in Pakistan. It investigates the gendering of energy use in domestic energy-consuming practices, while also addressing the structures and processes of energy access (e.g., decision-making procedures around energy provision/consumption through a socio-technical approach). This helps to identify the gaps in energy policy to support equitable development of new and ongoing policies and interventions on energy access.

Background context: Energy access policy and gender in Pakistan

Pakistan, like many other developing countries in the South, has seen rapid urbanisation and economic growth with predictions for exponential increases in future energy consumption, while facing increased vulnerability to climate challenges (UNDP, 2013). Pakistan's urban population (73.6 million in 2018, 36 % of the total population) is expected to increase to 50 % by 2025 (MPDR, 2013), with the country facing extreme challenges of planning, upscaling and infrastructure development, specifically in relation to energy security.

Residential electricity consumption accounts for over half of the total electricity consumption (95,530 GWh), with the country facing an electricity shortage of approximately 5,000 MW

(NEPRA, 2019). Around 61 million people in Pakistan (~30 % of the total population) do not have access to electricity and half the population (100 million) lack access to clean cooking facilities (UNDP, 2013). The intermittency of the electricity supply system results in frequent power blackouts even in urban centres, which can last over 12 hours per day. Centralised control of the electricity generation and distribution system (Figure 1), as the prevailing governance model, continues a major obstacle in the sector's growth and innovative progress. Hence, despite massive recent investment in the generation sector, issues of affordability, reliability and sustainability persist (NEPRA, 2019).

An estimated 81 % of Pakistan's off-grid population (approximately 11 million people) live in rural areas (PGREF, 2019). These present particular challenges to electrification due to wide dispersion of small clusters of communities, rendering it economically unfeasible for the government to extend utility supply to such remote regions. At the federal level, focus continues to be on utility-scale projects in areas already served by the national grid (IRENA, 2018). Currently, only 5 % of electricity is generated from renewable energy sources (PGREF, 2019) and whilst a plan of action for off-grid and dispersed renewable power generation was stipulated under the Alternative and Renewable Energy Policy 2006, it has yet to be put in practice (IRENA, 2018). Key factors limiting micro/mini-grid solutions for rural electrification include lack of technical expertise, limited data and knowledge of market potential and lack of financing and governmental support (PGREF, 2019).

Pakistan is ranked 151 out of 153 countries in the Global Gender Gap Index Report 2020, with its Human Development Index 25 % lower for women than for men (UNDP, 2019). Economic opportunities for women are extremely limited: only 25 % of women participate in the labour force and only 5 % of senior and leadership roles are held by women (UNDP, 2019).

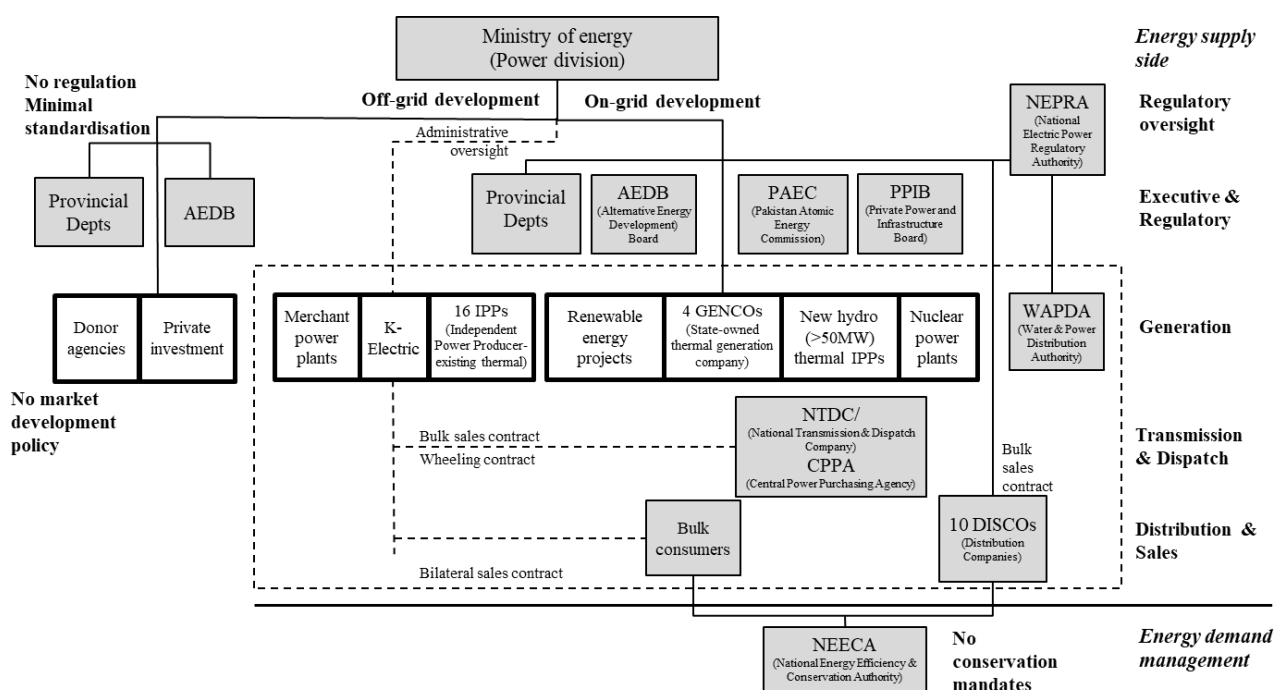


Figure 1. Institutional arrangement of Pakistan's power sector. (Source: adapted from IRENA, 2018.)

