Challenging Entrenched Power Structures in the Energy Sector –

Feminist Foreign Policy as a Key to a Just Transition

Imprint

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Content

List of abbreviations

ASM	Artisanal and Small-Scale Mining
CEO	Corporate Europe Observatory
CDB	Convention on Biological Diversity
CEJF	Community Environmental Justice Forum
CO2	Carbon Dioxide
CSO	Civil Society Organization
DRE	Distributed Renewable Energy
EIGE	European Institute for Gender Equality
EPA	Environmental Protection Agency
FFP	Feminist Foreign Policy
FPIC	Free, Prior, and Informed Consent
GBV	Gender Based Violence
GERI	Global Electricity Regulatory Index
GIZ	German Corporation for International Cooperation
IEA	International Energy Agency
ILO	International Labour Organization
IPCC	Intergovernmental Panel on Climate Change
IPLC	Indigenous Peoples and Local Communities
IRENA	International Renewable Energy Agency
OECD	Organisation for Economic Co-operation and Development
SDG	Sustainable Development Goal
STEM	Science, Technology, Engineering, and Mathematics
SUV	Sport Utility Vehicle
Rs	Rights, Resources and Representation
UN	United Nations
UNDRR	United Nations Office for Disaster Risk Reduction
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations International Children's Emergency Fund
UNPFII	United Nations Permanent Forum on Indigenous Issues
UNRISD	United Nations Research Institute for Social Development
UNSD	United Nations Department of Economic and Social Affairs Statistics
WASH	Water, Sanitation, Hygiene
WEDO	Women's Environment and Development Organization
WHO	World Health Organization

Executive summary

In order to respond to the global climate crisis, there is an urgent need for a rapid transition to sustainable energies. However, energy systems around the globe are marked by socio-economic inequalities embedded within them. **While the transition to renewable energy is essential, this transformation risks perpetuating existing inequalities if they remain unaddressed.** Addressing climate change and the energy transition thus need to take place in the form of a **just transition**, ensuring that the shift to low-carbon and environmentally sustainable economies is as fair and inclusive as possible and leaves no one behind. The inclusion of the concept of a just transition into the preamble of the 2015 Paris Agreement marks a pivotal moment in this context and it is now crucial for signatory states to put it into practice.

Beyond mere technological solutions, **this requires systemic societal transformation that promotes equity and inclusion by addressing the structural causes and the multi-dimensionality of existing energy-related inequalities**. Many communities, especially in the Global South, still **lack access to affordable and reliable clean energy**. At the same time, many of them disproportionately bear the **burden of pollution, environmental degradation, and biodiversity** loss caused by both fossil fuel and renewable energy infrastructure. Moreover, those most affected are often **excluded from energy-related decision-making processes**. While the transition to renewables creates new economic opportunities, these benefits are often not equitably distributed. The phasing out of fossil fuels risks leaving workers behind, particularly those without access to reskilling programs or alternative employment opportunities. All of these challenges **disproportionately impact girls, women, and marginalized communities, including Indigenous Peoples**, who are not only more vulnerable to energy poverty but also face systemic barriers in accessing the benefits of energy transitions.

While addressing these challenges is a crucial end in itself, a just transition, in the form of more inclusion, can also lead to better energy-related outcomes. As research shows, women – and female leaders in particular – are more inclined to advocate for equitable, sustainable energy solutions and they tend to prioritize long-term sustainability and community-based initiatives. In doing so, they drive behavioral change that counters the entrenched practices of male-dominated fossil industries, ultimately making female leadership a crucial catalyst for a global energy transition that benefits all communities. Linked to this, given energy systems' role in shaping societies and economies, transforming the energy sector can also have broader positive impacts for society at large, for example by improving girls' education or women's health and economic empowerment.

Countries in the Global North bear a special responsibility in working towards a just transition, both domestically and through international cooperation. For one, historically, these countries have been the largest Carbon Dioxide (CO2) emitters, as recognized in the United Nations Framework Convention on Climate Change (UNFCCC) and have significantly benefited from carbon-intensive economic growth while the Global South has been most affected by the negative externalities of this. Moreover, in moving towards decarbonization, **countries in the Global North will increasingly rely on energy imports such as green hydrogen, notably from the Global South**. This dependency places both a unique responsibility on them and creates an opportunity to ensure that the transition to renewable energies in energy-producing nations in the Global South is

a just transition. In this context, far from falling only into the classic purview of development policy, **there is a need to integrate the goal of a just transition into foreign policy and foreign energy policy as well, where it has so far received less attention**. While feminist foreign policies can be an important tool in doing so, even they have not yet fully addressed energy related questions.

Against this background, the overall objective of this study is to examine how entrenched power structures in the energy sector and the social, political, and economic inequalities linked to them can be overcome to contribute to a just transition. In particular, it investigates the key role that a feminist foreign policy can and should play in transforming the energy landscape towards greater equality and sustainability.

The multifaceted existing power structures and inequalities in the energy system

The analysis of the existing entrenched power structures and inequalities in energy systems is **structured around the three pillars of feminist foreign policy: Resources, Rights, and Representation**. These dimensions highlight the deeply rooted inequalities that shape the access to and control over energy, the protection of fundamental rights, and inclusion of marginalized voices in decision-making. Each section outlines how entrenched power structures reinforce exclusion and exploitation, underscoring the need for transformative approaches to ensure a just transition.

Resources

Energy systems, while central to economic and technological progress, often drive significant ecological and social harm, disproportionately affecting marginalized communities, women, and Indigenous Peoples. Fossil fuel extraction leads to deforestation, biodiversity loss, and pollution. These impacts exacerbate social inequalities, increasing health risks and resource scarcity, particularly for those who rely on natural ecosystems for survival. However, renewable energy systems, when implemented without justice-oriented planning, also pose risks, including biodiversity loss and habitat destruction.

Access to energy remains deeply unequal, disproportionately affecting women, low-income households and marginalized communities as many of them face significant barriers to obtaining reliable, affordable, and sustainable energy services necessary for daily life and economic activities. Energy poverty in turn continues to limit access to essential services such as healthcare, education, and economic participation, reinforcing broader social and economic inequalities. Rural and marginalized communities in particular face outdated infrastructure, high costs, and centralized energy systems that fail to meet their needs. Women, particularly in low-income and Indigenous communities, bear the brunt of energy poverty, as it increases unpaid labor, limits economic opportunities, and exposes them to health risks from pollution.

Ownership and control over energy resources remain highly unequal, with large corporations and wealthy investors benefiting the most while local and marginalized communities, particularly Indigenous groups, remain largely excluded. This concentration of ownership limits economic participation, decision-making power, and access to the benefits of energy projects, reinforcing historical injustices. As a result, those who bear the environmental and social costs, such as women, low-income households, and Indigenous groups, see minimal economic benefits. Without a shift toward more inclusive ownership structures, energy transitions risk replicating existing power imbalances. While community-driven renewable energy models present a viable path towards economic empowerment and expanded energy access, they face significant structural barriers,

including limited financing, competition with large-scale private actors, and a lack of supportive policies.

The energy sector is characterized by persistent labor exploitation and unequal working conditions, disproportionately affecting marginalized groups, particularly women, migrant workers, and informal laborers. Examples include low wages, hazardous environments, and weak labor protections, especially in regions with large informal labor markets. Gender inequality in the form of wage gaps and workplace discrimination is a particular challenge in the energy sector. While renewable energy is often framed as a sustainable alternative, many labor-related inequalities persist in the renewable energy sector, e.g., precarious employment in sectors like solar and wind energy or exploitative supply chains in critical mineral extraction. Additionally, energy transitions risk worsening economic insecurity for informal workers in developing economies, by displacing existing jobs without providing adequate retraining or alternative employment opportunities.

Rights

Widespread rights violations in the energy system disproportionately affect marginalized communities, women, and Indigenous Peoples, undermining efforts toward a just and equitable transition. Weak regulatory frameworks and a pervasive lack of accountability mechanisms enable exploitative labor practices, environmental harm, and human rights abuses to persist. Many countries lack robust legal protections for workers and communities, while existing regulations are often poorly enforced. Corruption limited institutional capacity, and opaque decision-making further erode accountability, making justice inaccessible for those most affected. Even when accountability mechanisms exist, legal, financial, and geographic barriers prevent marginalized groups from effectively utilizing them. Without structural reforms, the energy transition risks replicating these exploitative and exclusionary dynamics.

Indigenous Peoples and marginalized communities are disproportionately affected by energy projects, facing land dispossession, forced displacement, and the destruction of natural resources critical to their livelihoods and cultural identity. Governments and corporations frequently bypass their rights to Free, Prior, and Informed Consent (FPIC), prioritizing industrial expansion over the well-being of local populations. The expansion of renewable energy infrastructure, while necessary for climate action, risks replicating these injustices if land-intensive projects and mineral extraction are pursued without proper safeguards.

Representation

Energy systems are shaped by entrenched inequalities that exclude women and marginalized groups from economic participation and decision-making and narratives defining the value of nature and labor. Women remain largely absent from leadership and technical roles, with systemic barriers in hiring, education, and workplace policies reinforcing their exclusion. Even in renewable energy, they are concentrated in administrative rather than technical or executive positions, while unpaid care work remains invisible, further limiting their economic opportunities.

These exclusionary patterns extend into political decision-making, where women and marginalized communities are underrepresented in shaping energy policies and are often excluded from planning processes of individual energy projects. Despite their critical role in household energy use, women's perspectives are rarely integrated into governance, resulting in policies that overlook gendered energy needs. Indigenous Peoples in particular are excluded from decisions affecting their land and resources, despite possessing knowledge vital for sustainable energy transitions.

Dominant narratives around nature and labor further entrench these inequalities by treating them as resources to be exploited – notably by underlying extractive economic models and related metrics. Similarly, large-scale renewable projects often replicate extractive models that displace local communities and disregard traditional knowledge. Without fundamentally transforming governance structures, economic participation, and the narratives that shape energy systems, the transition to renewable energy risks sustaining rather than dismantling systemic inequities.

The "stickiness" of fossil energy systems and entrenched power structures

What makes these entrenched power structures particularly wicked, is that the fossil fuel system has reinforced these structures just as they have contributed to the stickiness of the fossil fuel system. Fossil energy systems have not only deepened socio-economic inequalities but have also reinforced gendered power dynamics. The concept of "petro-masculinity" describes how fossil fuel consumption is linked to ideals of strength and dominance while environmental concerns are dismissed as weak or unmasculine. Moreover, the concentration of benefits among a small elite in the fossil fuel sector has reinforced patterns of exclusion in decision-making, ownership, and access to resources. This structural inequality limits the ability of women, Indigenous communities, and marginalized groups to influence energy governance, making it more difficult to drive a just transition.

Renewable energy projects do not automatically lead to more gender equality or to overcoming other social inequalities, because technological solutions alone do not resolve structural issues rooted in societal and cultural norms. Even more so, without proactive intervention, the inequalities which have marked fossil energy systems risk being replicated in the renewable energy sector. Unequal grid access, affordability challenges, and the underrepresentation of women and marginalized groups in well-paid, high-tech, and leadership positions pose significant risks to equitable energy transitions. Moreover, exploitative labor conditions in the extraction of critical minerals for renewable technologies mirror the injustices of the fossil fuel industry. Large-scale renewable energy projects also raise concerns about environmental degradation and biodiversity loss, particularly for Indigenous communities living near such developments. For example, the construction of hydro-energy dams has frequently led to extensive land dispossession, forcing Indigenous peoples off their ancestral territories, and to significant ecological disruptions such as flooding of biodiverse regions and the disruption of aquatic ecosystems.

Approaches for a feminist foreign policy to transform entrenched power structures

Building on this analysis, **the study outlines how a feminist foreign policy can and should contribute to transforming entrenched power structures and inequalities in the energy system and to ensuring a just transition,** following the three Rs (Resources, Rights, and Representation) as a framework. While feminist foreign policies offer a valuable instrument for addressing systemic inequalities and environmental injustices, they have yet to fully incorporated the complexities of energy governance. Current approaches often narrowly focus on increasing women's participation in the energy workforce or expanding access to energy, without addressing deeply entrenched power structures that perpetuate exclusion. To drive meaningful change, feminist foreign policies must go beyond technocratic solutions and actively dismantle structural inequalities, ensuring that energy transitions do not replicate existing injustices. Given that most feminist foreign policies are still in their early stages of implementation, there remains significant untapped potential

to refine strategies, integrate intersectional feminist perspectives, and develop policies that not only promote gender equity but reshape energy governance itself.

Fostering access to resources and their equal distribution: A feminist foreign policy can and should drive systemic change in the energy transition by ensuring equitable access to and control over energy resources. This involves advancing community-driven models that empower local stakeholders and fostering decentralized governance. Prioritizing ethical and sustainable resource extraction helps prevent environmental and human rights violations, while integrating circular economy principles into energy policy and project design can help mitigate environmental and human rights violations and reduce reliance on exploitative supply chains. Economic empowerment, ethical and fair labor practices play a key role, including gender-responsive workplace policies, protections for migrant and informal workers, and enforcement of better working conditions. Recognizing and valuing care work also contributes to a just transition, supported by investments in gender-responsive public services, social protection, and low-carbon care jobs. By embedding these principles, a feminist foreign policy strengthens the renewable energy transition as both a climate solution and a pathway to social and economic justice.

