

Exploring energy transition narratives through a gender perspective

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Abstract:

Transitions toward a low-carbon future are not only technical and economical, but also deeply social, political and gendered. However, dominant framings around low-carbon energy transitions often give limited attention to gender dynamics of energy transitions, such as the influence of power relations, effects on gender roles and social equity. Here, we explore the ways in which energy transition narratives consider social, policy and gender dynamics. We specifically aim to understand how gender perspectives manifest in energy transition narratives and their potential implications in decision making spaces across different energy technologies. We draw on existing narratives of energy transitions across three different continents where issues of gender and impact on local communities are evident: Canada, Kenya and Spain. In the province of Alberta, Canada, we explore Indigenous perspectives related to large-scale development of oil sands sector; in Kenya, we look into large-scale power development in contested landscapes; while in Spain, we evaluate emerging narratives at the macro-political level in the movement away from fossil fuels and deployment of renewable technologies. In these case studies, we evaluate the role and perspectives of gender in considering issues of values, institutions, and power in energy decision making, and explore the potential of “gender sensitive narratives”. We find in our case studies that ‘mainstream’ energy transition narratives primarily represent the decision-making process and perspectives of male specialists. These transition narratives require a diverse perspective to be more inclusive and representative. We synthesise our findings to support the (re)construction of narratives based on framings that encourage different genders, minority or other groups that are marginalised to not only participate but are active agents of changes and to facilitate a more inclusive, transparent and multi-scale energy decision-making process.

Key words: narratives, energy transitions, innovation, gender equality, Indigenous peoples, right holders

1. Introduction

The Paris Agreement has played a pivotal role in setting the global agenda for climate change and has recognised the need to consider gender in climate change actions by respecting and promoting gender equality in mitigation actions and supporting gender-responsive adaptation. While acknowledging that gender equality in global climate policies is important for agenda setting, implementing actions is significantly more challenging. Part of the challenge is due to entrenched power dynamics of gender, which can lead to exclusion and inequality in resources access and decision making. These are brought about by unquestioned long standing practices, discourses, and norms that have reinforced unequal gender and power relations in decision making spaces.

The mainstream discourse on gender, energy and climate change tends to perpetuate unhelpful gendered stereotypes often as represented as binary concepts. Women are typically categorised as ‘vulnerable’ groups, and ‘victims’ (True, 2003) in need protection from climate change risks. Gender, energy and climate change issues are often associated with women in the household (see literature review in Osunmuyiwa and Ahlborg, 2019) or women in the ‘global south’ (Terry, 2009) who need access to energy services that impact their livelihoods (see literature review in Jiska de Groot, 2017). Women are type casted as nurturers or are ‘virtuous’ care takers of nature but often without the needed resources (Arora-Jonsson, 2011). Meanwhile, men are often associated with the generation of knowledge and organisation of science and technology (Hern and Hasu, 2013) and can help ‘solve’ climate change challenges.

Energy and related technologies are associated with masculine characteristics (Terry, 2009) usually conceived and developed by male technical specialists. Additionally, the development of technologies is usually viewed in terms of utility and solutions to current technological system deficits. Technology is usually conceived as removed and dis-embedded from society and therefore socially- and gender-neutral (Zwarteveen, 2017; Liebrand, 2014). Men are also ‘naturally’ seen as ‘leaders’, as evident in male dominated governments and the policy making domain where power is exercised (True, 2003).

These generalised gender discourses can be dangerous in perpetuating unhelpful biases that fail to recognise the complex power dynamics that different genders face in climate mitigation and adaptation action. When talking about energy transformations, Stirling (2014) defines the exertion of power in the form of asemanic flows of social agency. The narratives constructed for low-carbon transition pathways can have a strong discourse around technological and managerial solutions and reflect the dominant political and policy agenda set primarily by strong incumbent actors with an interest in maintaining the status quo. Such discourses tend to exclude plural perspectives that reflect a wide range of problems linked to climate change. On the other hand, narratives - when thoughtfully constructed and includes plurality of perspectives - can be an platform to promote a just energy transition. Reflecting on the gender issues in energy transition, this paper explores gendered perspectives within a low carbon mitigation pathway through the use of narratives. We ask: *how do gender perspectives manifest in energy transition narratives and what are their implications on decision making spaces across different countries?*

In the next sections, we discuss how gender has been considered in energy transitions and explore the use of narratives as a platform for more inclusive discussion of energy futures. We then present a new framing based on technological innovation and gender mainstreaming concepts to evaluate energy transitions narratives. This framing is applied to three country case studies and the findings are synthesised to draw more generalisable observations that could be helpful for other energy transitions contexts. We then conclude with overarching insights.

2. Where is the gender perspective in energy transitions?

2.1 Exploring a gendered perspective for just energy transitions

Energy transitions is a fertile ground to explore justice and equality issues, as changes in energy systems are often confronted with power inequalities linked to politics and policy making (Delina and Janetos 2018). Energy policy and policy making processes are often explored through a technocratic perspective, and efforts to include social-economic analysis are often limited to the energy prices, jobs and labour issues (Healy and Barry, 2017) and energy poverty (Bickerstaff et al 2013; Sovacool et. al, 2019). The limited emphasis on the social dimension could partly be attributed to the fact that “energy engineers, economists and bureaucrats dominate energy policy design and implementation” (Healy and Barry, 2017, p. 452). There are links drawn between energy justice and policy making (Jekins et al, 2017), but the discussion of gender equality in decision and policy making process for just, energy transitions is still under explored. However, a growing area of research on gender and energy have in the past explored issues of energy poverty, women’s untapped talent in the energy work force and employment, decision making and adoption of more energy efficient and safer cook stoves especially in developing regions (Clancy, Skutsch, & Batchelor, 2002; Ryan, 2014; Danielsen, 2012; Cecelski, 2004).