Apart from being responsible for most unpaid care and domestic work (10 times more time spent than men), women are overrepresented in the informal economy (Zaidi et al., 2016). A review of Pakistan's women-related policies and programmes reveals that in the past two decades, focus has been on supporting legislation and institutional mechanisms to protect women from violence and criminal activities (Government of Pakistan, 2019), while significantly less attention has been given to gender-mainstreaming and women's improved role in social, economic and political arenas. Although gender is prioritised in the country's National Policy for Development and Empowerment of Women (2002), and Vision 2025 (2013), significant gaps persist in tailored and targeted recommendations for framework implementation. For example, Pakistan's SDG National Framework (2018) lacks baseline data and clear targets to achieve gender equality and women's empowerment. The framework also reveals a clear lack of intersection between SDG5 (gender equality) and SDG7 (energy access), with insubstantial budgetary allocation to improving gender equality (Government of Pakistan, 2019). This indicates a clear gap in national policies and practices to promote women's equitable access to energy-related opportunities, resources and development benefits. In addition, there is a gap in the academic literature on the nexus of gender equity, energy access and justice in the Pakistani context, indicating a critical need for contribution within the field.

Research frame

This study was guided by three complementary theoretical approaches, which together formed a point of departure for the preliminary analysis presented in this paper:

- **A practice theoretical approach to social order:** Theories of Practice decentralise units of enquiry; from individual agents or technologies to the underlying socio-material constructs that determine collectively held, routinised practices. Practices are formed of various constituent elements including meanings, rules, materialities, bodies, and competences that together ascribe socio-cultural meanings and define social order (Shove et al., 2012). Three implications of practice theories for this study should be highlighted. First, domestic energy use is a constituent of how household practices are performed (Shove and Walker, 2014). Second, gender is 'performed' in the carrying out of (energy-consuming) practices (Mechlenborg and Gram-Hanssen, 2020). A gendered practice theoretical perspective therefore entails an investigation of how the performance of and participation in practices varies between men and women. Third, a 'flat' ontology (e.g. Schatzki, 2015) emphasises how professional and household practices are dynamically interconnected. For example, (perceived) social conventions of household use shape how professionals design/deliver infrastructures, and in turn that provision influences household practices – and their resulting energy use. Such considerations thus challenge the dichotomy of energy provision and use (e.g. Strengers, 2011).
- **An intersectional approach to gender:** Gender is socially and culturally constructed based on, for example, which roles and responsibilities are allocated (primarily) to men

and women. Although this study focuses on women's access to energy – juxtaposed with that of men – a binary conception of gender is avoided. Rather, this study takes an intersectional approach to account for 'the interaction between gender, race, and other categories of difference in individual lives, social practices, institutional arrangements, and cultural ideologies and the outcomes of these interactions in terms of power' (Davis, 2008, p. 68). This approach negates the understanding of 'women' as a unified category, enabling exploration of how household practices and energy access varies between women from different social classes, incomes, geographical locations, religions, ethnicities, etc.

- **An energy justice approach to gender equity:** Gender inequity in energy access is an outcome of power dynamics in gender relations that are manifest through energy-related practice-performances. Aside from the obvious of practice theories providing a conceptual basis for analysing differences in men and women's (energy-consuming) practices, the little work that has been done on inequalities is also instructive. For example, in practice-theoretical terms, inequalities can be understood as the social exclusion from certain (energy-consuming) practice-performances – due to uneven distribution of capabilities to successfully integrate the various practice elements, for instance – or, as recruitment in or defection from certain practice-as-entities² (Walker, 2013). In building on such work, we lean on Walker and Day's (2012) energy justice framework and bring the language of social practice to their three key tenets: (1) *distributional justice*, i.e. fair recruitment to essential energy practices; (2) *recognition justice*, i.e. acknowledgment of intersectional diversities and differentiation in practice-performances of vulnerable and marginalised social groups; and, (3) *procedural justice*, i.e. agency in decision-making processes – here taken as participation in professional practices of energy access and provision.

By broadly drawing on these concepts, the paper explores inequalities inherent in gendered governance processes in energy provision policies that result in women's differential energy use and related practices.

Method

In this paper, the investigation of Pakistan's domestic energy provision practices and policies is based on a preliminary thematic analysis of 21 semi-structured interviews with professional experts from various fields in the Pakistani energy sector (Table 1). The interviews were conducted over November 2020–February 2021, and on average lasted 61 mins (range: 28–101 mins). A further detailed thematic analysis is currently underway, which includes comparative analysis of energy sector policies from interviews in three other developing countries in the South as part of the larger GCRF-funded project. A desktop review of existing studies, national/regional policies and initiatives was also undertaken. The understanding of gendered domestic energy use and practices was further substantiated through the lead author's previous research (Khalid and Sunikka-Blank, 2018).