Advancing rights in the energy transition: A feminist foreign policy can and should further contribute to overcoming entrenched power structures in the energy system by advocating for rights-based frameworks that prioritize inclusion, equity, and participation. This includes embedding gender and human rights safeguards into energy policies to protect marginalized communities from exclusion and exploitation. Strengthening nature's rights can prevent environmental harm and help redress past injustices, ensuring that ecosystems have a solid legal standing rather than being just resources to be exploited. A feminist approach also emphasizes reparative and restorative justice to address historical exploitation, providing compensation and structural redress for communities negatively affected by energy projects. Supporting the establishment, expansion, and enforcement of these rights requires building the capacities of affected communities, environmental defenders, and advocacy groups to claim and uphold them.

Ensuring inclusive representation in energy governance: To contribute to overcoming entrenched power structures in the energy system, it is important for a feminist foreign policy to ensure inclusive representation in energy governance. This involves strengthening decision-making power of affected groups, amplifying the voices of marginalized communities, and embedding participatory approaches. Meaningful participation means going beyond mere representation, ensuring that women, Indigenous Peoples, and other marginalized groups have real influence over energy-related decisions. Supporting gender-equitable leadership, fostering mentorship programs, and creating accessible decision-making platforms are key to advancing more inclusive governance. Additionally, promoting transparency and accountability mechanisms ensures that energy governance reflects diverse perspectives and remains responsive to social and environmental justice concerns. Beyond representation, a feminist foreign policy should also transform prevailing narratives in the energy sector, particularly those that reinforce gendered hierarchies and exploitative views of nature. Addressing harmful stereotypes, engaging men as allies, and promoting relational and care-based approaches to environmental stewardship can reshape how energy transitions are designed and implemented.

Inclusive implementation processes of feminist foreign policies: To contribute to overcoming entrenched power structures in the energy system, it is important for a feminist foreign policy to take a holistic approach, integrating Resources, Rights and Representation to drive systemic change. Addressing these pillars in isolation risks perpetuating inequalities in energy

transitions. Policies should align with climate and environmental justice principles, ensuring that renewable energy investments also address social and ecological costs. Linked to this, adopting an intersectional approach is crucial, as barriers e.g. to resource access and the equitable distribution of benefits across the energy value chain can vary significantly based on race, ethnicity, geography, and socio-economic status. Moreover, coherence between feminist foreign policy, foreign energy policy, and development policy is essential to prevent fragmented approaches. Additionally, meaningful participation of marginalized groups must be ensured at all levels, from shaping policies to monitoring their implementation. Engaging civil society and affected communities strengthens accountability and ensures an inclusive, just energy transition – for all.

General terminology

This study builds on a set of key terms that are central to understanding the intersections of feminist foreign policy, climate justice, and energy transitions. These terms provide a conceptual foundation for the analysis, ensuring clarity and consistency throughout the study. By defining these key concepts, we aim to establish a shared understanding of the frameworks, principles, and dynamics that shape feminist approaches to global energy governance.

Accountability – generally, accountability can be described as "a state of or a process for holding someone responsible to someone else for something." A more concrete definition in the context of policy making and energy systems is "being accountable to stakeholders […] for what has been done, why and how, including justifying or explaining costs and any negative results." (Organisation for Economic Co-operation and Development (OECD) - Development Assistance Committee 2022).

Energy access can be defined as "a household having reliable and affordable access to both clean cooking facilities and to electricity, which is enough to supply a basic bundle of energy services initially, and then an increasing level of electricity over time to reach the regional average" (IEA 2020). Unequal access to resources refers to the inability of these groups to reliably secure affordable energy to meet their essential needs, such as lighting, heating, or powering small businesses while unequal distribution of benefits refers to the fact that financial gains from these projects – such as revenues from energy sales – overwhelmingly flow to distant stakeholders, with little reinvestment in the affected communities.

Environmental justice – While there is no binding definition of environmental justice at international level (UNDP 2022), environmental justice is a concept that seeks to address the disproportionate burden of environmental harm "resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies on marginalized communities" (EPA 1998). This refers particularly to communities with lower socio-economic status and historically marginalized groups (e.g. in cases where hazardous industries, waste disposal sites, and pollution sources are disproportionately located in communities of color and low-income areas). Besides more equal distribution of burdens, the approach also advocates for a fair distribution of environmental benefits, ensuring that all communities have equal access to clean air, water, and land. The movement for environmental justice also emphasizes the importance of participatory justice for achieving environmental justice, that is by ensuring affected communities have a voice in environmental decision-making (EPA 1998, Mohai et al 2009, Ali & Kamraju 2023).

Gender – Roles, behaviors, activities, and attributes that a given society at a given time considers appropriate for men and women. In addition to the social attributes and opportunities associated with being male and female and the relationships between women, men, girls and boys, gender also refers to the relations between women and those between men. This means that gender also refers to those vulnerable groups of persons who experience oppression, marginalization, and discrimination (UN Women 2022b).

Intersectionality – promotes an understanding of human beings as shaped by the interaction of different social locations (e.g. race/ethnicity, gender, class, sexuality, geography, age, disability/ability, migration status, religion). These interactions occur within a context of connected

systems and structures of power (e.g. laws, policies, state governments and other political and economic unions, religious institutions, media). Through such processes, interdependent forms of privilege and oppression shaped by colonialism, racism, homophobia, ableism, and patriarchy are created (Crenshaw 1991).

Just transition – A just transition means that the transition to low-carbon and environmentally sustainable economies and societies is designed in such a way "that is as fair and inclusive as possible to everyone concerned" and that ensures that "no one is left behind or pushed behind in the transition" (ILO 2024; UN Committee for Development Policy 2023). The International Labor Organization defines this as "maximizing the social and economic opportunities of climate action, while minimizing and carefully managing any challenges – including through effective social dialogue among all groups impacted, and respect for fundamental labor principles and rights" (ILO 2024).

Marginalized groups – Different groups of people within a given culture, context and history at risk of being subjected to multiple discrimination due to the interplay of different personal characteristics or grounds, such as sex, gender, age, ethnicity, religion or belief, health status, disability, sexual orientation, gender identity, education or income, or living in various geographic localities (EIGE 2022).

Stickiness –Stickiness refers to systemic inertia, unwillingness or resistance to change within entrenched structures, e.g. in the context of the transition to a more equitable energy system based on renewable energy sources (Boettke, Coyne, & Leeson 2015). Stickiness encapsulates the ways in which cultural, institutional, economic, and social norms create **path dependency**, making it difficult to shift toward new systems or paradigms, such as decarbonization and just transitions. In the context of this study, the concept of stickiness is relevant in examining why a) fossil-fuel-based energy systems and their associated social conditions (e.g. gender inequality) persist, even in the face of clear evidence of their harm and why b) decarbonization and just transitions face systemic barriers, including economic dependencies, entrenched power dynamics, and cultural norms. Understanding stickiness is essential for the study because it highlights the **intersectionality of barriers** (e.g., cultural, economic, social) that impede change; it informs strategies to **"unstick" systemic resistance** to decarbonization and promotes just transitions; and it underscores the need for **transformative approaches** (e.g., FFP) that tackle not only economic challenges but also systemic cultural and social inequities.

Vulnerability – A dynamic condition that has been historically produced over time putting some persons at a higher risk than others (UNDRR 2022). Vulnerability is dynamic, multifaceted and context specific, and is determined by societal organization and factors such as gender, age, health, social status, ethnicity, and class (IPCC 2022).

Main report

1) Introduction: Why a just transition of energy systems is needed

Globally, the energy system faces a multitude of interconnected challenges. On the one hand, there is the **need to achieve a rapid transition to a more sustainable energy system,** shifting from fossil fuels to renewable energy sources to tackle the global climate crisis. The current fossil energy system has detrimental impacts on both climate and the environment, which, in turn, exacerbate existing social and economic inequalities.

On the other hand, **the energy system in its current form does not benefit everyone equally. It is marked by socio-economic disparities and exclusion**, notably in the Global South. The environmental and social costs of energy production and consumption are disproportionately borne by vulnerable communities, while the benefits like improved infrastructure or economic opportunities are often unequally distributed. For instance, despite much progress, as of 2022, 685 million people (9% of the global population) lack sufficient energy access, while 2.1 billion (26%) still continue to rely on polluting cooking fuels and technologies (IEA, IRENA, UNSD, World Bank, WHO 2024). Additionally, local communities near energy infrastructure are often affected by pollution, environmental destruction and biodiversity loss caused by the construction and operation of energy plants.

Girls, women and marginalized groups such as Indigenous communities are particularly affected by the existing inequalities in the energy system. For instance, Indigenous communities are especially affected by environmental degradation or displacement caused by energy projects which not only threaten their economic livelihoods but also jeopardize their cultural practices. Due to their care responsibilities, women are disproportionately affected by **lack of access to clean energy**, which leads to **negative health outcomes**. Linked to this, the absence of affordable energy forces low-income households to make difficult trade-offs between basic necessities, such as food, education, and energy consumption, deepening existing inequalities. This further restricts the ability of already marginalized groups to improve their circumstances. Moreover, women's participation in the workforce - both in the fossil and renewable energy system is limited as women are often relegated to less - qualified and lower-paid job. Moreover, women's engagement in the sector is marked by a gender pay gap, with women earning 19% less than their male counterparts, an inequality even more pronounced than in non-energy sectors (World Economic Forum 2022).

While being most affected by these inequalities, girls, women and marginalized groups are often excluded in energy-related decisions making processes. They remain underrepresented in leadership positions in the energy sector and have limited influence on energy policies that directly impact their lives. As a result, energy policies often fail to adequately address their needs and priorities. Moreover, **inadequate accountability** and **compensation mechanisms** often leave affected communities without the means to seek redress for land dispossession, negative health impacts, or the loss of livelihoods, thereby exacerbating pre-existing inequalities.

Against this background, **the concept and objective of a *just transition* has gained increasing recognition in global climate policy and been integrated into the global agenda for fighting climate change and decarbonizing the energy system**. The inclusion of the concept into the preamble of the 2015 Paris Agreement marks a pivotal moment in this context and it is now crucial for the signatory states to put it into practice. A just transition aims to ensure that the shift to low-carbon and environmentally sustainable economies is as fair and inclusive as possible, ensuring that no one is left behind (ILO 2024; UN Committee for Development Policy 2023). Given both its importance in decarbonizing the economy and society at large as well as for people's livelihoods and well-being, **the energy system is a key sector that needs to be addressed in efforts for a just transition.**

Countries in the Global North bear a special responsibility in working towards a just transition, both domestically and through international cooperation. Historically, these countries have been the largest CO2 emitters, as recognized in global frameworks, like the UNFCCC and the 2015 Paris Agreement, and have significantly benefited from carbon-intensive economic growth. This positions them as key players in supporting other nations' climate mitigation efforts, including the transition to renewable energies. Additionally, **many industrialized nations, such as Germany, currently depend on energy imports and will continue to do so in the future**. Recently, countries like Germany have forged diverse **international energy cooperations, e.g. green hydrogen partnerships,** to reduce their fossil fuel dependence and decarbonize high-emitting industries. These partnerships create both a responsibility and an opportunity for these energy-importing countries to ensure that the transition to renewable energies, especially in the Global South, is just and inclusive.

To foster a just transition globally**, international cooperation on the transformation of energy systems requires coordinated and integrated approaches on various policy levels.** Far from falling only into the classic purview of development policy, there is also a need to integrate the goal of a just transition into foreign policy and foreign energy policy, where it has so far received less attention. While global energy interdependencies have long linked energy issues to foreign policy concerns, the aforementioned new international partnerships around green hydrogen highlight the essential role foreign policies play in the energy transformation. As such, the integration of a **just transition** into foreign policy and **energy diplomacy** is becoming increasingly critical.

Since girls, women and marginalized groups are particularly affected by an unequal distribution of benefits and burdens in the energy system, **feminist approaches are a key element for ensuring that a transition is just** in that it considers their voices, needs and priorities. Against this background, **Feminist Foreign Policies (FFPs) offer a valuable framework for integrating such approaches into foreign policy.** In recent years, a growing number of industrialized nations in the Global North such as Germany has integrated such feminist approaches into their foreign policies (see box 1 for background on feminist foreign policies in general). While feminist approaches to energy issues and just transition concepts have a longer history in development policy, they have been less explored in FFPs. Where energy has been mentioned in FFP, it has often been merely in the context of promoting women's participation in the workforce or addressing women's lack of access to energy. Therefore, a comprehensive analysis of the entrenched structures that put women,

girls, and marginalized groups at a disadvantage in the energy sector – and how these could be perpetuated or exacerbated in the transition to renewable energy – has yet to be fully developed.[1]

> **Box 1: Background – Feminist Foreign Policies**
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> First established as a formal policy in 2014 by Sweden, a feminist foreign policy (FFP) has since been adopted by almost a dozen countries, among which are Germany, Spain, France and Colombia. While these countries' FFP differ in their details/strategic orientation and respective content, what they have in common is a perspective that seeks to address global power imbalances and inequalities and their negative impacts by prioritizing gender equality, human rights, and the inclusion of marginalized groups in foreign policy.
>
> The FPP-concepts of the adopting countries vary significantly in their scope and form as well as in their degree of implementation. Whereas in some countries like Germany, the feminist foreign policy is distinct from the country's (feminist) development policy, in other cases like Canada, it is part of a general "international assistance policy" which includes both aspects of foreign and development policy. Moreover, while some countries like Germany and Spain have elaborated explicit fleshed-out strategic documents that lay out their FFP, in other cases like the Netherlands or Mexico, this is (so far) limited to public statements proclaiming the establishment of an FFP and general informational material (Güezmes García and Romero Castelán, 2024).
>
> With most countries having adopted their FFP only since 2020, their degree of implementation so far and the generation of learning experiences in it is still limited. Therefore, further efforts are required to create and share knowledge on the most promising approaches to put an FFP into practices. This includes the question of how to best implement an FFP in particular sectors such as the energy system.
>
> Moreover, after initial enthusiasm in several countries that saw the number of FFPs established rise, the future of FFPs is far from clear-cut. Changing political priorities have led to subsequent deprioritizations, the most notable case being that of Sweden which abandoned its FFP in 2022 following a change in government. The global anti-feminist backlash, too, poses significant challenges for the continuation of the feminist foreign policy agenda and highlights the need to further explain its relevance not only for girls, women and marginalized groups, but for the well-being of entire societies and the overall improvement of development outcomes.