Insights to bringing in feminist perspectives have also created alliances with studying the gendered character of environmental knowledge and practice (Hovorka, 2006; Paulson et al, 2003) as well as emerging literature focusing away from women’s vulnerabilities to emerging collaborative social action (Buechler and Hanson (2015). More forms of inclusiveness, “care-full” science and practices have been emerging, pushing for societies such as that of ‘regenerative cultures’ referring to a culture’s ability to regenerate and transform in response to change (Wahl, 2016).

Another way of positioning a gender perspective in energy transitions is to explore the dynamics of power and politics from a feminist political ecology tradition (Ahlborg & Nightingale, 2017; Elmhirst, 2011; Harcourt & Nelson, 2015). Power and politics in action are manifested in processes where authority structures evolve or are reproduced, how certain types of knowledge legitimize emergent authority, and how (gendered) subjectivities are created to embody and carry out the aspirations of both authority and the knowledge (Oksala, 2013; Robbins, 2012; Eriksen, Nightingale, & Eakin, 2015). This positioning can potentially explain how policies and programs can exclude gender discourses (i.e. ‘gender blindness’), or present tokenistic and moderate gender considerations, or introduce pathways for transformation because there can be struggles around authority and knowledge.

2.2 Narratives to set climate and energy policy agendas towards a low carbon transition

Narratives are being increasingly used to convey potential transitions to a low carbon future and could also be a useful platform to convey plural visions of the future. However, dominant narratives can also reinforce mainstream perspective that are constructed by powerful groups and exclude alternative voices. For instance, energy transitions are highly influenced by the visions and scenarios primarily developed by dominant groups – often led by men – along with a strong emphasis on technological change (Konsell, 2013). By and large technical-economic and socio-technical transitions storylines tend to dominate the narratives of the future. This strong technocratic perspective is prevalent in climate scenario modelling within the scientific community as seen in the Fifth Assessment Report where 88% of the top 44 authors responsible for compiling the report were male (Hughes et, al., 2017).

Scenarios and visions of technological changes are also represented in energy narratives, “which characteristically concern power systems and their problems, growth, limits, success, and failure” (Nye, 1993, p 73). Whereas “women's energy narratives would perhaps focus more on biological rather than

mechanical metaphors.” (Nye, 1993, p 73). The link between women and biology or nature is explored in ecofeminism where women have important relationships with nature and therefore have unique insights of the environment (Cudworth, 2003, qtd in Salehi et al, 2015). However, equating men to technology and women to the biological or natural world can create a false dichotomy between the roles, perspectives and responsibilities of different genders in energy transitions.

The use of narratives through story telling can also have positive role in promoting inclusion and is becoming more widely use in climate policy making at the international level. The 2018 Talanoa Dialogue initiated at the UNFCCC Conference of Parties 23 (COP23) was a bottom up process that used storytelling as a means of sharing ideas and experiences that could potentially feed into policy making. Some of the key insights that emerged was the importance of addressing cross cutting issues including gender equality, equity and justice (Talanoa Dialogue Platform, 2018, p 12).

Narratives as a tool have also been used in a number of sustainability and climate change research projects worldwide. Some examples include narratives that focus on risks in low-carbon transitions at the national and regional level (see Hanger-Kopp et al, 2019), ‘humanist’ narratives of energy transitions at the sub-national level (Miller et al., 2015), the individual city stories of the future (Mourik, et al 2017) and green ‘win-win’ narratives from entrepreneurs to global dialogue (Jäger et al, 2018). The inclusion of narratives of non-dominant voices provide opportunities for other agendas, including gender equality in energy transitions.

3. Framework for assessing how gender dynamics manifest in energy transition narratives

This study is an ex-post analysis of low carbon narratives developed through a previous research project (see the TRANSrisk¹ project and Hanger et al, 2019 for details for each case study). We selected three case studies from the fourteen country case studies where we could apply a gender lens to evaluate existing narratives. These studies include Canada’s oils sands, Kenya’s centralized power sector, and Spain’s energy sector transition from fossil fuels to renewables; all present different geopolitical challenges, and histories with varying degrees of vulnerabilities in energy provision and transition. While the case studies are very diverse, there were key commonalities across these narratives. All case studies had strong presence of vulnerable and marginalised communities due to impacts from large scale energy systems with land use implications. Another commonality was that the researchers overseeing these case studies were personally interested in emerging issues linked to gender equality and social justice. Additionally, out of the fourteen country studies the Spanish study was the only narratives that explored the role of women in energy policy making. This prompted the Canadian and Kenyan case study leads to question why there was an overwhelming absence of women and underrepresented voices in the decisions making. Based on the identified gap, we set out to critically examine the narratives by applying a framing that considers technological innovation and gendered perspective in energy policy making.

3.1 Technological innovation and energy transitions

We first consider technological innovations in energy systems to potentially support the transition away from the current high carbon system. Technological innovations can range from incremental changes to radical innovations that are drivers of paradigm shifts. They are supported by corresponding institutional innovations that comprise of policies, labour relations as well as organisation and research and

¹ TRANSrisk: Transitions pathways and risk analysis for climate change mitigation and adaptation strategies – (2015-2018) explored implementation risks (or barriers) and consequential risks (negative outcomes) of the transition pathways. The project was funded by the European Union’s Horizon 2020 programme, grant 642260.

development structures (Freeman, 2004). Radical innovations can occur outside the technological regime² and “niches act as incubation rooms that protect novelties against the mainstream market selection” (Gin et.al, 2010, p. 22). Experimental projects are carried out in the niche environment where the innovation is accessible to actors (Sarasvathy and Dew, 2005 cited in Grin et.al, 2010, p. 22). A technological transition therefore requires a shift in valuing energy resources would need to occur in parallel for green technologies to be applied within mainstream society. Studying the shift towards a low carbon paradigm from the technical, policy and social perspective is, therefore, essential to shifting towards a low carbon society. An exploration of potential social changes opens up a starting point to explore technological innovations from a gender perspective in policies and policy making process.