Table 1. Interview participant information.

Sr No	Energy sector stakeholder type	Interviews conducted	Gender representation	
			Male	Female
1.	Government policy institutions and regulatory bodies	3	1	2
2.	Companies concerned with generation, distribution and supply of electricity	4	4	–
3.	NGOs working on development, facilitating energy access, SDGs, energy and gender issues etc.	6	1	5
4.	Development authorities/ planners/ architects (i.e. practitioners responsible for putting the visions into plans)	3	1	2
5.	Engineers and others responsible for delivering services and solutions	5	1	4

Findings

This section is divided into two main parts: the first section presents a discussion of participants' perceptions of the gendered nature of energy use in household practices. The second section highlights three key themes from the analysis deemed critical for achieving equitable energy access and policy in Pakistan.

GENDERED ENERGY CONSUMPTION

While access to energy depends on material infrastructure development, it is also distributed and differentiated by power relations vested in a variety of social constructions, including gender (Clancy et al., 2007). The following subsections reveal how energy sector professionals understand the gendered use of domestic energy, i.e. how gender affects the way energy is used and benefits derived from access to energy. Participants were asked to highlight differences between men and women, as well as between different groups of women.

Differences in men and women's energy-consumption practices

In terms of energy use, participants highlighted the gendered distribution of energy-related practices in terms of division of labour between men and women, both at the household- and community-scale. Men are considered the head of the households and the breadwinners of the family. Women are traditionally responsible for performing most household practices (e.g. cooking, cleaning, laundering, household management, gardening, caregiving) in their role as primary caretakers and home-makers. Home is considered a feminine domain, and as such, women are seen as the primary users of energy in various domestic practices:

Men and women use energy differently ... When we look at a household structure, women are the ones doing all the household chores ... Men are thought to be the bread winner and they are doing work outside of the home. (P20 Female, NGO)

Women in rural areas, if they are burning wood for cooking ... they have to look after the livestock, they have to go towards the fields, they have to send the children to school, and if their husband has to go, then they have to press his clothes as well. So, this duty starts from the morning for a female. And the man, just has his breakfast, picks up his lunch and leaves. (P21 Female, Delivery services/solutions)

Interview participants clearly distinguished between women's work-related energy consumption in the house – such as in performing necessary household practices like cooking or cleaning,

or undertaking home-based income-generating practices (e.g. tailoring, sewing, bangle-making, shoe-stitching, embroidery, carpet weaving etc) – whereas men's consumption of domestic electricity was associated with practices related to comfort, convenience and entertainment (e.g. lighting, fans, air-conditioning, computers and televisions, etc.).

In the urban centres, in households you observe that ... air conditioning and cooling is turned on when the men and boys come home. Women live in discomfort or are generally not given the same treatment (P21 Female, Delivery services/solutions)

These examples show that women and men consume energy in different ways and in the performance of different everyday practices in Pakistan, similar to what has been observed in other countries in the South and North (Räty and Carlsson-Kanyama, 2010; Sunikka-Blank, 2020; Wilhite, 2008). Analysis shows that in the case of Pakistan, this differentiated use of energy is the result of the deeply engrained patriarchal socio-cultural norms – as part of the 'general understandings' of gender (Mechlenborg and Gram-Hanssen, 2020) – that delimit women's performance of and recruitment to specific practices and in doing so, marginalise women's needs and demands for energy, particularly those in low-income, rural, and remote areas. Numerous studies (e.g. Arshad, 2008; Hakim and Aziz, 1998) suggest that prevailing socio-cultural meanings result in women receiving less education, fewer formal qualifications, less chances of mobility, and limited participation in economic practices and asset ownership. This means that most women are dependent on the male members of their households. Indeed, the majority of women in Pakistan (79.4 %) are labelled as housewives (Arshad, 2008). However, this classification hides the enormous contribution women make to the country's economy through their invisible unpaid (Arshad, 2008) and paid labour (Yousaf et al., 2018):

[Through energy access] women were able to do more of their embroidery or what we call in Sindh "rilli" [patchwork quilt] work for them to earn more income ... During the day, they have so many chores to do; looking after young children, perhaps looking after elderly and certainly, they are collecting water from [long] distances ... it's really later on in night that they have a chance to relax and to actually do things which are outside the normal everyday life that they have (P19 Male, NGO)

These home-based income-generating practices often remain invisible to decision-makers and the society at large (Yousaf et

al., 2018). This emphasises that apart from the distributional injustices in women's inequitable recruitment to essential energy-consuming practices (relating to e.g. mobility, employment and education), the lack of recognition of women's specific economic practices also plays a significant role.