Against this background, the overall objective of thie study is to **examine how entrenched power structures in the energy sector and the social, political and economic inequalities linked to them can be overcome to contribute to a just transition** from a fossil energy system to a sustainable, low-carbon energy system based on renewable energies. In particular, **it examines the key role that a feminist foreign policy can and should play in this process**.

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[1] Only Canada's 2017 feminist international assistance policy goes further in also mentioning women's „participation in environmental decision making and in the renewable energy sector".

The study adopts a **multi-method approach**, combining a **literature review** with **semi-structured interviews** to explore the role of feminist perspectives in the energy transition. The **literature review** draws on key academic contributions and publications from **international organizations**, **professional networks**, and **civil society organizations**, providing a solid foundation for understanding the current state of research and policy frameworks related to the energy system. Complementing this, **semi-structured interviews** with **sectoral experts** offer valuable insights from professionals working directly in the energy sector, helping to bridge the gap between theory and practice. Both the literature review and interviews are guided by a **feminist analytical lens**, utilizing concepts such as **intersectionality** and **climate justice** to critically examine how dimensions such as gender, race, and class intersect within the energy sector. This approach not only highlights existing inequalities but also ensures that **marginalized voices** are included in the analysis. By integrating these methods, the study aims to provide a deeper understanding of the barriers to a just transition in the energy sector, focusing particularly on the social and economic implications for underrepresented groups (see chapter 2 for more details).

The remainder of the study is structured in the following way:

- **Chapter 2** presents in more details the study's objectives and methodology
- **Chapter 3** comprises the main results of the study, that is the description of the entrenched power structures and inequalities in the energy system
- **Chapter 4** presents recommendations as to how a feminist foreign policy can and should be used to transform the energy system
- **Chapter 5** contains the overall conclusion

2) Objectives and Methodology of the study

2.1 Objectives of the study

The overall objective of this study is to **examine how entrenched power structures in the energy sector and the social, political and economic inequalities linked to them can be overcome to contribute to a just transition** from a fossil energy system to a sustainable, low-carbon energy system based on renewable energies. In particular, it **examines the key role that a feminist foreign policy can and should play in this process**. Therefore, this study focuses on so-called "patriarchal structures", that is the entrenched power structures and inequalities (and their consequences) that are relevant in terms of gender equality and social inclusion (Nash 2020).

To this end, the study first analyzes the **status quo of existing power structures and inequalities in the energy system** and what their consequences are – especially for girls, women and marginalized groups – from a feminist perspective. For one, the study examines these existing structures in the fossil energy system and how the fossil energy system reinforces them. In turn, the study evaluates how these structures contribute to the "stickiness" of the fossil energy system and impede the transition to a renewable energy system. However, it also assesses how such inequalities can persist in a renewable energy system as well.

In a second step, the study examines **pathways of transformation to overcome the existing power structures and inequalities**, to ensure that the energy transition does not perpetuate them, and in turn contributes to a just transition. This involves the identification of needs and potentials for change both within the fossil energy system as well as in the renewable energy system and in the transition towards it. In doing so, the study identifies needs and potentials for change in three dimensions. The **normative dimension** refers to cultural and societal norms and roles. The **procedural dimension** refers to aspects of governance such as decision-making and participation processes. The **structural dimension** refers to the institutional and legal framework as well as existing socio-economic structures. Change in each of these dimensions involves an individual, an organizational as well as a societal dimension.

2.2 Analytical framework, methods and limitations

The study was conducted using a **feminist analytical framework**, drawing on well-established feminist research concepts and approaches, which will be further detailed in the following sections. Feminist approaches are particularly valuable when analyzing **entrenched power structures** and **inequalities**, as they enable the examination of the **multi-dimensionality** and **intersectionality** of these structures. For example, by integrating the concept of **intersectionality**, feminist perspectives explore how various forms of inequality-related to **gender**, **race**, **class**, and **other identities** interact and reinforce one another within the energy system (see terminology for more details). In particular, feminist research is essential for understanding the **"stickiness"** of the fossil fuel-based energy system, as it helps uncover how historical, cultural, and institutional dynamics sustain these systems despite growing calls for a **green energy transition**. Through this lens, we can analyze not only the **structural barriers** to the **energy transition**, but also the **social** and **economic forces** that continue to obstruct change, often in ways that disproportionately affect marginalized groups. The feminist framework thus offers a more nuanced and comprehensive understanding of both the **root**

causes of the entrenched power structures and inequalities as well as the **intersectional impacts** they have on different populations.

The Three Rs of FFPs: Rights, Resources and Representation

Given that the study seeks to show the relevance of a feminist foreign policy in ensuring a just transition by addressing entrenched power structures and inequalities in the energy system, the study builds on the **three analytical dimensions of Rights, Resources and Representation which are key principles around which Feminist Foreign Policies are commonly structured**.[2] These pillars serve as a framework for addressing systemic gender inequalities in international relations, diplomacy, and development cooperation. However, thisstudy will expand on the Three Rs, adding aspects to them that they currently do not fully cover from a broader feminist perspective.

The **Rights** pillar focuses on the protection and promotion of women's and marginalized groups' rights globally. It reflects the core belief of FFPs that gender equality is a human rights issue and that individuals should have full autonomy and freedom from violence and coercion. To this end, this pillar emphasizes the need for strong legal frameworks, access to justice, and the elimination of discrimination and gender-based violence. Notably, it comprises the dismantling of discriminatory laws and structures, such as laws barring women from certain professions, or those that restrict equal access to rights for women and marginalized groups. Other key areas concern sexual and reproductive rights and guaranteeing the right to education and lifelong learning as well as the cultural and land-related rights of Indigenous Peoples. Strengthening legal framework also concerns issues such as lack of legal protections against workplace harassment and insufficient safeguards against domestic violence.

The **Resources** pillar addresses the unequal distribution of economic, educational, and financial resources that perpetuate gender inequalities. It reflects the assumption of FFPs that access to such resources is crucial for the empowerment and economic independence of women and marginalized groups as well as for sustainable development. Key areas include access to education, the formal labor market, and decent work, as well as social protection, health services, credit, and social security. Access to water, sanitation, hygiene (WASH), and digital goods and services are also vital for improving quality of life and overcoming barriers to development.

The **Representation** pillar seeks to ensure that women and marginalized groups have an equal voice in decision-making at all levels, especially in leadership roles. This includes fair representation in political and corporate decision-making bodies, as well as a strengthened role in administration and the judiciary, where women and marginalized groups are often underrepresented. By integrating this pillar, FFPs seek to address the fact that women and marginalized groups remain significantly underrepresented in political, economic, and social decision-making processes, which limits their ability to influence key decisions that affect their lives and the broader society.

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[2] For example, both Germany's FFP and the (now annulled) Swedish FFP are organized around the Three Rs – although their interpretations and priorities differ: While both the examples from Germany and Sweden structure their Feminist Foreign Policies around Rights, Resources, and Representation, their interpretations reflect different national priorities. Sweden's approach is broad and internationalist, with a strong focus on external engagement and dialogue with civil society. Germany, on the other hand, integrates structural changes within its foreign policy institutions, prioritizes gender budgeting, and places significant emphasis on legal protections and frameworks. This comparative approach illustrates how the Three Rs provide a flexible yet structured foundation for Feminist Foreign Policies while allowing for national adaptations based on policy priorities and institutional contexts.

Broadening the Three Rs

Drawing on feminist research shows that **the Three Rs as they are commonly conceptualized in the context of Feminist Foreign Policies do not capture all aspects relevant when seeking to overcome entrenched power** structures to contribute a just transition. Therefore, **this study extends the framework of the Three Rs notably through a feminist climate justice lens** as proposed by United Nations Entity for Gender Equality and the Empowerment of Women's (UN WOMEN) *Four Rs* of Climate Justice, which contains several important analytical dimensions and approaches that policies related to climate and the energy transition should actively address.

Drawing on these principles, this study integrates the dimensions of **redistribution, recognition, reparation, and representation** into the Three Rs of feminist foreign policy in order to apply a more comprehensive analytical framework that captures systemic gender and social inequalities in the energy system (UN WOMEN 2023).

This includes recognizing historical inequalities and intersecting forms of discrimination that shape access to environmental and economic rights. In this context, the climate justice lens highlights the need to move beyond formal legal protections to ensuring substantive justice in the transition to more sustainable societies and economies. This entails embedding reparative and restorative mechanisms that acknowledge historical exploitation and environmental injustices, recognizing that rights are not equally accessible to all and that systemic exclusions continue to shape climate action.

Furthermore, the approach **discusses that redistribution of resources in the context of climate action and energy transitions must not only address material inequalities** – such as access to land, financial capital, and infrastructure – **but also engage with the structural barriers that determine who benefits from green transitions.** These barriers are often rooted in long-standing socio-economic structures, institutional frameworks, and historical patterns of exclusion, all of which shape access to resources, decision-making power, and opportunities for participation. Addressing this requires transforming key political and economic decision-making processes, including the necessary resources and rights to have access to them. It also means that representation requires rethinking participation beyond formal inclusion. It must be ensured that women and marginalized communities are not only present in decision-making spaces but that their perspectives actively shape governance structures, knowledge systems, and political priorities.

However, it also involves the **need to transform the underlying norms and assumptions** that inform and enable social, political and economic behavior and structures. Therefore, this study also broadens the pillar of representation to examine the aspect of **narratives** and **roles.** On the one hand, this concerns narratives and **gender-related social roles that *represent* and shape expectations around how women and marginalized groups are perceived and expected to behave**. On the other hand, this includes exploring socially prevalent **narratives that *represent* nature, how and why it should be valued, and the human relationships to it that are deemed socially legitimate**. By interrogating these narratives, the study can reveal how gendered and cultural expectations influence decision-making processes and contribute to the marginalization of certain groups in the energy system.

Lastly, integrating UN WOMEN's Four R's of Climate Justice **highlight the need for a holistic approach**, which ensures that **the dimensions of rights, resources, and representation reinforce one another** and align with broader structural, procedural, and normative changes – rather than treating the Three Rs in isolation. This perspective also cautions that addressing only

one of these dimensions in isolation risks reinforcing existing power structures rather than dismantling them.

Empirical methods and limitations of the study

In terms of its methodology, the study adopts a **multi-method approach**, integrating both **desk research** and **semi-structured expert interviews** to examine the role of **feminist perspectives** in advancing a **just and sustainable energy transition**.

The primary method for gathering data is a **comprehensive literature review**, which incorporates key academic studies and publications from recognized institutions such as **international organizations**, **professional networks**, **civil society organizations and non-governmental organizations**. These sources include both **global and local perspectives**, providing a broad understanding of the **existing research**, **policy frameworks**, and **approaches** related to the transition towards renewable energy. By reviewing the literature, this study seeks to uncover the underlying social, economic, and environmental dimensions that shape energy policies and practices, highlighting how inequalities are often embedded within these frameworks.

In addition to the literature review, the study incorporates **semi-structured interviews** with **sectoral experts** to enrich the analysis with real-world perspectives. These interviews provide qualitative insights from professionals working directly within the energy sector, offering an in-depth understanding of the challenges and opportunities associated with the energy transition. The interviews were structured to capture a wide range of experiences, particularly focusing on how gender, class, and other socio-economic factors intersect with the energy transition

By combining **desk research** with **expert interviews**, this study pursues a holistic and intersectional analysis of the energy transition. It places a special focus on the experiences of **historically marginalized groups** whose voices are often overlooked in mainstream energy debates. The aim is to provide a comprehensive understanding of the **challenges** and **opportunities** for a just transition, one that ensures all communities, particularly women and marginalized groups, are not only **included** in the process but that their needs, perspectives, and priorities actively shape the future of the energy system.

A key limitation of this research is that the study could not systematically investigate all different types of fossil and renewable energy. However, where relevant differences between e.g. solar energy and wind energy with regards to (overcoming) entrenched power structures where identified, they are taken into account. Moreover, the study takes a general view in examining the entrenched power structures and inequalities in the energy sector. While it acknowledges that energy systems in specific regions and countries differ in this regard (e.g. when it comes to energy poverty or women's economic prospects in the energy sector), it is beyond the scope of this study to take these differences into account systematically.[3] The goal of the study lies on a policy level, i.e. to inform how feminist foreign policies can and should be used in working towards a just transition. It therefore provides a general overview of key issues that FFPs should consider as well as of pathways to address them – which would then need to be adapted to the social, cultural, political and economic circumstances in in the respective context.

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[3] While the study focuses on countries in the Global South, it also seeks to highlight the relevance of its analysis by showing how many of the identified entrenched power structures and inequalities in the energy sector are also prevalent in countries in the Global North.

3) What are the Entrenched Power Structures in the Energy Sector, and what Consequences do they have?

The following chapter will analyze the status quo of existing power structures and inequalities in the energy system and what their consequences are – especially for girls, women and marginalized groups. This will provide the case for why feminist approaches are needed to ensure a just transition – based on which chapter 4 will show what role feminist foreign policies can and should play in this. To this end, the study will first lay out the existing power structures and inequalities in the energy system in sub-chapters 3.1 to 3.3 along the dimensions of Resources, Rights and Representation (see chapter 2). After this, in sub-chapter 3.4, the study examines the "stickiness" of both the fossil fuel system and the entrenched power structures and inequalities in the energy system. This involves how these structures and the fossil fuel system can reinforce each other as well as how such structures and inequalities can persist in a renewable energy system as well.