3.2 A gender lens for exploring energy policies and transitions

One means of exploring gender perspectives in energy and climate policies is to consider gender equality and mainstreaming³ as a generic policy approach (see Daly, 2005) with a broader perspective of diversity and democratic processes. Gender equity in policies can be viewed through a “threefold typology of inclusion, reversal, and displacement” (Squires, 1999, p 366) or as other scholars interpret it ‘sameness’, ‘difference’ and transformation (Walby, 2005). Sameness includes integrating (Squires, 1999) or constitutionally embedding women’s rights (Shaw 2002) in the mainstream decision making process by promoting equality of women to that of men. Another perspective of gender equality is to promote differences that exists across genders (Calhoun 1995; Felski 1997 qtd. in Walby, 2005) for instance, through affirmative action policies. Finally, transformations for gender mainstreaming transcends the binary concepts of male and females and consider all genders and their interests in the decisions making process (Rees 1998; Squires, 1999, 2005, Fraser, 1997). We apply these three types of gender equality policy actions (see Table 1 for further details) as a starting point to discuss how gendered perspectives can be included in low carbon energy transitions narratives.

Table 1: Energy technology and the gender lens

Gender equality	Linking energy and the gender lens	Understandings
Sameness	<ul style="list-style-type: none"> - Working to further rights and equality for women (and men in certain circumstances) and vulnerable groups in the development and use of energy technologies. - Equality embracing for equal opportunity and outcomes for women (Ní Aoláin et al. 2011, p. 14). 	<ul style="list-style-type: none"> - Gender neutral understandings in energy transition narratives (e.g.: Equal pay, equal representation, equal right to “veto” decisions). - With program planning and development, the “sameness” approach has led to “gender equality”.

² The technological regime is described as “a set of design parameters which embody the principles which will generate both the physical configuration of the product and the process and materials from which it is to be constructed” (Georghiou et al., qtd. in Kemp, 1994, p. 1025).

³ OHCHR, 2019 defines gender integration mainstreaming as “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 so that women and men benefit equally and inequality is not perpetuated.”

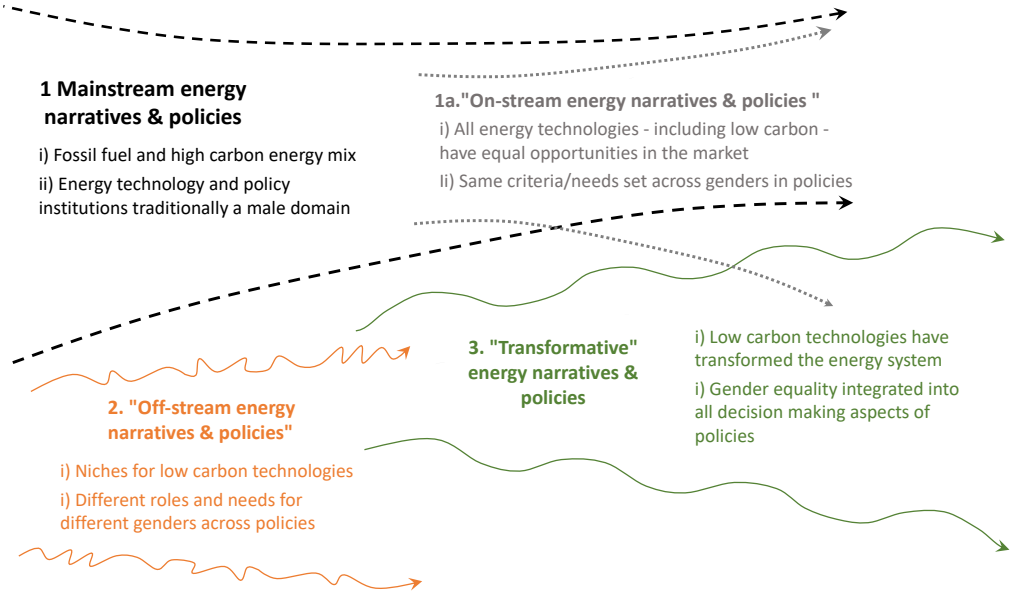
Gender equality	Linking energy and the gender lens	Understandings
Differentness	<ul style="list-style-type: none"> - A departure from a “one-size-fits-all” approach within energy systems, recognizing that women and men have diverse needs, aspirations, perceptions, and behaviours linked to energy technologies. These in turn, are influenced by prevailing gender norms, cultural norms and inequalities. 	<ul style="list-style-type: none"> - Within program planning and development, the “difference” approach has led to “gender equity”. - Gender sensitive understandings for different needs (Porter 2016) and applied to the design, delivery, and provision of energy services
Transformation	<ul style="list-style-type: none"> - Broadening: rethinking gender norms and no longer equating gender solely with women in the development, use and governance and decision making processes of energy systems - Deepening: incorporating gender with other social identities including age social class, ethnicity, religious backgrounds, urban/rural setting (Porter, 2016). - Highlighting ‘intersectionalities’, that is, gender intersecting with other social identities 	<ul style="list-style-type: none"> - Focusing on the active agent as part the innovation decision making process - Broadening and deepening the understanding of gender in a sustainable energy transitions and the importance of active agency

Source: authors

3.3 Framework to analyse energy narratives through a gendered lens

We develop a broad framework (See figure 1) to explore low carbon narratives by including the concepts of gender equality in an energy policy making process using the “threefold typology” (see Squires, 1999 and Walby 2005) as an overarching framing to specifically promote energy transitions. We then apply the gender equality lens to analyse different narratives, perspectives, and power dynamics within energy policy making processes in each country. We do not intend to apply gender mainstreaming concepts as a blanket solution; rather we want to consider a broad framing as a starting point to assess energy transitions that considers gendered perspective.

Figure 1: Framework to analyse energy innovation through a gendered lens



Source: Authors

While we acknowledge there could be many types of narratives and factors that contribute to low carbon pathways. In our study, we focus on four different main types of energy narratives and on two core aspects: i) technological innovation through energy policies; and ii) gender equality in energy policy making. These narratives can co-exist within the same space at a given point in time and are defined below.