Similarly, the prevalent cultural ideologies of *purdah* (religious female screening and seclusion), which are reified through gender segregation and female seclusion, result in a socio-spatial division of private and public spaces (Shaheed, 1989). This division of space pertains to a skewed distribution of decision-making and gendered power dynamics that serves to firmly establish traditional gender role segregation and allocation of practice-as-entities. It also serves to delimit women's practice-performances by constraining women's access to energy and space use, as well as their mobility within and beyond the house:

Women have less mobility. If there is a female-led household ... in that household, mobility will also be less ... If energy access is there, it would probably be for men because they are more mobile and they'll be able to get out of the house more, so they probably have greater access to that particular equipment because energy access itself is only as ... good as what it runs (P05 Female, Delivery services/solutions)

This is in line with previous research that shows that the use of and access to space is often constrained and confined by gendered roles and identities through its division into private and public domains, which affects women's access to energy and technologies (Khalid and Sunikka-Blank, 2018, 2017). In the interviews, only a few participants were able to identify how women's confinement to household spaces, especially for activities other than housework (e.g. productive use), translates into their differentiated needs for energy within the house:

If there is electricity at home, beyond doing household chores, these women can actually engage in productive business, like stitching, sewing, running a salon, and having a computer at home, where they can do remote work. So, all these opportunities can only happen, when there is electricity access, basic electricity needs in households is being fulfilled. (P03 Female, NGO)

Due to prevalent notions of housework being the responsibility of women, some participants believed that this attributed greater autonomy and control to women over the use of household electricity. However, most participants agreed that greater use of energy does not necessarily translate into more control over energy practices, sources, and technologies. As many respondents reflected, men control household resources and are mostly responsible for paying electricity bills, and as such, have more agency and decision-making power in terms of energy-related practices, technologies, finances and planning. This was seen to be true even in situations where women had more bargaining power by contributing to the household income through wage-earning practices:

If it's a male-headed household, you will see the energy access finance decision is taken by men. If it's a female headed household then maybe a woman, but then again, financial decisions in that situation are taken by men as well ... there are a lot of households, where the man of the household is

not earning ... but they will be the ones, because of cultural norms, women will leave financial decisions to them. (P03 Female, NGO)

However, in their role as the primary users of energy in the household, women were also perceived as better managers of, and more responsible for, energy use in household practices:

Women use more energy for cooking and washing, so if they are aware, there can be a difference, that they can use the energy in a better way ... If women know, which appliance uses less energy and which technology they should use, then they will adopt it accordingly. (P11 Female, Govt regulatory body)

In this way, the interview participants suggested a gendering of pro-environmental behaviour and energy-saving practices, which is similar to other studies in the North and South (Sunikka-Blank, 2020; Khalid and Sunikka-Blank, 2017). Whilst this was perceived as a form of domestic power by some participants, Petrova and Simcock (2019) highlight that such energy-saving practices and expectations can also result in women's added emotional and physical burdens of being good household managers, while negotiating tensions with the efficient completion of household tasks.

Intersectional differences in consumption practices between women

The analysis revealed a clear recognition of intersectional differences (between gender and other socio-economic characteristics) in practice-performances and the consequent access to energy between different groups of women. Women with higher levels of education, income and class were perceived to have greater access to energy:

Definitely, for women coming from a more affluent class, having a more affluent income, would have much easier access to energy. Women with a lower income would face a lot of more difficulty in getting access to energy. (P04 Male, Electric utility)

Similarly, variation in geographical location was seen to have an impact on women's practice-performance and consequent energy consumption. In part, differences were related to unequal infrastructure development in rural and urban areas, which resulted in failure of successful integration of various practice elements in rural settings, leading to distributional inequalities. For example, urban areas were perceived to have more developed energy infrastructures, allowing better access to energy. However, participants recognised that differences between urban and rural settings was not only influenced by the successful integration of material infrastructures in practice-performance, since social dynamics and cultural imaginaries only exacerbated such differences. Interview participants clearly believed in different degrees of gender disparities between urban and rural contexts, as well as differences in energy-consuming practices of different urban and rural women:

Even in the urban areas ... people have connections to electricity but some people, some areas experience a lot more load shedding than others and these are primarily low-income communities that get very limited electricity. (P01 Female, Delivery services/solutions)

I don't think urban and rural, I find these terms really complicated. If you are saying rural and if I mean the landlords' wife or daughter in that rural setting, of course she has likelihood of better stuff [access] rather than some women in slum area in urban setting. (P09 Female, NGO)

Participants acknowledged that the rural-urban divide becomes much more complex when seen through the intersectional lens of income and class disparities. Women in high-income urban areas were, for example, perceived to have greater freedom of movement and access to certain energy technologies (e.g. mobile phones, computers, televisions, other household goods), allowing them to successfully perform practices related to energy consumption and well-being. In contrast, low-income rural women faced greater restrictions in mobility outside the house and in the use of communication and household technologies, thereby limiting their practices. Whilst it was believed that both urban and rural women were disproportionately responsible for domestic practices, rural women were said to face greater burdens of hard unpaid physical labour, such as collecting firewood and other fuel for cooking, heating and lighting, fetching water, caring for livestock, and contributing to farming and agricultural practices:

For women in urban setting, they do have access to piped gas for example, so they don't have to chop fuel wood every time they want to make tea. Even if they don't have gas, they will have a cylinder. They are not using firewood or they might have appliances to help them in the kitchen, which women in the rural areas cannot dream of because they don't really have electrical sockets or wires coming into their village (P09 Female, NGO)

This corresponds with previous studies, which show that both urban and rural women in Pakistan spend around 12–20 hours per day on household practices (Arshad, 2008; Nazli and Hamid, 1999) and wage-earning women face greater burdens of household work and time poverty (Najam-us-Saqib and Arif, 2012). Interview findings revealed key challenges in low-income urban and rural women's equitable practice-performance, such as: lack of basic knowledge, education and know-how of energy use and technologies; lack of equal opportunities for economic growth, skills development and participation due to time poverty, household responsibilities and energy poverty; and lack of infrastructures for mobility, communication and use of digital technologies:

For urban areas, it's mostly boys who first get access to computers in some socio-economic classes, and women don't. Same thing with STEM [Science, Technology, Engineering and Mathematics] education, that oh, boys, need to learn more technical things, girls don't. But I think that changes with class in urban areas (P01 Female, Delivery services/solutions)

Less attention was given by the interview participants to the intersections of other axes of differences, such as religion, disability, or age. Specifically, there was little mention of the power dynamics between women of the same household – as observed in our previous research (Khalid and Sunikka-Blank, 2017) – especially since joint and extended family systems are still prevalent in the Pakistani society. Having said this, some

participants acknowledged cultural differences in practices pertaining to specific family structures in Pakistan's different geographical locations and the consequent need for localised technology solutions:

In KPK [Khyber Pakhtunkhwa], they make large flatbread called mana. Our stove was of a smaller size, so this was a problem. We have joint family systems in GB [Gilgit-Baltistan], KPK and Azad Kashmir. So, they need to cook food in a larger quantity ... later we developed our double top stove because it was needed in GB and KPK. So, we increased the size, made the double top. (P21 Female, Delivery services/solutions)

These findings emphasise that equity in practices related to energy consumption and well-being is both a societal and policy concern (Walker and Day, 2012) and that recognition of women's differential needs under prevalent patriarchal norms is key in designing women-specific policies and interventions.

TOWARDS EQUITABLE ENERGY PRACTICES AND POLICIES

Analysis revealed significant challenges in achieving gender equity in practices related to energy access, as well as limitations of policy. Below are discussed three critical themes generated from the interviews:

Moving beyond gender-neutrality: integrating energy access and its use

Most participants believed in the 'gender-neutrality' of energy policy. Although they acknowledged that differential gender practices and needs should be considered in the implementation of policy for improved energy equity, they were unable to articulate specific gender gaps in policy or recognise the adverse effects of 'gender-less' policies. This is in line with our review of national energy and planning policies that revealed a dearth of gender considerations in design, decision-making and implementation of infrastructure and development. Further, for most participants, the understanding of gender went only so far as to address the gender division of labour, overlooking its social construction, therefore resulting in an absence of emphasis on challenging existing gendered practices and norms (apart from emphasis on the patriarchal system). For most participants (irrespective of gender and stakeholder type), the dominant perception was that gender differences do not exist in terms of *access*, but only in terms of the *demand* for energy. Whilst the former was considered part of their remit, the latter was deemed as not factoring in organisational roles and responsibilities:

I think it [gender inequity] is more related to the use of energy after access is provided ... when they're providing the electricity connection, they're providing it to a house, not to some male or female ... they make sure that they're providing the right amount of wire or space or capacity in the transformer and they'll connect you to a grid. So, there is difference in the usage in terms of gender equity, but in terms of providing electricity, I don't think there is really a difference. (P04 Male, Electric utility)

[Policy] should be genderless. Focus should be on humans, not on gender. If you try to make it gender sensitive, you are creating a lot of problems. For example, how can it be that a grid is only for males ... or you construct a biogas plant only

for females. You need to keep policy genderless and human-specific. Yes, the areas that are being completely neglected like clean cooking; those areas should be incorporated ... regardless that they are related to females or males. (P16 Female, Development authority)

Such perceptions and resulting practices lead to a disconnect between 'gender-neutral' policy objectives and on-the-ground gender-biased energy outcomes, in which women's practices related to energy and well-being remain marginalised. When energy access is seen separately from its differentiated use, the dynamics of demand and the quality and equity of access (regarding e.g. affordability, reliability, sustainability) are overlooked. This results in energy planning that, in reality, is gender-blind (Govindan et al., 2020). Here, a practice theoretical perspective provides useful insight. By divulging the dichotomy of energy provision and use, a practice theoretical approach conceptualises consumption as inextricably shaped by, and shaping, resource production and provision (Strengers, 2011b), in which energy supply and demand are both part of ongoing reproduction of social order in specific socio-economic, political and technical systems (Shove and Walker, 2014). Such a policy framing can better address inequities in energy access by focusing on differential energy practice-performances. Further, drawing from the energy justice framework (Walker and Day, 2012), inequitable distributions of essential energy practices can be thought of as being produced, reproduced and sustained through procedural injustices, one key form of which is women's lack of meaningful participation and agency in decision-making. Although women's limited role in decision-making within households was discussed in previous sections, it is important to note that women's participation in meso- and macro-level decision-making through professional practices also remains limited, specifically in energy policy bodies (discussed in the third sub-section).