3.1 Resources: Destruction of natural resources, lacking access to goods, and unequal distribution of benefits

Access to such resources (including natural resources, energy, and employment) in the context of the energy sector and the ability to actively take part in the energy sector is particularly crucial for the empowerment and economic independence of women and marginalized groups as well as for sustainable development.

However, as laid out in the following, the study shows that the energy system is marked by negative ecological impacts (section 3.1.1), lacking access to (clean) energy (section 3.1.2), unequal control over energy-related resources, notably concerning energy ownership, and the related distribution of benefits (section 3.1.3) as well as poor working conditions in the energy sector (section 3.1.4) – all of which disproportionately affect girls, women and marginalized groups. While especially the case for the fossil energy system, many of these issues are also prevalent in the renewable energy system or risk being perpetuated in the absence of just transition-based approaches.

3.1.1 Natural resource exploitation

Despite their central role for economic activity, technological advancement, and societal well-being, energy systems also often have negative ecological and social impacts. This is particularly true for fossil-based systems but can also apply to renewable energy systems. Both ecological and social impacts are deeply intertwined.

Fossil fuel extraction and production lead to significant environmental degradation. Activities such as deforestation, mining, and oil drilling inflict severe harm on ecosystems, leading to biodiversity loss, soil erosion, as well as the contamination of air, water and soils (UNEP 2024). One example is hydraulic fracking, which despite its destructive environmental and social consequences has been framed as a technological breakthrough for energy security and economic growth, (Transnational Institute 2014). Advocates promote fracking as a means to reduce dependence on coal and foreign oil, but this obscures its long-term harms, including groundwater contamination, methane emissions, and seismic instability. The cumulative effects of these practices have far-reaching consequences, including the acceleration of climate change through greenhouse gas

emissions. As of 2023, atmospheric CO2 levels reached unprecedented levels, with fossil fuel combustion remaining the primary contributor (National Oceanic and Atmospheric Administration 2023).

The environmental degradation caused by extractive activities and fossil fuel-based energy consumption disproportionately impacts women, marginalized communities, and Indigenous Peoples, exacerbating existing socio-economic vulnerabilities. Women and girls face heightened health risks, increased unpaid labor burdens, and greater economic insecurity as resource depletion and pollution reduce their access to essential needs such as clean water, food, and arable land (Lahiri-Dutt 2023). For Indigenous communities, who often rely heavily on their natural surroundings for economic activities, subsistence, and cultural practices, environmental destruction further threatens their livelihoods and traditions (Rights+Resources 2023). The contamination of water sources, deforestation, and other forms of ecological degradation intensify resource scarcity, making daily survival tasks such as gathering water or food more dangerous and time-consuming, particularly for women who bear the brunt of these responsibilities (GBV Area of Responsibility Helpdesk 2021; Greenpeace International 2023).

But renewable energy systems, too, although often touted as sustainable alternatives, can have significant ecological footprints when implemented without consideration for local contexts (Agrawal et al. 2023). This can be seen in examples from South America where the construction of hydropower dams has flooded vast areas of rainforest, displacing Indigenous communities and endangering biodiversity (Pezzuti et al. 2024). Such projects highlight the trade-offs inherent in energy transitions that prioritize technical efficiency over ecological balance.

To complicate matters, a key challenge in renewable energy expansion is the "displacement paradox"-the phenomenon in which energy projects, instead of mitigating environmental harm, **exacerbate ecological (and social) disruptions**. This paradox reflects the profit-driven motives underlying many large-scale renewable projects, where the focus on maximizing energy output can lead to new forms of land dispossession, habitat destruction, and biodiversity loss (Bell, Daggett, & Labuski 2020). Addressing these issues requires integrating justice-oriented approaches into renewable energy planning, ensuring that environmental sustainability does not come at the cost of local communities' well-being and ecological integrity.

3.1.2 Unequal access to energy and energy poverty

Access to reliable and affordable energy remains a major challenge, particularly for marginalized communities facing systemic barriers. Energy poverty affects over a billion people, limiting electricity, clean cooking, and economic opportunities, disproportionately impacting women and low-income households. Despite global electrification efforts, outdated infrastructure, centralized systems, and high costs continue to exclude vulnerable populations.

The energy access gap remains a significant challenge, particularly for rural and low-income communities. According to the 2024 *Tracking Sustainable Development Goal (SDG) 7* report, 685 million people still lacked access to electricity in 2022, marking a reversal in a decade-long trend of progress (IEA, IRENA, UNSD, World Bank, WHO 2024). These communities face substantial barriers to obtaining the energy services needed for daily life and economic activities. Many people in rural or low-income areas struggle with outdated infrastructure, high costs of energy, or even a complete lack of access to electricity. This energy deprivation impacts their ability to meet basic

needs such as cooking, heating, and lighting, while also limiting their economic opportunities (UNDP 2024; American Council for an Energy-Efficient Economy 2018).

Barriers to energy access are deeply rooted in systemic infrastructure neglect and structural inequalities. Energy systems have historically focused on urban and industrial areas, leaving rural and marginalized communities underserved. This disparity is exacerbated by the dominance of centralized structures that often fail to adapt to local populations' specific needs. Inequality in energy access is particularly high in sub-Saharan Africa, which accounts for more than 80% of the global population without electricity (IEA, IRENA, UNSD, World Bank, WHO 2024). In this region and rural Asia, 95% of those without electricity reside in underserved areas, highlighting the failure to prioritize inclusive electrification. Beyond limited grid connectivity, many countries' energy systems are characterized by outdated distribution infrastructure and high transmission losses (Lu & Ren 2023). These factors contribute to a persistent energy divide, hindering economic development and limiting quality of life in affected areas.

The unequal access to energy described above directly contributes to energy poverty, a condition that disproportionately affects women, children and marginalized communities. Energy poverty, broadly defined as the lack of adequate and affordable energy for essential needs, affects at least 1.18 billion people globally (UNDP 2024), with 759 million experiencing severe energy deprivation (World Bank 2021). Despite global electrification rates rising from 75% to 90% between 2000 and 2020, millions of people remain unable to meaningfully utilize electricity in their daily lives.

Inadequate energy access restricts participation in various aspects of life, such as education, employment, and entrepreneurship. For example, without reliable energy, people face difficulties in accessing educational resources, working after dark, or starting businesses that could improve their economic situation. This is starkly illustrated in the education sector, where electricity access is often an overlooked yet crucial component for quality educational services. In Sub-Saharan Africa, only 31% of primary schools have access to electricity, coinciding with the region's lowest levels of learning and Human Capital Index scores. Globally, over 200 million children attend primary schools without electricity access, primarily in disadvantaged and rural communities. This lack of energy infrastructure significantly compromises their educational and development outcomes, limiting access to modern teaching tools, extended study hours, and digital resources essential for contemporary education (United Nations, 2021). Moreover, high energy costs compel low-income households to make difficult trade-offs between basic necessities, such as food or education, and energy consumption. A study by the American Council for an Energy-Efficient Economy (2024) finds that one in four low-income households in the United States spend more than 15% of their income on energy bills, often forcing them to choose between paying for energy and other essentials like food and medicine. These disparities and trade-offs exacerbate existing inequalities by disproportionately affecting marginalized groups, further limiting their ability to improve their circumstances (UNICEF 2019; Consultative Group on International Agricultural Research 2023).

Energy poverty disproportionately impacts women, particularly those in single-parent households. Due to income disparities and broader socio-economic factors, women often bear the greatest burden of energy poverty. Despite this, many energy policies fail to recognize the gendered dimensions of energy consumption, neglecting the specific needs of women, particularly in low-income or marginalized communities (Murauskaite-Bull et al. 2024). **For women, the challenges of energy poverty are compounded by their unpaid care work and subsistence activities.** Limited energy access increases their workload, which is further exacerbated by environmental degradation

(OECD 2019). Beyond economic hardship, energy poverty has serious consequences, including poor health outcomes, social exclusion, and restricted political participation.

<u>Box 2 – Health Implications: The Intersection of Marginalization, Poverty and Energy Access</u>

The social implications of access to energy are deeply interconnected with aspects of ecological harm, particularly when it comes to health. Communities located near energy extraction sites-such as coal mines, oil refineries, or natural gas operations-frequently face increased health risks due to exposure to pollutants. Areas close to energy projects tend to be home to marginalized populations, often Indigenous peoples or low-income communities, who are disproportionately affected by fossil fuel activities. Chronic illnesses, respiratory diseases, and fertility issues are prevalent in these regions, where local populations have limited capacity to resist the environmental degradation caused by energy production (Global Climate and Health Alliance 2022).

Another significant health risk linked to energy access arises from the type of energy used for daily household activities. Nearly 2.3 billion people globally rely on inefficient and polluting fuels such as wood, charcoal, and kerosene for cooking. This reliance exposes women and children - who are primarily responsible for cooking - to dangerous levels of indoor air pollution, which contributes to millions of premature deaths annually (WHOa 2024). Among those particularly vulnerable to this are women in low- and middle-income countries in particular, but so are children, the elderly, pregnant people, and people with pre-existing conditions. Yet often these people live in poverty and lack the resources or agency to transition to cleaner energy solutions, deepening the cycle of health inequities and energy poverty. Factors such as genetics, nutritional status, and access to healthcare further complicate these health risks, highlighting the intersection of gender, age, and socio-economic status.

The absence of reliable energy access also directly impacts healthcare facilities. Around 1 billion people globally live in areas where healthcare facilities lack reliable electricity, severely impairing the functionality of essential medical devices like ventilators, incubators, and diagnostic equipment. This lack of energy in healthcare settings disproportionately affects marginalized communities, further reducing their access to quality healthcare. In these regions, where energy poverty intersects with poverty more broadly, the health system's inability to function properly exacerbates existing inequalities (IRENA 2024; WHOa 2024).

The health consequences of energy access are not only a reflection of environmental damage but also illustrate the intersection of poverty, gender, and marginalization. The communities most affected by poor energy access are often those already facing significant socio-economic disadvantages. This intersectionality reveals how energy access (or the lack thereof) amplifies existing health inequalities.

Globally, nearly one in three people lack access to clean cooking facilities, a challenge that disproportionately impacts women and children (SDG Report 2024, see box 2). As primary caregivers, women heavily rely on energy for cooking, heating, lighting, and other household tasks.

However, high energy costs often force low-income households to rely on inefficient and harmful energy sources, such as traditional biomass or outdated fossil fuels, which exacerbate health risks and environmental degradation. Moreover, this lack of access to clean and modern energy options not only affects their health but also prevents many women and girls from fully engaging in educational, economic, or entrepreneurial activities that could improve their financial autonomy. This, in turn, reinforces cycles of economic vulnerability and social exclusion (IRENA 2020; UNDP 2024). The health disparities, as outlined in the Health Implications box above, further underscore the urgent need to transition to clean energy systems. Investing in clean cooking solutions, renewable energy, and electrified healthcare facilities is essential to reducing harmful air pollution and improving health outcomes, particularly for vulnerable populations.

However, the transition to a renewable energy system risks itself being undermined by a lack of equitable energy access. If large parts of the population continue to lack access to modern, efficient energy solutions, the transition to renewable energy systems will not benefit them but can reinforce unequal access. Marginalized communities – especially those living in poverty – are often excluded from the benefits of the global shift towards clean energy. High costs for connection and consumption, compounded by a lack of affordable financing options, also exclude low-income households from accessing renewable energy. Additionally, the strong subsidy of fossil fuels in many regions places renewable energy solutions at a disadvantage, limiting their potential to expand access and address energy needs of marginalized communities (IRENA 2020; Haney & Pollitt 2013).

3.1.3 Energy ownership and the distribution of benefits in the energy system

The energy system is characterized by highly unequal ownership and control over energy resources, with large corporations benefiting the most, while marginalized communities, including Indigenous groups, remain largely excluded. **These disparities not only limit local participation in decision-making and economic gains from energy projects but also reinforce historical injustices, creating persistent barriers to equitable energy access and just transitions**.

Ownership structures are dominated by large corporations and wealthier investors, leaving local communities that live near or on the land used for energy projects with little ability to benefit from the profits generated by energy projects. This is particularly pronounced for Indigenous communities. Despite **bearing the environmental and social costs** of such projects – such as land degradation, pollution, or displacement (see chapter 3.2) – they see **little to no or only limited benefits from them, notably with regards to direct economic benefit** from the profits generated (Rioux-Gobeil & Thomassin 2024; Siamanta 2021). Often, these communities already face limited ownership of land and energy assets as well. Moreover, the existing ownership structures in the energy system can make the exclusion of marginalized groups from decision-making processes within energy systems more likely as well, leaving them without meaningful say in the planning or operation of energy projects, not to mention in the decision-making in the energy system as such (Ross et al. 2022, see chapter 3.3).

This lack of influence and shared benefits exacerbates disparities in access to resources and benefits, particularly affecting women and marginalized groups. This, together with limited access to energy in general (see above), can in turn perpetuate cycles of poverty and disempowerment, leaving these communities underserved while external stakeholders benefit (Lahiri-Dutt 2023; Wågström & Michael 2023). For instance, for those with fewer financial resources

or political influence, this creates persistent barriers to improving economic opportunities and achieving energy security (Haney & Pollitt 2013; Hogan 2024).