1. Mainstream narratives represents:

- i) the dominant energy policy discourse that consists of high carbon incumbent energy technologies central to the energy system.
- ii) an energy policy making process is primarily a male domain and the positions of power mainly held by a homogenous demographic in policy making, the technology value chain and work force.

1a. On-stream innovation narratives (sameness) exists *within a dedicated space of the mainstream narrative* and promotes:

- i) Niche low carbon technologies (e.g. renewable energy): incumbent or fossil fuel technologies dominate the energy system; but through dedicated policies, low carbon technologies are given equal opportunities to participate in the existing infrastructure of the energy system.
- ii) Equal treatment of gendered perspectives in energy policy: while the largely male-dominated narrative continues to be accepted, alternative gender views are equally valid. Niche spaces can be created within the mainstream but without necessarily challenging the current perspective.

2. Off-stream innovation narratives (differentness) value alternative perspectives that are *external to the mainstream perspective* and:

- i) Promotes low carbon innovations in a dedicated space separate from incumbent technologies: within the energy system, policies help to create niche spaces for low carbon technologies, which exist in parallel to the mainstream energy system. Low carbon technologies may require new infrastructure to be built alongside the existing infrastructure. These technologies may be supported through special incentive, programmes, and subsidies.
- ii) Considers the differentiated needs of women and men in energy policies: narratives are created that are distinct from the mainstream perspective to reflect different gendered needs in the development of the energy system and its outcomes.

3. Transformative innovation narratives involves a radical technological and social innovation that leads to a new norm that no longer resembles the original mainstream discourse. A transformation may occur as a result of on- and/or off-stream narratives leading to a drastically different future.

- i) Transformations in the energy mix supported by a mix of energy policies leads to a radically changed energy system dominated by low carbon energy.
- ii) The transformation process is supported by active agents of change by women or other marginalised groups. A wider concept of gender equality and plurality of knowledge is considered in decision making processes. Transformative narratives also consider “broadening” the discussion of gender beyond women and “deepening” the discussion by including gender with other intersecting social identities.

4. Evaluation of narratives internalities by gender mainstreaming approach

4.1 Canadian case study narratives

Cap the Hat: mainstream narrative to limit oil-sands emissions while supporting its growth

The oil sands in Alberta, Canada is one of the biggest fossil fuel energy resources in the world and is also ranked as a top ten emitters in the world, contributing to 1.6 % of global emissions (International Energy

Agency, 2016). For Canada, the fossil fuel sector is one of the main sources of green-house gas (GHG) emissions but also a key economic driver. The Canadian oil sector has an entrenched regional industrial culture that could be perceived as a “boys club” (Amnesty International, 2016). The “good jobs” are preserved for white males who represent the frontier masculine identity: the heroes conquering the remote wilderness to find fortune (O’Shaughnessy and Göze, 2016). The “boys club” was a term used by women and Indigenous people working in the industry to reflect unequal hiring practices, barriers to better paid positions, and sexual and racial harassment on the work site (Alook, Hussey and Hill, 2019). Whereas, the “good jobs” represent full-time, year-round, benefit providing, indefinite, single employer position capable to sustain a family (Hill, Alook and Hussey, 2017). Additionally, in Alberta, women account for 21.5% of the oil and gas sector (Government of Alberta, 2018), while visible minorities only represent 13% of the workforce (Petroleum Labour Market Information, 2018). Women and other minorities statically remain more prevalent in lower paid, less stable jobs. Also, women in this province make 41% less than men above the national average in earnings gap of 31% (Lahey, 2016).

These figures do not improve when ethnicity is considered. Beyond under representation, Indigenous workers face discrimination in the income, type of eligible positions and education opportunities. Indigenous workers also experience additional challenges that consider the conflictive relationship between dominant capitalist structures and caring for the collective good represented in their world views. Additionally, the ancestral homes of Indigenous communities are located near large natural resource development sites. The communities at large are not benefiting from these large economic activities when compared to the gains from the industry. However, Indigenous companies that have been able to gain space in this sector have offered opportunities to Indigenous workers under a more familiar dynamic and the opportunity to maintain a healthier family-work relationship within their community (Fox and Moyser, 2018). These changes have also brought internal inequality within Indigenous communities, creating separations between members with access to capitalist structures and members who do not. Also, perceptions remain among some Indigenous workers that consider that the role of the woman is at home and the oil sector is a tough workplace built for men (Alook, Hussey and Hill, 2019).

From the climate policy perspective Canada agreed to decrease GHG emissions by 30 % below 2005 levels by 2030 in its Nationally Determined Contribution, as a part of the Paris Agreement. For Alberta, policies around carbon pricing, emissions capping, electricity generation from renewables, increased efficiency in energy usage, were developed in 2015 to decrease emissions growth under the “Climate Leadership Plan” (Leach *et al.*, 2015). However, the newly elected provincial government in 2019 announced that this plan would be replaced by the “Technology innovation and emissions reduction (TIER) fund” (United Conservative Association, 2019). The TEIR fund requires big emitters, including oil sands producers, to reduce their emission intensity by 10% (increasing by 1% annually) compared to their performance between 2016-2018. Additionally, the plan considers emission reductions by paying a rate of \$20/t-CO_{2eq} to the TIER fund, well below the \$30-50/tonneCO_{2eq} proposed by the previous government, and significantly below prices required to meet IPCC targets (National Roundtable on the Environment and the Economy, 2008; IPCC, 2014).

Prevalence of fossil fuel extraction on this narrative maintains the unequal reality of this sector. The voice of different genders and cultural groups including the Indigenous right holders are largely absent in the official climate policy implementation targets, which take on a technocratic approach focusing on ‘technology innovation’ in Alberta’s TIER fund. Additionally, the Canadian NDC failed to recognise the value of Indigenous knowledge and practices in addressing climate change issue and did not mention the diverse needs of Indigenous communities or *any* community. The NDC also failed to mention gender and social needs, and rather focused on clean growth to address climate change issues.