Further, recognitional injustice in Pakistan's energy policy stems from the lack of access to information (Walker and Day, 2012), i.e. not knowing the scale and scope of the problem of energy access and its distributional and intersectional impacts. This can be linked to the 'know-how' or 'competence' of practice. Putting this in terms of gender equity in energy access, Clancy et al (2007) contend that the lack of awareness for gender consideration in energy policymaking stems from the scarcity of gender-disaggregated data on energy needs and practices. This is discussed further in the next sub-section.

Scope and scale of intervention

Analyses revealed that most participants envision access to energy at the household level, with the assumption that when a household gets access to energy (e.g. if the household is connected to the grid or provided with a new technology), all household members are able to benefit equally. Such assumptions are further substantiated by the lack of disaggregated intra-household level data. In Pakistan, most statistical data and survey sets (e.g. the Pakistan Social and Living Standards Measurement (PSLM) and the Household Integrated Economic Survey (HIES)) are generated with the household as the unit of observation, specifically with reference to consumption. Such surveys do not provide the level or scale of disaggregated intra-household data required to understand the diversities

of demand, specifically between different genders or with an intersectional perspective; for example, difference in decision-making agency between men and women within households (Nazli and Hamid, 1999) or accounting for the use of domestic space for income-generating activities by many (low-income and rural) women. Lack of gender-responsive monitoring and evaluation ultimately leads to a dearth of gender-sensitive strategies in energy policy. Taking the household as a unit of analysis results in a black boxing of household energy consumption, in which uneven distribution of resources between household members remains invisible (Nazli and Hamid, 1999). The previous section highlighted how intrahousehold dynamics have significant intersectional impacts on women's practices related to energy and space use, and overall well-being. Hence, there is a need to first: reconceptualise the household beyond a unified social core, and instead focus on what energy access is for, i.e. understanding of everyday practices (Shove and Walker, 2014); and second: investigate how and why individual practitioners perform, or get recruited to, or defected from, specific (gendered) household practices to address issues of equity and sustainability (Walker, 2013).

Generating an understanding of practitioners and their energy consumption practices requires extensive fieldwork. As Clancy et al. (2007) contend, the lack of field-level extension workers in ministries of energy results in a disconnect between policymakers and the people they aim to serve. In contrast, participants from international donor agencies, NGOs and private social enterprises, were found to have greater know-how of gendered differentiation of energy practices related to distributional energy access. Such organisations often engage on-the-ground with local communities, ensuring creation of dialogue with both men and women. This helps in better understanding their energy practices catering to their specific energy requirements:

Some other things we will consider is what kind of businesses are being run, for example the household energy survey also has a micro-enterprise component/survey, where we can get information on these off-grid/poor grid rural areas, what kind of business women are involved in and how those businesses can be benefitted from access to electricity. (P03 Female, NGO)

Participants highlighted many small-scale projects that focus on women's improved energy access as a means to increase their recruitment to practices related to income-generation and overall wellbeing¹. Most small- to medium-scale projects are usually undertaken in collaboration with international donor agencies (e.g., the United Nations Development Programme (UNDP), the World Bank, the German Society for International Co-operation (GIZ), etc.) that have their own organisational mandates for gender equity and inclusivity, which means that women's practices are often given priority. Whilst this certainly has its advantages, it can allow for certain pitfalls: proposed energy interventions, for example, often do not fall within the government's regulatory framework (which mainly extends to on-grid electrification) and thus are not subject to (national) legal frameworks of procedural justice. This can result in incurrence of structural organisational biases or a predetermined focus on specific gendered interventions or practices, which can sometimes hinder innovation and implementation of contextual solutions, as highlighted by some participants:

I see that these policies are very well drafted, but it's not tweaked and tailor-made to the Pakistani requirement. It doesn't take into account the practicality and applicability with the local challenge we have. They have more of a western tone ... somehow, it's just the wording being adapted by international policies. Policy should interest local issues, and in that language, it would be more meaningful for us to apply (P06 Female, NGO)

This suggests that in the first instance, there is a need for national/local energy policy bodies to integrate intrahousehold level practice-based demand demographics into energy provision programmes and processes, and secondly, to then design interventions that are better aligned with context-specific differential community needs. For this, analysis suggests the need for careful consideration in ensuring meaningful engagement with both men and women, for example in collecting gendered field data:

In focus group discussions, when you talk with men, they are much more aware of their needs and what they want versus women ... getting more insightful information from women is probably more likely through observations and ethnographies versus focus group discussions, I think even survey tools and questions, they should be different for men and women (P05 Female, Delivery services/solutions)