The privatization of energy resources and infrastructure has been a key factor in concentrating ownership among a limited number of private stakeholders. Beginning in the late 20th century, many governments pursued large-scale privatization of public utilities, driven by the assumption that private markets would enhance efficiency and innovation. While this shift has often led to a focus on profit-driven models that sideline considerations of social welfare and equitable energy distribution, disproportionately impacting marginalized communities by limiting their influence and benefits from energy systems (Haney & Pollitt 2013)**, it is also important to acknowledge that state ownership is not a guaranteed solution for community control or equitable access either.** The effectiveness of state-owned energy systems hinges on factors such as governance, transparency, investment priorities, and the level of local participation. While some state-owned systems have successfully promoted fairer energy ownership and access, historical examples demonstrate that state control can also be exclusionary, failing to adequately address the needs of all communities. Therefore, a nuanced approach is necessary when considering different ownership models, focusing on mechanisms that ensure accountability, inclusivity, and community empowerment regardless of whether the energy system is publicly or privately owned.

In addition, **historically evolved practices in energy development projects in the Global South have further entrenched inequalities**. In many developing countries large-scale energy infrastructure projects, often financed by foreign investors, prioritize the extraction and export of energy resources over local benefits. This results in the exploitation of land and resources, often at the expense of indigenous and rural communities, who have limited decision-making power in these projects. The roots of this dynamic often lie in historical colonial dependencies, where countries in the Global South were structured to serve the economic needs of nations in the Global North. While political independence largely disrupted this, structural dependencies persist and shape the role of resource-rich developing nations within global economic structures. As a result, these countries frequently find themselves in economic relationships that prioritize global demand over local well-being, limiting their ability to fully harness their resources for sustainable and inclusive development (Siamanta 2021; Lu & Ren 2023). This is also true for renewable energy projects such as green hydrogen, which – if not planned and implemented in an inclusive way – can perpetuate such dynamics (see box 4 in chapter 3.4).

These dynamics may also undermine the effectiveness and transformative potential of just energy transitions. Renewable energy is often framed as a pathway to environmental sustainability and social equity, but this promise is frequently unfulfilled when affected communities are excluded from ownership and decision-making processes (see also chapter 3.3). Without meaningful community participation in their planning and benefits, **renewable energy projects often face resistance from local populations**, delaying implementation and reducing social acceptability (Hogan 2024; Siamanta 2021). Moreover, transitions that fail to address underlying inequalities in ownership and access **risk replicating the same power structures and economic injustices** seen in traditional energy systems (Bell, Daggett, & Labuski 2020, Siamanta 2021; Lu & Ren 2023).

At the same time, the development of innovative, community-driven renewable energy solutions, **which have demonstrated potential in addressing energy poverty and inequality, are constrained by the dominance of corporate ownership models – and in some cases, exclusionary state-owned models** (see above). The transition to renewable energies offers the opportunity of distributed renewable energy (DRE) solutions such as solar home systems and mini

grids, which could provide scalable, affordable energy to underserved communities. When implemented equitably, these solutions can reduce energy poverty, increase energy security in remote locations, enable productive uses of renewable energy, improve energy efficiency, increase project ownership, attract local investments, and create local green jobs (Alliance for Rural Electrification 2022) (see also chapter 4.3). However, the lack of investment in energy projects with inclusive ownership models reinforces economic disparities and disenfranchises marginalized groups, excluding them from the benefits of sustainable energy systems (IRENA 2020; Hogan 2024). By prioritizing profits over inclusivity, private corporate ownership structures limit the transformative potential of renewable energy transitions, diminishing their capacity to achieve both environmental sustainability and social equity goals (IRENA 2020; Lu & Ren 2023; Siamanta 2021).

Other significant barriers that community-driven projects face concern limited financing, competition with large-scale private energy providers, lack of expertise and unsupportive policies. Community-ownership projects and DRE-solutions often require substantial upfront investments, but community equity contributions are usually insufficient. Securing commercial financing is also difficult due to uncertainties around long-term revenues, as these projects often prioritize energy security and decarbonization over profits. Partnerships with local businesses or developers can help address funding gaps and improve project viability. For example, in the United Kingdom, many successful community-ownership projects have partnered with developers to enhance creditworthiness and secure necessary investments (IRENA 2020). A promising example from the Global South illustrating the importance of technical support for Distributed Renewable Energy (DRE) solutions is the RevoluSolar project in Brazil (IEA 2024). This community-led initiative brings solar energy to families in Rio de Janeiro's favelas and the Amazon through cooperative models by providing access to renewable energy but also emphasizes capacity development within the community. Members can join the cooperative at no cost, benefiting from reduced electricity bills through net-metering schemes, while contributing part of their savings to a cooperative fund that helps finance ongoing initiatives. The project actively involves community members through training and education programs, addressing the lack of technical expertise that often hinders DRE adoption. By equipping locals with the necessary skills to manage and maintain their energy systems, the program ensures the sustainability and longevity of its projects, demonstrating how adequate technical support and capacity building are essential for the successful implementation of community-owned renewable energy solutions. However, the **lack of technical support** for DRE solutions further hinders their adoption. Therefore, capacity development of local communities as well as the availability of adequate technical expertise and assistance in implementing various community-owned projects is key (IRENA 2020). Finally, **policy and legal barriers, coupled with weak institutional frameworks**, have disproportionately disadvantaged smaller, community-led initiatives (IRENA 2020; Wågström & Michael 2023).

3.1.4 Inequalities and exploitation in the labor market

The energy sector has long been marked by poor and unequal working conditions, particularly for marginalized groups, with labor exploitation ranging from low wages and hazardous environments to forced labor. These issues are especially severe in countries with large informal labor markets, where weak labor protections make enforcement difficult. Rather than being industry-specific, working conditions often reflect broader national labor standards and economic contexts. At the same time, global competition for cheap energy and labor fuels a race to the bottom, pressuring companies to cut costs by compromising worker protections and fair wages. This dynamic disproportionately affects vulnerable workers in low-income countries, where

inadequate regulations and enforcement leave them with little recourse against exploitative conditions, reinforcing cycles of economic and social inequality. These challenges are exacerbated in countries with large informal labor markets, particularly in the Global South, where labor rights protections are weak and difficult to enforce.

One of the most glaring issues in the energy sector is gender inequality, especially in working conditions. **Women in the energy sector earn, on average 15 to 19% less than their male counterparts –** a gender wage gap that is wider than in many other industries (World Economic Forum's Global Gender Gap Report 2022, IEA 2024). Despite having similar qualifications, experience, and skills, women are disproportionately employed in lower-paid positions within the sector. For example, only 15% of senior managers in the energy sector are women (IEA 2024, see chapter 3.3). This wage disparity is compounded by the underrepresentation of women in technical roles, particularly in STEM (Science, Technology, Engineering, and Mathematics) fields. Constrained by social norms that limit both the quality of the education they receive and the subjects they study, only 35% of STEM graduates are women, a figure that has stagnated in the last decade (UNESCO 2024). This underrepresentation limits women's ability to access better-paying, more secure jobs within the energy sector. Additionally, women in the energy sector face challenges unique to their gender. Maternity leave and career advancement are major issues for many women. Inadequate maternity leave policies (Lebrun & Nagel 2022; Remerscheid & Kotecha 2024) and career advancement barriers tied to maternity leave (Clancy & Feenstra 2019) reflect a broader pattern of discrimination in the workplace. These compounded challenges create a work environment in which women are systematically disadvantaged. To address these issues, gender-sensitive reforms are urgently needed within the energy sector to tackle gender-based labor exploitation.

Informal labor arrangements in the energy sector significantly worsen working conditions, especially for women and vulnerable groups. These roles typically lack essential protections such as job security, social benefits, and the ability to challenge mistreatment, leaving workers particularly vulnerable to exploitation. While informal labor rates are generally lower in the energy sector compared to the wider economy, they remain widespread in areas like coal mining, bioenergy harvesting, and fuel delivery. In these informal sectors, workers often face harsh conditions, low wages, and the absence of legal protections (IEA 2024a; IEA 2024b).

When it comes to forms of outright labor exploitation, a group that is particularly affected by this are migrant workers (Hennebry & Walton-Roberts 2016). **Migrant worker exploitation plagues global energy systems, impacting local economic participation and gender equality**. Migrant labor, particularly in energy-rich regions, often involves illegal recruitment practices, wage theft, unsafe working conditions, and restricted movement (Business and Human Rights Resource Center 2024; Equidem 2024). These exploitative practices not only harm migrant workers but also impact local economies, especially where cheap migrant labor marginalizes local populations, including women, by restricting their access to economic opportunities. Examples of such exploitation can be seen in the fossil fuel sector, such as in cases of Chinese workers in Africa or Pakistani workers in the Middle East and North Africa region (Parreñas & Silvey 2021; Feffer 2021).**Another challenge is the lack of access to information and resources, which makes it difficult for affected groups to demand accountability and legal recourse.** Marginalized communities and informally employed workers often lack crucial information about energy projects, their potential impacts, and the decision-making processes surrounding them. For example, according to the Environmental Law Alliance Worldwide, of 55 countries reviewed, only around 20% made draft environmental assessments publicly available (Environmental Law Alliance Worldwide 2024). This information asymmetry prevents these groups from meaningfully engaging in decisions

that affect their lives, limiting their ability to advocate for their rights or seek legal protection (UNEP 2019). Despite recent pushes for information disclosure by private companies, access to data alone does not automatically lead to greater participation or accountability. The inability of affected communities to challenge energy companies or hold them accountable for labor violations hinders progress toward more equitable working conditions in the sector (see chapter 3.2).

Discriminatory practices and poor working conditions are not only characteristic of the traditional energy system but also persist in the renewable energy sectors. The shift to renewable energy, while necessary for sustainability, risks perpetuating existing inequalities or creating new ones if labor conditions are not addressed.

For one, in the renewable energy sector, gender bias in recruitment, unequal pay, and the absence of family-friendly policies also create unfavorable work environments that hinder

Box 3 – The intersectionality of Labor in the Energy Sector

Labor exploitation in the energy sector is deeply multi-dimensional, disproportionately affecting women and marginalized groups. Women in low-skilled, informal energy sector jobs face compounded forms of exploitation, rooted in societal norms and discrimination. Cultural stereotypes discourage women from pursuing technical energy careers, while gendered social norms burden them with household responsibilities, limiting their workforce participation and marginalizing them in the energy transition (International Finance Corporation 2022).

A significant but often overlooked aspect of labor in the energy sector is unpaid care work, such as caregiving and household tasks, **which women predominantly perform.** In many developing regions, women spend significant time collecting firewood and other energy sources for cooking and heating, effectively subsidizing energy systems through unpaid labor. This is compounded by economic models that exploit such work, excluding women from decision-making processes and limiting their professional opportunities in the energy sector (Bell, Daggett, & Labuski 2020). Additionally, these tasks are physically demanding and time-intensive, often performed in unsafe settings, particularly in crisis or disaster-affected areas (Global Alliance for Clean Cookstoves 2014; Clean Cooking Alliance 2015; UNEP 2017).

Women's unpaid work also sustains the workforce and enables men's economic activities in the energy sector, but it remains excluded from formal value chains, keeping production costs low and profits high (Wågström & Michael 2023). For instance, in coal mining regions, women play essential roles not just in household care, but also in service-related industries, supporting the broader community ecosystem around coal (Lahiri-Dutt 2023).

This broader view of labor in the energy sector highlights the need for **inclusive energy transitions** that values and integrates the full spectrum of labor-both formal and informal, paid and unpaid.

women's participation and advancement. A key issue is the prevalence of project-based contracts, especially in sectors like solar and wind energy, where employment is tied to installation phases. These short-term contracts, with high mobility demands, create challenges for workers, particularly those with family commitments (World Energy Employment 2024).

Moreover, the renewable energy system creates new resource demands, the supply structures of which are particularly marked by problematic labor conditions. Reports highlight that labor abuses in the renewable energy system are especially prevalent in the mining of rare materials for solar panels and wind turbines. The 2023 Global Slavery Index identified solar panels as one of the top five imported products at risk of forced labor involvement. Similarly, cobalt mining, critical for electric vehicle batteries, involves workers enduring severe health risks due to inadequate protective measures and toxic exposure. The rise of artisanal and small-scale mining (ASM) in recent decades has exacerbated labor conditions in the mining sector. The ASM sector, now larger than industrial mining in terms of workforce, is characterized by diminished labor protections and a growing reliance on informal workers (Mcquilken & Weldegiorgis 2018). With 80-90% of ASM activity operating informally, workers are exposed to dangerous conditions without proper safeguards, facing numerous hazards including landslides, mercury exposure, and intense manual labor (Perks & Schulz 2020).

Also, the energy transition does not automatically improve conditions for informal workers. The shift from coal to renewable energy often results in the loss of existing jobs, both in the formal labor market and the informal sector. Historical evidence shows that transitions away from traditional energy sources can harm local economies by replacing existing jobs and reducing demand for informal economic activities. In turn, according to experts interviewed, often it is those workers already facing socio-economic hardship who are most at risk of losing their livelihoods, while facing significant challenges in reskilling for new roles within the green energy economy. Women in developing economies, who are more likely to work in the informal sector, are disproportionately affected by these changes (UN WOMEN 2024). For instance, experts interviewed pointed out how the shift to electric vehicles is significantly restructuring employment in the automotive industry. Such developments are compounded by global economic trends. Notably, there is currently slow growth in productivity and real wages resulting from a failure to accelerate structural transformation as well as decelerating growth in formal employment which is exacerbating the challenges faced by workers in the energy sector (ILO 2025).

While formal workers often benefit from transition support programs, informal workers – who already lack access to essential services like healthcare and education – face greater barriers to finding new income streams or receiving transition assistance. The lack of targeted skill development programs for the informal sector means that these workers are often excluded from opportunities for retraining or securing new employment (Lahiri-Dutt 2023).