Hold your horses: oil sands development considering Indigenous perspectives for an on-stream narrative

Under the current mainstream policy narrative, there have been limited efforts to provide a legitimate space that considers the diverse needs and priorities of Indigenous peoples; however, the gender issues are currently acknowledged and explored but is rather disconnected from wider discussions of inclusion and equality related to Indigenous rights. Previous research by Stienstra et al.(2016) found a significant lack of consideration of gender and intersectional factors in resource development in the Canadian north and discussed how policy instruments fall short in incorporating Indigenous gender and intersectional aspects in their assessments. The authors highlighted the importance of incorporating gender-based analysis into decision making process and the key role government organisations have. These elements have not yet been addressed appropriately in Alberta's oils sector.

An example demonstrating the lack of intersectionality is seen in the Alberta Narratives Projects (Marshall and Bennett, 2018; Marshall, Bennett and Clarke, 2018), a public engagement research that collected narratives on Alberta's energy-climate future. While gender issues were included in the narratives, Indigenous perspective were excluded in the project as the structure set out to collect the narratives was problematic for Indigenous participants. Indigenous communities highlighted problems that energy and climate could not be detached from the call for action of the Truth and Reconciliation Commission (TRC) tasked to uncover past injustices linked to residential schools where young girls and boys were systematically abused within the system (Truth and Reconciliation Commission, 2015). Additionally, the history of research and consultation has often be extractive, adding another layer of injustice on top of the resource extraction and colonial history (Marshall, Bennett and Clarke, 2018). The colonial history has especially placed Indigenous women at a disadvantage. The Indian Act of 1876 "abolished traditional forms of governance and inserted laws that brought local government under state control (Milloy 2008). Leadership roles of women, hereditary chiefs, and elders were replaced with a patriarchal, male-only elective system (Sayers 2001)." (qtd. in University of Alberta Faculty of Native Studies, 2015).

There have been some independent efforts and studies from Indigenous communities to voice their concerns in energy and resource development. The community of Fort McKay, consisting of Dene, Cree and Métis community members, commissioned a study that expressed their community needs in relation to the development of oil sands near their reserve and traditional lands (Alces, 2013). We have taken up this study to develop a narratives alongside the mainstream narrative in Alberta (Virla, Lieu and Fitzpatrick, 2019). The 'hold your horse' narrative is based on the community's priorities areas to conserve biodiversity and cultural practices while slowly developing the oil sands. This narrative lies within the mainstream since the assumption is the oil sands sector will continue to grow but within limits. At the same time, there are also push backs on resource exploitation through the court system that threaten the traditional lands (Lieu et al, 2019). The strong emphasises on land use and biodiversity indicators based on traditional practices (i.e. berries, fisheries, caribou herds) are not typically highlighted in climate policy agendas, nor are the differing gender roles linked to traditional practices and energy resources development.

Within Indigenous communities there is also a gender perspective that varies significantly between each community (Alook, 2016). Some communities are matriarchal, where women make all the leadership decisions, whereas in other communities, women take roles related to education, community management and knowledge holders (Tsosie, 2010). Applying a westernised gender lens can provide skewed interpretations to the meaning and role of women within the Indigenous world views. Therefore, it is essential to have proper accounts from Indigenous researchers and methodologies about the

manifestation of gender inequalities within communities affected by natural resources development and how it can manifest in different transition narratives proposed.

The innovation narratives can include distribution of benefits more equally and across generations, challenge the existing power dynamics that lead to unsustainable social and environmental impacts. Also, other 'silent' narratives must be made explicit to enable clarity and building trust between community and government. In addition, narratives should also consider inform non-Indigenous participants about alternative world views, priorities and protocols so the narrative based Indigenous values is accepted by the wider public with less social and legal resistance.

4.2 Kenya case study narrative

In 2007, the Kenyan government established Vision 2030, its roadmap for becoming a newly industrialising, middle-income country by 2030 (Government of Kenya, 2007). Achieving Vision 2030 relies strongly on developing the power sector to expand generation capacity and increase access, security and affordability of energy services for a growing industrial and household customer base (Ministry of Energy and Petroleum, 2016). The launch of Vision 2030 provided an opportunity to address persistent social and gender inequalities in Kenya (Society for International Development 2010), including in the energy sector. In addition, Kenya's new constitution in 2010 set out a range of provisions for improving gender equity: no more than two thirds of all public committees and decision-making bodies should be men and 30% of the government's procurement budget had to be dedicated to women, youth and people with disabilities.

A vision for the future: Kenya's mainstream narrative for growth and prosperity

Whilst there are a number of different energy pathways Kenya could have chosen to develop its energy sector, the mainstream narrative focuses on large scale electricity generation to power the nation based upon a diverse generation mix that includes exploitation of domestic coal resources. As electricity access expands, the middle class grows, and industrial activity rises, major electricity demand increases are forecast (Government of Kenya, 2011, 2018). Since 2011, a number of plans have been established to meet this demand, the latest being the updated Least Cost Power Development Plan 2017-2037 published in 2018. Currently there is no coal-fired power generation in Kenya. However, the Least Cost Power Development Plan 2017-2037 expects coal power to expand at a similar pace to geothermal power and hydropower, both of which have a well-established history in Kenya.

Kenya's mainstream energy narrative is rather gender-blind. Compared to Kenya's 2004 Energy Policy, the revised 2011 Energy Policy incorporated considerably more gender issues (Clancy et al. 2016). Yet in formal energy institutions, such as the Ministry of Energy and Petroleum and state-owned electricity utilities, men with engineering backgrounds continue to hold most senior management positions and thus dominate the decision-making space (Winther et al. 2016). For example, in the state-owned distribution company, KenyaPower, women make up only 19% of the workforce (10,590), with the majority working in technical field operations (2,190) and customer service (470). Thus, it is perhaps no surprise that large-scale technological solutions in areas of existing expertise (hydro, geothermal and fossil fuels) dominate the response to addressing Kenya's energy challenges. Meanwhile, energy needs beside electrical power, such as biomass energy – which is largely collected and used by women and girls for household cooking and which accounts for up to 70% of energy demand in the country – receives little attention in the mainstream narrative (Malonzo and Fedha 2015).