Further, analysis suggests that emphasis should also be given to how interventions are targeted and implemented. For example, some participants shared experiences of how women-specific marketing of clean energy technologies can backfire by excluding men from the conversation. Specifically, since men are in positions of power and authority, alienating them from the benefits of modern clean technologies can have adverse effects:

If you are appealing to just women or if you are orienting a product just to women, that might actually not work in favour of women because your customer is actually the men, they are the ones, who are going to make the decisions ... if they are not being targeted too, that would be bad marketing in my opinion (P01 Female, Delivery services/solutions)

This suggests that interventions need to factor in the local gendered power norms and socio-cultural and economic structures to enable equitable distribution. As Clancy and Mohlakoana (2020) highlight, leaving men out of the picture in women-focused policies runs the risk of overlooking the relational aspects of gender and can strengthen inequalities in practice-performances. Similarly, as Walker and Day (2012) suggest, recognition-informed policies need a balanced approach to avoid the pitfalls of stereotyping or over-essentialising marginalisation. In this regard, instead of focusing only on women-specific benefits (even for interventions that target traditionally feminine practices such as cooking), marketing interventions that highlight benefits for both women *and* men can present greater chances of success and community penetration:

Because we are giving benefit to both, if we are giving them a product, in which their consumption of fuel wood reduces, so it is a big thing for men ... money is being saved. We try to influence the men into buying like this. And for women, we say that this product is very good for your health, as your

eyes are getting weak because of the smoke, your blood pressure remains high ... The walls of your home have become black with this stove, the paint will not spoil. So, in different ways we try to capture the community and address it. (P21 Female, Delivery services/solutions)

This also shows that energy interventions need to be designed with reflexive awareness of their role in (re)producing inequalities through the gendering of technologies and practices.

Women's representation in the energy sector

Gender inequality is recognised not only in terms of failure of recruitment to specific energy-consumption practices, but also in women's lack of agency in decision-making in the energy sector through participation in professional practices – a form of procedural injustice. In Pakistan, women remain underrepresented in the energy sector with limited participation in planning and policy. Cultural scripts restraining women's work-related and economic practices create contradictory pressures for women (Shaheed, 1989). Various studies show that women make up between 1–4 % of the total workforce in energy and power utilities and are underrepresented in architecture (9 % of registered principal architects) and town planning practices (4.5 % of registered town planners). Similarly, studies on female enrolment rates for graduate STEM programmes in Pakistan show that women account for 23 % of the total student population, and only 15 % of the total engineering faculty (ESMAP, 2020).

Key challenges identified by interview participants in women's participation in professional energy-sector practices included lack of enabling environments and prevalence of patriarchal norms that inhibit women's economic participation and upward mobility. For instance, women are often overlooked for certain roles considered more suited to men (e.g. site-visits, fieldwork, travel to remote areas, engagement with male community representatives, etc.):

At the manager or chief level, females are not given the charge of for example grid station construction or any field-related task ... In case there is an emergency or the system collapses, then in no time, you need to get the new system up and running. So, in positions like this, females have not yet been placed ... It is preferred to give them office or desk jobs. (P11 Female, Govt regulatory authority)

Such concerns are not just voiced by men in positions of authority, but also by female participants: women's 'recruitability' to professional energy sector practices is hindered by a lack of integration of essential practice elements, such as lack of adequate infrastructure, facilities and structural support, and increased safety risks during commute and fieldwork. Analysis showed that the absence of women employees in fieldwork can consequently limit engagement with women end-users, thus inhibiting data collection from female members of the community under prevailing cultural norms of gender segregation:

In all four provinces of Pakistan, if a male team member is accompanying me to the community, then he cannot interact with the women, only I can interact with the women ... because men are in larger number, and they know how to read and write a little, they behave as if they can respond to our questions more authentically and their women are completely useless (P21 Female, Delivery services/solutions)

This shows that women's participation in energy sector fieldwork is necessary to understand the gendered differentiation in energy access and to address women's specific energy-related practices and needs. Further, some participants were able to provide examples of women successfully taking on traditionally masculine practices in the energy sector (e.g. meter reading, community solar power management), which served to challenge normative cultural perceptions of gender roles and provided evidence to the contrary:

In these [high-risk] areas you cannot make recovery for utility services because of security issues. In one area, they recruited a local woman and she managed to check the meters and make all the recoveries. Things improved significantly and people who didn't pay bills or misbehaved with male officers, changed their attitudes as well. It is our mindset that females should not be hired at locations like these, but the results are opposite. (P11 Female, Govt regulatory authority)

We used to select a Roshna Bibi [Light Woman – a female selected to be a rural solar entrepreneur] in the village, in whose home we would install the solar plant ... These are women from the community, who people think are reliable ... They know basic bookkeeping and people trust them ... the idea was to create awareness that women can also start this business and contribute their daily wage at home. (P21 Female, Delivery services/solutions)

Such success stories are signs of a changing culture towards women's improved agency and participation in the energy sector. However, much progress still needs to be made. In public energy sector organisations, although gender quotas have been implemented, interview participants suggest that these have yet to be achieved, especially in upper-management roles:

They [organisation name] follow a government policy, where they had 30–32 % women participation in decision making. But practically, there are no women. Either women are not applying, or I don't know what the problem is. Second, the female staff is less. On field, it is even less and if there are any, they are either in HR or admin, or at some small post ... not at the higher level. (P20 Female, NGO)

According to USAID (2016), there are no systematic studies on women's employment or discussions on improving employment opportunities for women in grid-based DISCOs. Analysis showed that women working at utility companies face harassment, lack of equal employment opportunities, gender-biased promotions, communication barriers, and lack of basic infrastructure facilities (e.g. separate bathrooms). Moreover, other studies have shown that the application of national law can be inconsistent in the private sector organisations, which often show inconsistency in the policies they follow and adopt (ESMAP, 2020). Lack of gender responsive infrastructure and weak implementation of laws on harassment at workplace and in the public sphere inhibit women from pursuing professional practices (Zaidi et al., 2016). Further, lower literacy rates and non-familiarity with ICT skills and technologies, specifically among low-income/rural women, inhibit their involvement in modern economic enterprises (Government of Pakistan, 2019). This suggests that a practice theoretical approach, focusing on

interventions in various interlinked practice elements, can improve women's agency in energy sector decision-making; for instance, by developing women's competences, providing essential material infrastructure, but also challenging masculine imaginaries of certain professional responsibilities.

Conclusions

This study contributes to the limited literature on the nexus of gender equity, energy access and justice in the Global South by exploring the gendered nature of energy practices and policies in Pakistan. Specifically, the study addresses the gap in energy research in the South from an energy justice and practice theoretical framework, analysing the experiences and expectations of 21 energy sector professionals. Guided by three complementary theoretical approaches – practice theories, intersectionality and energy justice – the study shows that energy access, consumption and efficiency practices are inextricably linked to gender, but that these links are complex and dependent on various forms of distribution, recognition and participation. Analysis reveals different degrees of gender disparities between different urban and rural contexts, as well as intersectional differences in energy practices of urban and rural women: for low-income urban and rural women, domestic energy access is not only a means to perform everyday household practices more efficiently but becomes essential to partake in home-based income-generating economic activities. Key challenges to women's equitable energy practices include: lack of skills and know-how of energy use and technologies; lack of equal opportunities for economic growth, mobility, and communication; and context-specific patriarchal socio-cultural meanings and norms that limit women's economic participation and financial decision-making. Further, women remain underrepresented at all levels of the energy sector, with limited participation in professional energy sector practices due to key challenges such as male-dominated workplaces, lack of provision of adequate infrastructure, and fieldwork facilities and increased safety risks.

Differentiation between energy access and the understanding of its demand in energy policy and practices results in the marginalisation of women's differential energy practices and needs. Analysis shows that there is a need for policy to make visible the integrated nature of energy supply and demand through a better understanding of energy practices to challenge normative constructions of (gendered) demands. This calls for interventions to go beyond providing basic access, and instead target gendered practices, technologies, energy services and asset ownership for improved sustainability and well-being. This requires disaggregated intrahousehold data and gender assessments, gender-responsive monitoring and evaluation, and culture-sensitive solutions. More significantly, the study highlights the need to move beyond 'gender-neutrality' in energy policy that fails to acknowledge power relations and existing patriarchal norms that prioritise and benefit men. For this, women's equal participation in decision-making practices in the energy sector, along with more gender-sensitive policies, are key. In this regard, recent women-focused microfinancing initiatives in the banking sector and targeted housing finance subsidies for women co-owners (Rizvi, 2018) are certainly promising.

Although efforts have been made in Pakistan's national programmes and government-led initiatives for women's protec-

tion and improved gender consideration in the last few decades, there still remains much work to be done. No doubt, equitable access (SDG5) is dependent on energy that is affordable, reliable and sustainable (SDG7). But beyond that, findings suggest that gender equity in energy access can only be achieved, when energy policies factor in non-energy and related social practices and policies, such as gender-sensitive urban planning and development, health-related policies that promote women's social and psychological empowerment and well-being (Baltruszewicz et al., 2021; Clancy, 2016), and innovative social initiatives that challenge prevailing gender relations and cultural understandings, to name only a few. The research indicates promising links between practice theories, intersectionality and energy justice. Integrating energy justice within a gender-based practice framework can help elucidate how power dynamics in gender relations manifest through practice-performance and how (professional and policy-related) practices reproduce inequalities and constrain well-being.

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Endnotes

1. These included *Roshna Bibi* (<https://news.un.org/en/audio/2016/03/610042>), *Lighting a million lives* (<https://www.globalgiving.org/pfil/22398/projdoc.pdf>), *Goats for water* (<https://www.bbc.com/news/av/magazine-39927875>), *Eco-Energy* (<https://ecoenergy.global/>), and many other such microfinancing and solar initiatives.
2. Schatzki (1996) defines practice-as-entity as the organisational structure of practice that endures over space and time, whereas practice-as-performance refers to the 'doing' of practice, in which elements are integrated by practitioners in different performances. Practice-as-entities shape performances, while practice-as-performances sustain practice entities.

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