3.2 Rights: Disregard and violation of rights

To foster gender equality and social inclusion in the energy system, it is crucial that the rights of all stakeholders – notably women and marginalized groups – are protected, that they have equal access to (claiming) their rights and that discriminatory laws and structures are dismantled.

However, as the analysis shows, across sectors, there are widespread cases of disregard and violations of fundamental rights, notably in the context of planning, the construction and operation of energy projects. On the one hand, weak regulatory frameworks render it more difficult to prevent and redress violations, e.g. when it comes to ecological impacts or labor conditions (see section 3.2.1). On the other hand, marginalized groups such as Indigenous communities as well as women, are particularly affected by rights violations in the energy system (see section 3.2.2). This notably concerns Indigenous communities' human, land-related and cultural rights, as well as women's (human) rights in the context of gender-based violence.

3.2.1 Weak regulatory frameworks and lack of accountability

Energy systems in many countries can widely be characterized by a lack of accountability. This includes weak legal and regulatory frameworks, ineffective (and non-inclusive) institutions, vested interests preventing accountability as well as barriers in accessing and ensuring accountability for affected groups (UNEP 2019, UNEP 2023). This deficiency allows exploitative and exclusionary practices to persist (see chapter 3.1 and below).

Many countries lack robust regulatory frameworks that govern the energy sector effectively in general as well as energy projects and their ecological impacts in particular. For example, 2022 data from the World Bank's *Global Electricity Regulatory Index* (GERI), which benchmarks a country's existing regulatory system for electricity against theoretical best practice, shows that the average global GERI score still left room for improvement in regulatory systems in all covered countries. This concerns notably shortcomings in sufficient safeguards against conflicts of interest in electricity governance, but transparency of regulatory decisions, open access to information (provided by regulators) and accountability measures (notably, formal complaint mechanisms against regulators' decisions) show need for improvement in many cases, too (Rana and Foster 2022).

A key weakness of regulatory frameworks and accountability measures concerns the prevention of negative ecological impacts of energy projects. Marked by a strong increase in the last decades, most countries have implemented environmental framework laws, and a vast majority of countries have enshrined environmental protection or the right to a healthy environment in their constitutions. However, especially in developing countries, environmental legal frameworks are often not sufficiently tailored to local contexts, having been imported from other countries. Linked to this, in some cases, the frameworks are fragmented focusing on certain areas more than others as a result of donor support in setting them up (e.g. on wildlife protection, while neglecting the protection of the environmental health of children). Moreover, they often lack clear standards against which their adherence can be measured (UNEP 2019).

Another important dimension of rights affected by weak legal and regulatory frameworks concerns labor rights. Weak regulatory frameworks are a crucial factor that allows outright labor rights violations (such as illegal recruitment practices, wage theft, hazardous working conditions, and forced labor), as described in chapter 3.1, to persist. But they are also important when it comes to

poor working conditions in general, with factors such as wages, social protections or safety standards being largely influenced by the overall state of workers' rights in each country.

Even where legal frameworks or provisions for accountability exist in the energy sector, they are weakened by ineffective enforcement mechanisms. Regulatory bodies often struggle to monitor compliance and penalize violations effectively, notably when it comes to environmental regulations. The reasons for this include lacking institutional capacities, in the form of understaffing and underfunding, but also a lack of clear mandates and coordination among relevant agencies as well as reliable data and information. This is further compounded by general levels of corruption (UNEP 2019; Wisniewski et al. 2024).

Moreover, power asymmetries in the energy sector create significant disparities between corporations, governments, and local communities and render accountability more difficult. Large energy companies often leverage their resources and influence to shape policies, marginalizing local populations and prioritizing corporate interests over community needs and environmental considerations. For example, InfluenceMap (2023) illustrates how European energy corporations influence policy-making, in Europe and Africa, showing how industry lobbying risks locking in fossil fuels across the value chain. Power asymmetries between multinational corporations and local communities or workers can also hinder effective advocacy for better working conditions. Linked to this, a key challenge for effective regulatory frameworks is a weak political will by political actors, notably a country's national government, catering to their important interest groups and often prioritizing profit interests by industry actors over other, often more marginalized stakeholders.

Related to this, affected groups often have limited access to justice, notably they lack the resources and capacities to claim their rights or fight for legal redress when e.g. environmental laws or labor rights have been violated. This can be due to narrow legal interpretations of "legal standing", that is who can submit court cases on behalf of affected groups or nature. For example, in the case of shared resources like a forest, a narrow legal interpretation focusing on individual harm can make it impossible to mount legal action, especially when it comes to preventing harm in the context of planned energy projects (UNEP 2019). Other key factors consist of lacking financial means to engage in court cases, geographic remoteness of responsible courts as well as the lack of specialized knowledge necessary to pursue legal proceedings and the absence of relevant data and information. The latter is linked to a frequent lack of transparency measures. For example, as of 2017 only around 60 countries had legal measures ensuring citizens' rights to environmental information (ibid.). Lack of resources and geographic distance in particular affect women and marginalized groups, making it especially difficult for groups most affected by e.g. energy projects' ecological impacts to seek redress (see chapter 3.1).

Limited access to accountability is also linked with barriers to participation in decision-making (see chapter 3.3) and the question of energy ownership of individual energy projects (see chapter 3.1). For example, when it comes to poor working conditions or labor rights violations, male-dominated unions and policymaking bodies fail to represent or protect women's interests adequately, reinforcing their marginalization (Lahiri-Dutt 2023). Also, while private ownership models prevail, community-owned or hybrid models, which offer high levels of accountability to local communities, face many hurdles (Siamantha 2021).

The lack of accountability in energy systems has profound and far-reaching consequences: Firstly, **without proper checks and balances, energy projects may proceed without adequate consideration of their social and environmental impacts (UNDP 2023)**. For example, this can lead to the displacement of communities, destruction of ecosystems, and long-term health

consequences for local populations (see below). Secondly, **lack of transparency and accountability can erode trust between affected communities and energy projects** (see also chapter 3.3 on lack of participation). This, in turn, can lead to social unrest, project delays, and increased costs for all stakeholders. Thirdly, even when equitable policies are in place, the lack of accountability mechanisms limits their effectiveness in achieving just transitions. Even initiatives that are well-conceptualized may fail to deliver their intended benefits due to **poor implementation and oversight**. This can lead to unnecessary impacts on local communities and the environment by energy projects. Finally, the absence of accountability often results in the **unequal distribution of benefits and burdens** from energy projects. Marginalized communities may bear the brunt of negative impacts while reaping few of the rewards (Cannon et.al. 2023).

Weak regulatory frameworks are not just an issue in the fossil energy system but are also a challenge in the context of renewable energies. As the previous chapter showed, there is a risk that renewable energies perpetuate forms of negative ecological impacts as well as poor working conditions or labor exploitation. In the case of labor issues, there is even a risk that rights violations can increase due to renewable energies' demand for specific mineral resources which are partly located in counties with poor labor-related and environmental regulations (see chapter 3.1). A factor which increases the challenge of insufficient regulatory frameworks is the fact that supply chains in the renewable energy sector tend to be considerably longer and more complex than those in the fossil energy system (IEA 2022). In long supply chains with various points of responsibility, it is particularly challenging to enforce regulatory standards (The Danish Institute for Human Rights 2021).

3.2.2 Violation of rights of marginalized communities

The rights of marginalized groups are often disregarded or even directly violated in energy systems worldwide. The most relevant and egregious forms of this are land dispossession, physical and economic displacement as well as (sexual or gender-based) violence. This affects Indigenous Peoples and local communities' (IPLCs) in particular, which is in stark contrast to their critical role in biodiversity stewardship and their extensive landholdings essential to the energy transition.

For one, many Indigenous communities face outright land dispossession and forced displacement due to large-scale energy projects that are implemented without their consent in the lands they traditionally inhabit (Agrawal et al. 2023, Owen et al. 2023, Shah & Bloomer 2018). Governments and corporations frequently bypass the Free, Prior, and Informed Consent (FPIC) process to fast-track energy projects, further marginalizing Indigenous communities and perpetuating historical injustices. This happens despite the existence of international frameworks that acknowledge the rights of Indigenous communities and the principle of FPIC, for example the United Nations Declaration on the Rights of Indigenous Peoples. FPIC ensures that Indigenous communities have a right to participate in decisions regarding their land and resources, but its enforcement remains weak (Rioux-Gobeil & Thomassin 2024). This is also in contrast to such communities' critical role in biodiversity stewardship (Green Climate Fund 2018, UNCCC 2021). Crucially, this perpetuates historical injustices, since IPLCs have long faced historical dispossession and exclusion, their ancestral lands having been taken or disrupted by former colonial powers, national governments, and private companies seeking to exploit natural resources, including for energy projects (UNDP 2024).

Moreover, energy projects often lead to the destruction of forests, biodiversity, and natural food sources, which affects local marginalized communities and Indigenous People in particular. For instance, contamination from energy plants or mining operations can pollute water sources and soil, which can diminish the quality of life for affected communities through increasing health risks and threatened food security. This is particularly relevant for Indigenous communities who depend on natural resources for food and livelihood (Jonasson et al. 2019).

Both direct land dispossession and indirect limitations on access to natural resources can result in economic displacement as well as cultural marginalization of affected groups. On the one hand, given their dependence on natural resources, this undermines their ability to survive economically, which in turn can force Indigenous communities to relocate to distant areas in search of resources or economic opportunities (UN 2024). Given their often already disadvantaged role and status in society and the household, this can affect women in particular (see below). On the other hand, when energy projects destroy the ecosystems such communities depend on, it can also disrupt their cultural practices. For instance, in many cases energy projects lead to the destruction of sacred sites, burial grounds, or areas of cultural significance, severing communities' connection to the land that holds spiritual and historical importance (UNPFII 2025). Indigenous communities often rely on traditional food sources as an essential part of their cultural identity. The loss of traditional food collection and consumption, such as hunting, fishing, or gathering, also contributes to this, creating a cycle of displacement, poverty, and cultural marginalization (Fernández-Llamazares et al. 2020). At the same time, IPLCs also often rely heavily on their natural surroundings for their economic activities, to address basic needs e.g. collecting food and water or for their cultural practices. (UNPFII 2025).

In some cases, Indigenous People and local communities face physical threats due to their opposition to energy projects, including intimidation, violence, and human rights violations carried out by private security personnel, e.g. of operating energy cooperations, or state actors aiming to suppress resistance. Large-scale energy projects often involve forced displacement, and tactics such as strategic lawsuits are used to intimidate, bankrupt, and silence those who stand up against these developments (Zuluaga & Dobson 2021). In Central America, Indigenous communities opposing wind power projects have faced death threats, violence, and detention (Shah & Bloomer 2018). In the nickel industry in South East Asia, mining expansions have proceeded without seeking consultation with Indigenous communities. Reports document the use of intimidation tactics, including weapons, to silence opposition and forcibly displace Indigenous Peoples from their ancestral lands (Angarova 2024).

A particular facet of violence concerns the deep intertwinement of the (notably fossil fuel) energy system with gender-based violence (GBV) through social, economic, and environmental pathways (WEDO 2023). For one, extractive industries, such as oil and gas, often bring male-dominated workforces into resource-rich regions, exacerbating gender inequalities and creating conditions that increase the vulnerability of women and girls to sexual exploitation, harassment, and trafficking (Greenpeace 2023). For example, Indigenous communities are sometimes subjected to GBV and sexual assault by private security personnel or temporary workers involved in energy projects (Agrawal et al. 2023; Business & Human Rights Resource Centre 2021). Moreover, the fossil fuel sector's contribution to climate change indirectly amplifies GBV risks by intensifying environmental disasters and resource scarcity, both of which disproportionately affect women (Women's Earth and Climate Action Network 2024). For example, resource scarcity due to environmental degradation from fossil fuels, increases the risks women face while performing essential tasks like gathering water or food (GBV Area of Responsibility Helpdesk 2021; Greenpeace

International 2023). Additionally, the displacement of communities caused by energy projects disrupts social structures, leaving women in precarious situations with heightened risks of GBV due to insecure housing, loss of livelihoods, and dependency on male authority figures.

Importantly, the much-needed transition to renewable energy systems risks exacerbating poor working conditions due to the vast amounts of land and energy transition metals (ETMs) this requires (Owen et al. 2023, Shah & Bloomer 2018). The territories IPLCs live on, manage or have recognized rights to are critical for the transition to renewable energies, as they often contain the land and mineral resources required for renewable energy development. This concerns over approximately 38 million km² of land across 87 countries, constituting about 28% of the global land area (Garnett et al. 2018, Owen 2023). Crucially, the production of green energy is estimated to be ten times more land intensive than its equivalent of fossil fuel production. Its additional requirement for minerals puts Indigenous territories in danger as 50 to 70% of global Energy Transition Minerals and Metals (ETMs) are estimated to be either in or near Indigenous Peoples' lands (Avellaneda et al. 2024).

3.3 Representation: Participation in economic activities, economic and political decision-making and narratives about nature

Representation is a critical pillar in fostering gender equality and social inclusion, focusing on ensuring the equal participation of women and marginalized groups in all areas of society, notably including their representation in decision-making processes and leadership roles. Under this pillar, this study also examines narratives which a) concern gender-related social roles that represent and shape expectations around how women and marginalized groups are expected to behave as well as which b) represent nature, notably how and why it should be valued.

However, women and marginalized groups remain significantly underrepresented both in the **economic** sphere in general and in leadership positions in particular (section 3.3.1) as well as in the **political** sphere, notably concerning key decision-making and planning processes (section 3.3.2). Both limit their ability to influence key decisions that affect their lives and society more broadly. However, the study also shows how harmful practices, as reflected in extractive economic models or technocratic approaches to renewable energies, are manifested in narratives and metrics that treat nature mostly as an expendable resource and which fail to account for unpaid labor and ecological degradation.