Low-carbon climate-resilient development: on-stream narratives to power the economy

Alongside the mainstream narrative is an on-stream narrative focused on the potential for largescale, grid-connected renewables to power Kenya's economic development ambitions. Renewable energy has always

played a major role in Kenya's electricity supply. For decades, hydropower dominated the electricity mix. But since the turn of the century, when a series of droughts highlighted the climate vulnerability of hydropower, geothermal has begun to represent an increasing share. Indeed, the state-owned generation utility, KenGen, made a strategic decision to invest in more geothermal power in order to diversify its generation assets and reduce risk to future rainfall variability in a changing climate. More recently, wind has become prominent, with KenGen's 25MW Ngong Wind Farm first coming online in 2009 and the 310MW Lake Turkana Wind Power Project – which provides 13% of Kenya's total generation capacity and is the region's largest wind farm – coming online in 2018 (Kenya Power, 2018). Indeed, in the power sector, the country's abundant renewable energy resources offer significant opportunities for pursuing low-carbon development pathways.

Added to this, Kenya has positioned itself within the international community as a champion of low-carbon climate-resilient development. In 2015, Kenya submitted its NDC to the UNFCCC, setting out a number of mitigation and adaptation actions to abate its GHG emissions by 30% compared to a business-as-usual scenario (Ministry of Environment and Natural Resources, 2015). Expansion of renewable sources of energy was a core mitigation priority, with geothermal being the focus of a recent proposed Nationally Appropriate Mitigation Actions for Kenya submitted to the UNFCCC (Falzon et al., 2014). Also, in 2018, the government announced its third Medium-Term Plan (2018-2022) – its economic development vehicle anchored within the Vision 2030 – giving great priority to expanding the renewable energy sector.⁴

In many ways, this on-stream narrative maintains the same male-dominated decision space and gender-blind policy perspective as the mainstream narrative. However, the on-stream narrative does appear to be accompanied by growing momentum around changing gender dynamics in the centralized energy system. In 2017, the state-owned generation company, KenGen, appointed its first ever female CEO, Rebecca Miano (ESI Africa 2017a) and the KenGen board has transformed its board to ensure one third are women (KenGen 2019). Meanwhile, the Pink Energy in KenGen and Women in Geothermal (WING) Africa are networks established to promote women in the power sector (USEA 2017; Women in Geothermal 2019) and women are starting to work in roles traditionally dominated by men, such as geothermal drilling engineers (ESI Africa 2017b).

Political and technological decentralization: off-stream narratives to improve local livelihoods

Despite the dominance of the mainstream and on-stream narratives around largescale centralized grid-based power development, there are several alternatives. One off-stream narrative lies around decentralized power generation through off-grid solar home systems and renewable energy mini-grids. Decentralized solar power has witnessed strong growth over the past decade, with innovative pay-as-you-go solutions utilizing Kenya's well-established mobile money services. This new market has opened opportunities for women-led enterprises in solar, steam, briquettes and biogas to champion the benefits of adopting renewable energy (Kenya Climate Innovation Center 2017; Practical Action 2019; Clancy et al. 2016). Opening up space for women entrepreneurs provides one avenue for increasing the decision-making power of women within the sector. However, Marshall et al. (2017) argue that the focus on private sector entrepreneurship only serves to reinforce gendered power imbalances through social norms associating business entrepreneurship with male-dominated behaviour.

Another off-stream narrative is on more local governance of energy resources and benefit-sharing. In recent years, decisions around how to manage geothermal power generation have also been heavily influenced by the changing political landscape associated with the devolved government system established in the new Kenyan constitution in 2010 (Government of Kenya, 2010). The social and

⁴ See www.mtp3.go.ke/

environmental risks of largescale renewable energy development – such as geothermal, hydro and wind – are largely borne by local communities, which are rights holders of the land where the activities generally occur. Kenya’s strong land rights mean that traditional communities even maintain some access rights on privately-owned lands. Since the livelihoods of these communities are closely tied to the land, the national and county governments – as duty bearers for the citizens they govern – have a responsibility to uphold these rights. This is particularly the case where the capacity of rights holders to manage social and environmental impacts is limited. Environmental and social impact assessments, with associated resettlement action plans for displaced communities, are the typical tools used by duty bearers to hold private economic interests accountable for minimising risks to local communities. But there is potentially a greater role for monitoring by local citizens, including opportunities for women, who might be better placed to identify changes in their local communities and environment.

With energy planning and development mandates, county governments in Kenya have a substantial role to play with regard to shaping energy development priorities and politics according to their local resources (Johnson, Nyambane, Cyoy, & Oito, 2016). For instance, most geothermal steam fields lie within the Rift Valley – an area spreading across Turkana, Baringo, Nakuru and Kajiado counties. Local governments in these counties want a role in decision-making over geothermal development in their constituencies to embrace its benefits, rather than risk disruptions in the county and local community (Matara & Sayagie, 2018). Already, in December 2017, land disputes and public participation concerns led to the collapse to the Kinangop Wind Power Project, highlighting the sensitivity of land issues and community engagement.

The recent passing of the 2017 Energy Bill has given legal clarity to what local-level governance will mean within the counties when it comes to energy issues (Government of Kenya, 2017). For example, each county government is now expected to develop a county energy master plan that will be used to formulate an integrated national energy master plan. Debate continues over how governance of the energy sector at county and central governments will be managed in practice. The devolved system in Kenya is still new, hence a lot of learning and adaptation still needs to take place before effective means of ensuring citizen participation, including women, are established. Moreover, it is not clear how this will address gender power dynamics in relation to energy decision-making in the home and community, where men often make the major purchasing decisions related to energy in the household (Fingleton-Smith 2018).

4.3 The Spanish case study narrative

Old wine in new bottles: From the mainstream to the on-stream narrative

Spain has been on shaky grounds in terms of its energy transition vision until recently: around 80% of primary energy (in 2016) depended on imports (IEA, 2016), GHG emissions increased to 340 million tonnes (in 2016 for all sectors excluding LULUCF, including international aviation (Eurostat, 2019), as well as , the “halt” to new renewable power installations (since 2013) due to political impositions and administrative barriers such as the 'sun tax' and constraints and fees on auto consumption. These factors have been seen as a lack of commitment in terms of political will fostering a renewable energy transition agenda and a weak ambition in complying with the Paris Agreement.

Yet, in 2017, an expert commission was gathered to provide a roadmap for decarbonisation proposals and analyses for designing a new Law on Climate Change and Energy Transitions for Spain (Expert Commission on Energy Transition Scenarios, 2018). However, the expert commission summoned by the Government, opposition and several trade unions were composed of 14 male experts. The commission of experts in fact is a true reflection of actor-dynamics in the energy sector. This, consequentially sparked outcry by the public that not only had women been excluded in energy policy and decision making, there was a general overall lack in gender diversity in energy companies as well (Carlsson-Kanyama et al. 2010)). Porter (2016)

points to the potential of narrative agencies in telling or withholding stories, such that when a certain group's voices "...[a]re suppressed, silenced, excluded or ignored; agency is undermined" (Porter, 2016, pg. 36). Spain's case of an all-male expert panel, or exclusion to certain positions in companies accentuates attention to a particular set of storytellers and storytelling; while ignoring gender sensitive understandings of how different gender conscious energy transitions can be manifested. Similar agencies might be inhibited when disputing voices of vulnerable (under)represented communities on this path for responding to current energy predicaments of our time.

This mainstream narrative has been useful for highlighting structural problems. Critiques claimed that the current energy model focusing on centralised and often polluting infrastructure and oligopolistic actor agglomerations was becoming obsolete and unjust (see Sorman et al. 2019). Also, the unequal composition is not a matter questioning numbers or the capabilities of men but are issues of plurality of visions and actors and that of overall justice. The mainstream structure not only perpetuated a lack diversity and equality - failing to achieve the basics of the "sameness" criteria of gender representation - but was ignorant in the power and agency of gendered narratives, undermining voices of women.

The new ministry of ecological transitions and off-stream narratives

The new government in Spain, taking over in June 2018, (and re-elected in April 2019) has created a new Ministry for Ecological Transition. The Ministry is the first of its kind merging the former Ministries for Environment and for Energy, whilst also delegating a female minister. The new ministry has had an ambitious outlook on energy transitions with a central focus on the National Integrated Energy and Climate Plan (PNIEC) 2021-2030 (IDEA, 2019), a guiding roadmap toward EU's 2030 climate and energy goals as well as zero emissions for 2050. The national plan, ranked highest of the 28 European Union Member States National Energy and Climate Plans, evaluated by the European Climate Foundation based on the adequacy of national targets, the comprehensiveness of the policy descriptions as well as the quality and inclusiveness and participation (ECF, 2019). Another positive in this time outcome has been regarding the removal of the controversial "sun tax" (Binnie and Elías Rodríguez, 2018) that had hindered the development of Solar PV in the recent history of Spanish renewables rollout. The current government has also been compiling a strategy of just transitions in collaboration with unions on the future role of coal workers all contributing to more ambitious plans for the overarching goals in complying with the Paris Agreement (MITECO 2019a; Nelsen, 2018).

The just transitions strategy is solidarity strategy that aspires to ensure that people and territories take advantage of the opportunities of this energy transition and that nobody is left behind promising inclusivity (MITECO, 2019b). Yet it is widely acknowledged that the factor of gender emerges as a prerequisite that needs to be infiltrated into all practices and solutions, as gender-conscious visions are currently marginalized (Anfinsen and Heidenreich, 2017). Here, although inclusivity is captured through the "sameness" criteria (i.e. gender equality), integrating rights of all vulnerable groups with the just transitions strategy; capturing gender specific needs and ratcheting women's visions into decision making spaces is also vital. This can be seen in the results of a survey conducted in 2017 when asked regarding the perception of women in energy decision making in Spain (Sorman et al. submitted). While 26% of male participants believe that there is gender equality in energy decision making, this is reflected as 4% by women participants, while more than half of women believe that are systematically excluded in the current energy transition model.

Placing consumers at the heart of the energy system for a “care-full” and gender sensitive pathways toward transformation

There is general consensus that renewables are to take deepened roots in the future of energy transitions (REN21, 2017), thus the innovation narrative in such a case would be to aboard the possible benefits of a more equal representation and decision making on an already changing energy system. Not only are systems transitioning for more decentral mode of production, bringing people closer to nodes of production, but they also serve as a tool for empowering more diverse and gender sensitive, grassroots participation in a new form of energy production. “Prosumers”: consumers generating their own power in this sense has been a being a crucial step in for the democratization of energy (Angel, 2017; Fairchild and Weinrub, 2017; Szulecki, 2018). This leap has finally been supported in April 2019, when the Spanish Government approved the final regulation on auto-consumption (BOE (2019). Royal Decree 244/2019), freeing the pathway for “citizen participation” in Spain.

Although not a new concept in Europe (Friends of the Earth Europe, 2018), the decree is to accelerate the energy transition panorama in Spain since it opens up producing and consuming renewable energies both as individual users or in the forms of community production through shared renewable installations. This not only gives access to people who do not have access to a roof owned renewable electricity production/supply system, but also opens “space” to transition toward an economy based on “the commons” where resources are taken care of by a community (Helfrich and Bollier (2014) in D’alisa (eds)) rather than private appropriation or dispossession of communal assets (Harvey (2003). Although adhering to the mainstream: grid connection and “sameness” criteria, the new legislation lifts administrative barriers in grid connecting, providing basic rights to remuneration of electricity or everyone which previously was considered as an economic activity only allowed though certain fees; this can be seen as a temporary emancipation towards transformative change.