3.3.1 Economic participation in workforce and leadership

Women remain disproportionately represented as energy consumers while being largely excluded from leadership, technical, and decision-making roles within the sector. Despite **growing participation in renewable energy**, **systemic barriers** in hiring, education, and workplace policies continue to **limit their professional advancement**, reinforcing **structural inequities and reducing the sector's ability to develop inclusive energy solutions**.

Women and marginalized groups **remain significantly underrepresented in decision-making and leadership roles within the energy sector**, facing systemic barriers to professional advancement. As of 2023, women comprised only 16% of the workforce in traditional energy systems and held less than 12% of leadership positions, while in the renewable energy sector, their participation was higher at 38%, though largely confined to administrative rather than technical or leadership roles (IEA 2023; IRENA 2019), which highlights that **systemic barriers to leadership**

and decision-making remain largely unaddressed. This persistent gender disparity **perpetuates structural inequities, limiting the sector's ability to address gender-specific challenges effectively**. Research indicates that **organizations with diverse leadership are more likely to develop inclusive and innovative energy solutions** (German Development Institute 2022; Malerba 2022; IEA 2020), yet the energy industry remains one of the least gender-diverse sectors globally.

This gap is in part rooted in discriminatory hiring practices, the absence of policies to promote gender equity, and the persistence of unconscious biases that limit women's career advancement. Despite initiatives such as gender quotas for corporate boards, these often lack strong enforcement mechanisms, allowing companies to bypass meaningful reforms. The absence of mentorship programs and the lack of family-friendly policies, which are essential for women's professional development, further reinforce the barriers to leadership roles (Murauskaite-Bull et al. 2024). As shown in chapter 3.1, **the underrepresentation of women in the energy sector is also linked to broader systemic barriers in education and employment, such as societal biases and a lack of encouragement.** Women are significantly underrepresented in STEM fields, which are essential for careers in energy technology and innovation (UNESCO 2024).

Furthermore, patriarchal norms and societal expectations continue to perpetuate gender inequality by relegating women to unpaid or undervalued care and labor roles, both within households and communities. These roles, often seen as domestic rather than professional or technical, limit women's participation in the energy sector. Women's critical contributions to managing household energy use, sourcing fuel, and ensuring energy efficiency are largely invisible within formal economic metrics. This exclusion reinforces cultural narratives that associate technical and leadership roles with men, thus perpetuating the gender disparity in energy systems. (IRENA 2019).

In addition, parts of the energy sector, particularly oil and gas, are marked by a lack of social dialogue and worker representation. This absence of meaningful engagement with workers exacerbates the challenges of advancing gender equity and professional development in these industries. Without robust channels for worker participation, energy workers, especially women, are less likely to have their concerns addressed in the workplace or to gain support for policies that would enable career advancement (IRENA 2023). This lack of representation further entrenches the gender disparities in energy systems, as the voices of those most affected by energy policies and practices are often sidelined.

3.3.2 Participation in political planning and decision making

Women and marginalized groups remain underrepresented in energy policy design and decision-making, limiting the sector's ability to develop inclusive solutions that address their specific needs. This exclusion not only reinforces existing inequalities but also hinders innovation and the effectiveness of energy transitions, particularly for Indigenous communities, whose traditional knowledge is often overlooked in favor of profit-driven, large-scale projects

The underrepresentation of women and marginalized groups in decision-making spaces within energy governance highlights how deeply ingrained structural inequities persist in shaping energy policies and practices. Energy policies and programs frequently fail to incorporate the perspectives and needs of women, continuing their exclusion from the full benefits of energy systems. Even though women are often primary managers of household energy

in many societies, their participation in energy policy-making remains negligible. This lack of representation hampers the development of more holistic energy policies that consider gender-specific impacts and opportunities. Women's exclusion from decision-making processes not only perpetuates systemic inequalities but also hinders the sector's ability to innovate and develop creative, inclusive solutions. Energy policies that prioritize technical and economic metrics often overlook gender and social equity, sidelining women's needs and contributions, and thereby limiting the potential for transformative, inclusive energy solutions (Lahiri-Dutt 2023; Lazoroska et al. 2021).

The underrepresentation of women in **both political and economic leadership roles exacerbates the inefficiencies of current energy systems**, disproportionately burdening women, particularly in rural and marginalized communities. Limited access to clean cooking technologies, unreliable electricity grids in urban informal settlements, and insufficient support for small-scale renewable energy initiatives further deepen gendered disparities in energy access (Lahiri-Dutt 2023; Wågström & Michael 2023). **Without women's perspectives and expertise in both policy-making and industry governance, energy solutions often fail to address the needs of all communities equitably, reducing system resilience and effectiveness**. Just as in the economic sphere, gender diversity in leadership has been shown to foster more inclusive and innovative solutions, with research indicating that organizations with gender-diverse leadership are better equipped to develop sustainable energy systems (IEA 2020). By **incorporating a wider range of perspectives and approaches, gender-balanced leadership enhances the sector's ability to deliver secure, affordable, and sustainable energy for all**. However, as one of the least gender-diverse industries, the energy sector must actively work to overcome entrenched hierarchies and foster greater collaboration. Prioritizing the inclusion of women and marginalized groups is essential not only for achieving social equity but also for unlocking the full potential of innovation needed to drive a just and effective clean energy transition.

Indigenous Peoples face **similar patterns of underrepresentation and exclusion in energy decision-making**, with their communities often marginalized in discussions about projects on or near their lands. **National energy policies frequently neglect their rights, knowledge, and perspectives, resulting in decisions that fail to address their specific needs** (Mawere & Mukonza 2024). Yet, Indigenous communities possess **traditional knowledge crucial for the sustainable transition to clean energy systems.** Their deep understanding of weather patterns, biodiversity, and water cycles could significantly enhance the resilience of energy projects and minimize environmental harm (UNDP 2024). This knowledge, passed down through generations, plays a key role in biodiversity stewardship and holds substantial potential for climate change mitigation and adaptation (Mawere & Mukonza 2024; UN 2021). However**, despite recognition by international institutions such as the Intergovernmental Panel on Climate Change (IPCC) and the Paris Agreement, Indigenous expertise is often ignored, particularly in large-scale energy projects**. Structural prejudices and entrenched social biases frequently prevent their perspectives from being meaningfully integrated into climate and energy policies, as technical and economic priorities tend to overshadow considerations of environmental sustainability and local knowledge (UN 2021). Consequently, the **exclusion of Indigenous Peoples from energy governance not only undermines their rights but also weakens the broader effectiveness of energy transitions.**

Indigenous women, in particular, face additional layers of exclusion from decision-making processes in energy projects. Despite bearing disproportionate social and environmental impacts from energy developments, Indigenous women are often excluded from consultations and decision-making processes, further marginalizing their perspectives. This exclusion from leadership roles and

policy discussions not only reinforces patriarchal hierarchies but also undermines the broader goals of a just transition. The absence of their voices and expertise in energy planning means that critical issues affecting Indigenous communities, such as land rights, resource management, and energy access, are often overlooked, perpetuating cycles of inequality and injustice (Zuluaga & Dobson 2021).

These issues do not just characterize the fossil energy system but are also highly important for renewable energy generation: Eeven in participatory energy initiatives like solar energy communities, gender norms and economic inequalities can hinder equitable engagement. Research by Lazoroska et al. (2021) highlights how structural barriers continue to limit women's and marginalized groups' involvement in energy initiatives, particularly in rural and Indigenous communities. This lack of inclusive engagement further entrenches disparities in energy access and benefits, reinforcing the challenges these communities face in achieving equitable participation in energy transitions (MSSRF & CRT Nepal 2019; Lazoroska et al. 2021).

3.3.3 Representations of nature and labor

The entrenched power structures in the energy sectors as well as their negative social and ecological impacts are crucially enabled by narratives which *represent* nature and labor as a resource to be exploited. This is particularly manifest in extractive economic frameworks, notably used in the fossil energy system, which have caused significant ecological and social exploitation by prioritizing profit and technological expansion over environmental and social justice. Another important embodiment of such narratives are hierarchical gender roles which, in the context of the energy sector, can be described as "petro-masculinities". Such narratives have characterized the fossil energy system but persist even in renewable energy transitions.

The systemic causes of ecological and social harm in the energy system are to a considerable extent rooted in extractive economic frameworks that prioritize profit and technological dominance over environmental and social justice. These frameworks commodify nature and labor, reducing ecosystems to mere marketable resources, which perpetuates cycles of exploitation (Pirani 2021). Particularly in fossil fuel economies, an economic model overly driven by a growth-imperative treats nature as an expendable input, prioritizing exchange value over their intrinsic or relational worth. Traditional economic metrics, such as Gross Domestic Product, reflect and manifest this by failing to account for ecological degradation as well as unpaid labor. Such metrics also further marginalize vulnerable groups-especially women-whose contributions are central to energy economies but remain invisible in formal economic assessments (Butt et al. 2023; IRENA 2019; see chapter 3.1).

Such understandings of nature are closely linked to prevalent, hierarchical gender-related roles and narratives, as can be seen in the context of fossil-fuel economies, where extractivist economic frameworks align with entrenched structures of gender inequality to justify environmental degradation and social inequality. Both dimensions are deeply intertwined, as can be seen for example in stereotypes that frame environmental concerns as "weak" or "unmasculine", whereas fossil fuel intense lifestyles are championed, e.g. in the case of the marketing of Sport Utility Vehicles (SUVs) and large vehicles which ties their consumption to ideals of masculinity and strength. As it was highlighted in the expert interviews, this can also be seen in the current global anti-gender backlash that threatens girls' and women's empowerment, and which strongly intersects with climate change denial, a return to fossil fuel energies and a resistance to ecological action. The

narratives underlying this on the one hand shape the treatment of nature within energy systems by framing it as a resource to be controlled and exploited. On the other, they reinforce broader structures of dominance and exclusion, by beliefs in traditional gender roles.

Overcoming the dominance of traditional (economic) metrics is challenging, particularly because these metrics are well-established and familiar to policymakers. Alternative frameworks that offer a more holistic approach to energy policy that integrates ecological integrity and social justice do exist but are often more complex to apply and are affected by lack of data. For instance, the absence of gender-disaggregated data in energy systems makes it difficult for policymakers to identify and address specific inequalities (Ngum & Kim 2023).

The persistence of these extractive models within energy systems cannot just be seen in the fossil fuel system but also in the renewable energy sector. Fossil fuel economies, from the Industrial Revolution onward, emphasized technological expansion with little regard for the social and ecological impacts of energy extraction. Yet similarly, renewable energy projects-such as wind farms and solar mega-parks-often prioritize market efficiency and profitability over local needs, ecological preservation, and equitable distribution of resources (Siamanta 2024). This reflects the persistence of an understanding of renewable resources, in which energy is treated as a commodity to be monetized rather than a shared resource to be managed for the benefit of all.

3.4 The stickiness of the fossil energy system and the entrenched power structures within it

The previous chapters described the consequences and causes of the entrenched power structures and inequalities in the energy system and their role in the transition away from a fossil energy system. In order to summarize the analysis of the status quo, this chapter looks at the "stickiness" of both these power structures and the fossil energy system.

The study applies the concept of "stickiness" to the energy system, defining it as the persistence of entrenched economic, political, and structural factors, along with path dependencies, that obstruct the transition from fossil fuels to renewable energy. The general stickiness of the fossil fuel system has been well analyzed. For example, Unruh's (2000) study of "**carbon lock-in**" describes how technological, institutional, and economic path dependencies reinforce fossil fuel reliance and delay energy transitions. This lock-in effect is evident in long-term fossil fuel infrastructure investments, such as gas pipelines and coal power plants, which create financial and regulatory commitments that make rapid decarbonization costly and politically challenging.

The Stockholm Environment Institute's Initiative on Carbon Lock-In (2022) illustrates these dynamics with several cases where investments and policy decisions have entrenched fossil fuel dependence, making a transition to renewable energy more difficult. These includes billions in investments, for example in oil refinery infrastructure, often justified on the grounds of energy security and job creation despite economic and environmental concerns; the planned construction of over 100 new fossil fuel power plants across Latin America, which risks prolonging reliance on carbon-intensive electricity generation; and the continued expansion of fossil fuel extraction, reinforcing long-term dependencies on oil and gas revenues. This illustrates how political, economic, and infrastructural commitments can create self-reinforcing barriers to decarbonization, even as cleaner alternatives become more viable.

Despite the increasing global discourse on renewable energy, many energy policies continue to follow an "all of the above" approach, where fossil fuels remain central to energy strategies even as investments in renewables grow. As highlighted in the expert interviews, many policy decisions prioritize economic and geopolitical security interests which – although they may well be very legitimate – can reinforce the persistence of carbon-intensive industries and often come at the expense of questions of environmental justice. The latter can be seen in how the energy transition is often framed as a diversification strategy rather than a true shift away from fossil fuels. As a result, according to the experts interviewed, the green transition is mostly approached as a business opportunity and much less as a justice-driven transformation, which ultimately prolongs dependence on fossil fuels rather than dismantling existing power structures.