Thus, reappropriation of the right to auto production and hence creating a space of a new “commons” can act as a vital platform of where gender mainstreaming can systematically be reinforced. Many energy cooperatives, already in action in Spain, indeed have equality plans set out in their statutes, however, there is always a wide gap between formality and reality (Saltamontes, 2018). The change of the regulation may in fact serve as a promoter to seek for more gender equity in practices and applications. Such gender-targeted policies can also be combined with the idea that the supply and the consumption chain are not cut-off but are rather brought closer together for an equitable gender agenda in energy action and decision making. Engaging with gender conscious energy democracy determinants for transformative action can also serve as a vehicle in tackling larger issues of energy poverty: a very relevant intersectional issue bringing together gender, socio-economic and marital status in Spain, that has been illustrated to be a burden on the invisible workforce of women, mainly taking place in the household (De la Fuente et al, 2017) (Herrero et al., 2018).

Thus, this new regulation can be used as a transversal element that can foster energy democracy, combat energy poverty, organize bottom up grassroots initiatives with the inclusion of gender sensitive visions and applications from the ground up. This eventually is to fostering principles of solidarity and “care economy” based on core principles of inclusion across age, sex, race and gender.

5. Synthesis of the case studies:

Looking into energy transition narratives with gender lenses for each of the case studies, Canada, Kenya and Spain unveiled the many layers that can manifest within the narratives. At first sight, narratives were easily differentiated by their technological and the level of equality archivable in the narrative. However, when taking a closer look, each narrative presented unique gendered perspectives. Like many other

contexts of change, energy transitions show us how values and resources are governed and accessed. The kinds of resources, groups of people, regions targeted and who is considered knowledgeable and competent to undertake planned energy transition activities are contested and negotiated.

We see from the narratives that energy transitions proceed with authority. The institutions (rules and rulers of the game) and organisations for energy transitions are usually governments, their energy agencies and their institutional instruments that legitimize the decision-making about particular trajectories of transition. Power operates within and between these different formal and informal organisations and institutions, as well as between actors at different levels and scales to also shape who is authorized to steer the transition. In all three narratives, we see that authority is gendered.

The *mainstream narratives* were predominately technical and male-dominated raising the question “where are the gendered voices?”. Each narrative has a resounding absence of gendered voice or very limited representations of non-mainstream voices. Additionally, all three mainstream narratives focused on the top down decision making of centralised energy system. The mainstream narratives demonstrate a lack of awareness for a diversity of voices or perhaps a deliberate systemic exclusion of voices.

The *on- and off-stream innovation narratives* generally explored “what were the (potential) approaches for including gendered voices?”. These innovation narratives are a starting point to thinking about gendered perspectives. The on- and off-stream narratives demonstrate incremental changes that raise awareness to bring in different gendered voices. Many of these innovation narratives have a starting point from the community, a more local and bottom up, approach, which can begin to consider a gender lens and more inclusive space for decision making. This space allows for reflection and acknowledges the need for different gendered approaches within the smaller scale energy systems. But efforts cannot only be limited to representation and acknowledging differences.

Transformative narratives raised a question of “how can gendered perspectives be active agents of change?” A transformation is not the end point but a process of radical change that disrupts the existing unsustainable technologies and social practices that exclude different genders and underrepresented groups. While the narratives are not yet in the transformative phase, transformation can be viewed as a *process that* can enable ‘agents of change’. Women, and underrepresented groups need to be viewed as enablers as change rather than as vulnerable, marginalised groups at the mercy of powerful actors. This means real agency in participation, recognition and decision making in innovation and policy practices by bringing the voices to desired directions of transformation to set the policy agenda, develop and implement policies.

6. Conclusion and reflections

Energy transition narratives as manifested in Canada, Kenya and Spain present very different degrees of gender consciousness and maturity along the transition continuum and debate. However, a commonality is the workings of power around authority, knowledge and gender identity in the three narratives of energy transition, serve to explain the absence of the equal representation and voices of women in decision-making, perpetuate the technical cultures the energy sector is premised on by rendering its transition discourses as almost only technical thus bracketing out any social and gender discourse, and preserving the purview of expert knowledge in the hands of male technical experts.

The analysis applied the framework for analysing gender perspectives in energy policy making, highlighted a very important need to question why there was an overwhelming absence of not only gendered voices but *empowered gendered and diverse voices* in energy transitions. Applying a gender lens can challenge energy transition researchers to (re)think why a gendered perspective is needed and how it can be an active ingredient for women and other groups to be influencers of a just energy decision making process.

Often linking the issue of gender to energy technology and policy was already challenging. However, considering two different groups that are often marginalised in decision making was even more difficult. Tackling intersectionality is a real challenge when addressing gender equality along with issues of communities that have been systematic discriminated, as seen in the Canadian case study or where tensions occur between local communities and higher level of decision making in Kenya. The discussion of inclusion of local community's needs and gender were more disconnected from policy making. The Spanish case study had a strong focus on gender and policy making since these aspects were explicitly considered within the case study, while the Canadian and Kenyan case study did not explicitly explore gender issue but rather issues of equality and representation of Indigenous and local communities' needs.

Nevertheless, all case studies demonstrated that some efforts have been attempted to improve the *representation* of diversity through *on-stream narratives* to *broaden* the discussion to include both women, men and to create spaces for different narratives to potentially include minority groups. The off-stream narratives, on the other hand *deepened* the discussion of gender and wider (in)equality by recognising the diverse needs of different genders and other social groups through apply a more bottom up approach to energy planning and policy. New emerging spaces for transition options can be regarded as positive drivers toward transformational change. We argue that different energy innovation systems - whether on-stream or off-stream- emerging in very different energy transition narratives can be seen as steps towards change for a more gender equal and just energy system.

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