Crucially, as this study shows, there is a decidedly "patriarchal" dimension to these aspects of the fossil energy system's stickiness. The entrenched structures and inequalities in the energy system systematically put girls, women and marginalized groups at a disadvantage when it comes to their access and control over resources as well as their rights and representation. As such they can be described as "patriarchal structures". For example, girls, women and marginalized groups benefit disproportionately less from the benefits generated by the fossil fuel system, as is reflected in their access to and control over energy resources. At the same time, they have less influence over energy-related decision-making which affects them. Moreover, as the interview experts underscored, certain prevalent forms of masculinity also tend to favor the persistence of the fossil fuel system. This can be seen in context of climate change denial and resistance to environmental protection, where opposition to ecological action often intersects with anti-feminist stances promoting traditional gender roles (Kaul & Buchanan 2023; Barla & Bjork-James 2021).

What makes the stickiness of the fossil energy system particularly strong is that it has contributed itself to the stickiness of patriarchal structures. Prime examples include the way cities and urban areas are designed for the purposes of car-based transport as well as the fossil fuel industry's promotion of energy-intensive lifestyles (IEA 2021). As has been shown, this mostly caters to typical male mobility needs while disregarding those of women e.g. concerning their care responsibilities (Criado Perez 2019). Moreover, the fossil fuel system often operates within a framework of patriarchal practices, further marginalizing women and perpetuating cycles of violence.

Against this background, this section will draw the insights of the previous findings together, by looking at how those entrenched power structures which put girls, women and marginalized groups at a disadvantage and which hinder the energy transition by contributing to the stickiness of the fossil energy system. Moreover, it will examine the stickiness of those structures themselves, that is how the fossil energy system reinforces them and how the transition to renewable energies risks perpetuating them. By analyzing key dynamics – concentration of power, governance and policies, economic models focused on growth and wealth accumulation, norms and masculinities, technocratic solutions, and political resistance to change – the chapter reveals how entrenched inequalities and hierarchical practices within fossil fuel systems are deeply tied to patriarchal norms. These dynamics not only hinder transitions to renewable energy but also risk replicating the same inequities in emerging energy systems if left unaddressed.

The remainder of the chapter is divided into two main sections. The first examines how fossil fuel systems and entrenched power structures reinforce each other's stickiness, while the second section summarizes how the transition to a renewable energy system risks replicating similar patriarchal structures if not designed and carried out in an inclusive way.

How fossil fuel systems and patriarchal structures reinforce each other

<u>Concentration of power</u>: **The fossil fuel industry reinforces entrenched structures by centralizing decision-making in male-dominated leadership and governance systems**. Fossil fuel corporations and state-controlled energy entities are structured around hierarchical models, where power is concentrated in the hands of a few-predominantly male executives and policymakers (see chapter 3.3). In turn, women and other underrepresented groups are marginalized, their perspectives and needs often being excluded from energy planning and governance. Similarly, such entrenched power structures support and perpetuate this concentration of power by reinforcing traditional gender norms that restrict women's access to leadership and technical roles, as pointed out in chapter 3.1.

According to expert interview insights, community engagement in energy decision-making remains largely performative, rather than meaningfully integrated into governance structures. Experts emphasized during interviews that fossil fuel corporations and national governments often involve communities in consultations without conceding them any real influence. This results in policies that maintain centralized control over energy resources and prevent local actors, particularly women and marginalized groups, from shaping decisions that directly affect them.

Furthermore, in countries with significant revenues from oil production, the reliance on fossil fuel exports as a primary economic driver has substantial implications for gender equity, particularly in labor force participation. It can be observed that oil wealth often hinders female employment in the tradable sector, such as industry, due to structural and cultural factors linked to resource dependence (Almutairi 2022). The focus on resource extraction frequently results in male-dominated industries that offer few opportunities for women.

<u>Governance and Policies:</u> **Governance and policy frameworks within fossil fuel systems often prioritize industrial and geopolitical stability over social equity and inclusivity, reinforcing social norms that marginalize vulnerable populations.** Fossil fuel subsidies used to this end, which reached $620 billion globally in 2023, disproportionately benefit large corporations rather than addressing the needs of marginalized groups, particularly women, who often bear the brunt of environmental and health impacts in resource extraction zones (IEA 2023b; Strohecker 2024). Furthermore, the emphasis on sustaining centralized, state-controlled economic models in fossil fuel-exporting nations, sidelines grassroots and community-based energy solutions, entrenching traditional power hierarchies that resist inclusive policymaking (Stockholm Environment Institute 2022).

Additionally, policy decisions in the energy sector are often shaped by national security considerations, which can influence the pace and direction of energy transitions. As highlighted in the expert interviews, the way energy is framed as a security issue can sometimes lead to an emphasis on maintaining stable and established energy supplies, inadvertently affecting the prioritization of renewable energy initiatives. The experts interviewed noted that, in certain contexts, concerns over strategic infrastructure and national defense have led to hesitancy in investing in large-scale renewable projects, such as wind energy, in specific areas. This underscores the complexity of balancing energy security with sustainability goals and highlights the importance of fostering policy frameworks that align national security considerations with equitable and inclusive energy transitions.

Moreover, gender-blind policies within these systems perpetuate the unequal distribution of energy resources and environmental burdens, such as the severe health and safety impacts experienced by women of color in communities located near fossil fuel sites (WEDO 2024).

Economic Models Exclusively Focused on Growth and Accumulation: The fossil fuel industry's reliance on economic models that are overly centered on growth and accumulation, while neglecting social and ecological externalities (OECD 2020), has historically reinforced existing power structures, including gendered inequalities in access to resources and decision-making. Such models treat natural resources, labor, and land in a commodified way, prioritizing profits for industrial elites while exacerbating inequalities. So-called patriarchal structures reinforce this dynamic by legitimizing extractive economic models that prioritize profit over ecological and social well-being. Historically, these models have treated both natural resources and marginalized groups – particularly women and Indigenous communities – as expendable assets, often excluding them from decision-making while disproportionately burdening them with environmental and social costs, e.g., land dispossession, pollution-related health impacts, and unpaid care work in degraded environments. Furthermore, the wealth accumulation of fossil fuel systems reinforces such entrenched power structures by unequally distributing both economic benefits and influence over energy-related decisions, leaving women and marginalized communities with limited access to resources or benefits (see chapter 3.2).

Norms and Masculinities: The fossil fuel system has contributed to social norms which in turn have contributed to its stickiness. Cultural narratives and norms within **fossil fuel systems valorize traditionally "masculine" traits** such as strength and control, reinforcing gendered hierarchies and sustaining societal dependence on fossil fuels (Daggett 2018). In this regard Daggett introduces the concept of "**petro-masculinity**" to describe the intersection of fossil fuel dependency, intensive energy use, authoritarian impulses, colonial continuities, misogyny and patriarchal norms and how they reinforce each other – with fossil fuel systems becoming a symbol of dominance and control closely linked to male identity. These norms manifest in labor practices, marketing strategies, and societal attitudes that glorify fossil fuel consumption as markers of power, progress, and success (ibid.). Also, the marketing of SUVs and large vehicles ties their consumption to ideals of masculinity and strength, portraying them as symbols of independence and dominance (see chapter 3.3.3). Given the rising oil demand associated with SUVs, such narratives prioritize economic expansion and consumerism while marginalizing environmental sustainability (IEA 2023).

In turn, the association of environmental consciousness with femininity further entrenches these gendered dynamics. A 2024 study found that men were more likely to deny climate change than women, with denial linked to beliefs in traditional gender roles and masculinity. The study highlights how men may resist pro-environmental behaviors to maintain their masculine identity, as environmental concern is often stereotyped as "weak" or "feminine" (Frontiers in Psychology 2024, Kaul & Buchanan 2023).

Within male-dominated industries such as oil and gas extraction, these cultural norms foster exclusionary environments where perspectives advocating for sustainability or equity are undervalued or dismissed. By embedding these narratives in societal and systemic practices, fossil fuel systems create cultural inertia that not only hinders progress toward equitable energy systems but also entrenches harmful gender norms.

Technocratic Solutions and Exclusion: Technocratic approaches to energy governance often focus on top-down decision-making processes that exclude grassroots and community-led solutions. Such approaches, which have characterized the fossil fuel systems, sideline the voices of women and marginalized groups such as Indigenous People. The entrenched power structures in the energy sector reinforce this dynamic by valorizing expertise that aligns with traditional power structures, often discounting alternative knowledge systems or lived experiences. For example,

large-scale energy infrastructure projects, such as oil pipelines or coal plants, are often designed without consulting affected communities, such as Indigenous People and their knowledge, who bear the brunt of environmental and social impacts, as illustrated in chapter 3.5.

<u>Political Resistance to Change:</u> **The entrenched power structures that disadvantage girls, women, and marginalized groups also bolster political resistance to transitioning away from fossil fuels**. Lobbying efforts by fossil fuel companies, often supported by male-dominated political networks, emphasize the perceived risks of renewable energy adoption, such as economic disruption and loss of national security, to maintain the status quo (Earth Day Network 2024). **This framing aligns closely with broader narratives that present renewable energy as a threat to economic stability and traditional values**, reinforcing opposition to systemic change. These entrenched interests wield significant influence in policymaking, shaping national and international energy agendas to delay or weaken climate action (Global Witness 2024).

Protests against climate-friendly policies are often framed as a defense of economic security and national identity, particularly in resource-rich economies. These narratives intersect with anti-feminist stances, where resistance to environmental protection is linked to the defense of traditional gender roles and opposition to inclusive social policies (Kaul & Buchanan 2023).

The risks of the energy transition to replicate patriarchal structures

As the previous chapters demonstrated, **there is a strong risk that the transition to renewable energies perpetuates, and potentially even reinforces the entrenched power structures and inequalities in the energy system,** especially those understood as "patriarchal structures". Several experts interviewed emphasized that simply replacing fossil fuel infrastructure with renewable energy infrastructure does not inherently lead to more just or equitable energy systems. This refers both to an unequal distribution of the benefits and burdens as well as to discrimination as to whose energy-related needs and priorities are taken into account.

First, the renewable energy system risks continuing unequal access to energy that puts girls, women and marginalized groups at a disadvantage. In parts, this is already happening. This concerns both the question of grid access and electrification as well as questions of energy's affordability (UNDP 2024). If unaddressed, these risks perpetuating existing cycles of poverty and disempowerment (Siamanta 2021; Haney & Pollitt 2013; Hogan 2024).

Second, the renewable energy system risks perpetuating an unequal participation of women and marginalized groups in the labor force of the energy sector. This refers to both the access to jobs as well as labor conditions. That is, there is a risk to perpetuate the underrepresentation of women and marginalized groups in the energy sector, notably in high-tech, well-paid and leadership positions, the gender wage gap and exploitative and hazardous working conditions – as is the case in mining for minerals required for renewable energy technology (IEA 2023; IRENA 2019; World Energy Employment 2024). This is a risk if related social norms, regulatory standards and access to resources such as education are not addressed.

Third, the renewable energy system risks and in several cases is already reinforcing an unequal distribution of burdens related to environmental harm and destruction of biodiversity. This concerns notably how indigenous communities are affected by large-scale renewable energy projects built on or close to their territories (Agrawal et al. 2023; Pezzuti et al. 2024).

Fourth, in doing so, the renewable energy system risks perpetuating narratives about nature and labor that value it exclusively or predominantly as a resource to be exploited instead of a

more reciprocal and care-based understanding. For example, this is a risk if renewable energy projects prioritize centralized, profit-driven models over decentralized, community-based alternatives (Siamanta 2024). The environmental degradation and poor labor conditions that characterize the supply chains of e-mobility is another case in point (Owen et al. 2023).

Linked to this, experts interviewed noted that even in the renewable energy sector, extractivist economic models tend to be reproduced, favoring economic profits over sustainability or justice. Without a shift in the economic structures underpinning energy transitions, new energy projects will likely continue to benefit only few while failing to address systemic inequalities that affect the many. This raises concerns among experts that the shift toward renewables will follow the same patterns of exclusion and marginalization as the fossil fuel sector.

Lastly, the renewable energy system risks replicating the limited access to and outright exclusion of girls, women and marginalized from energy-related decisions. This concerns both these groups having a meaningful say in the making of such decisions (e.g. as to the use of land for renewable energy projects) as well as having the means to challenge them and demand accountability for them and their consequences if necessary (e.g. in the case of environmental damage in the construction of a renewable energy project; Bell, Daggett, & Labuski 2020; Mawere & Mukonza 2024; UN 2021).

This shows that renewable energy projects do not automatically lead to more gender equality or to overcoming other social inequalities, because technological solutions alone do not resolve structural issues rooted in societal and cultural norms (Murauskaite-Bull et al. 2024). Therefore, the following chapter will propose pathways to avoid these risks by addressing the factors that contribute to the risk, that the transition to renewable energies will replicate entrenched power structures and inequalities.

Box 4: Green Hydrogen and the Risk of Reinforcing Structural Inequalities

The green hydrogen sector serves as a compelling case study for examining the potential replication of entrenched power structures and inequalities in the energy transition. Growing demand for green hydrogen from Europe has driven investment into large-scale hydrogen production projects in the Global South. However, as experts interviewed and several reports highlight, these projects warrant careful scrutiny, particularly in their initial stages. **While these initiatives promise local job creation and infrastructure development, they also risk prioritizing foreign energy demands over domestic needs and risk replicating extractive economic models**. Notably, the significant amount of land and water resources required for the production raises significant environmental and social concerns, especially in water-stressed areas (Heinrich-Boell-Foundation & Bread for the World 2022; New Climate Institute 2024).

The risks related to green hydrogen are especially concerning for women and marginalized groups. For example, women are particularly affected by water scarcity since they are frequently responsible for household water management (Snousy et al. 2025). They also risk benefitting less from hydrogen's general economic opportunities according to the expert interviews which emphasized a stark gender imbalance within the hydrogen industry. One expert noted that many women who had previously worked in the renewable energy sector found the hydrogen industry to be more conservative and male-dominated than expected.

Moreover, **large-scale green hydrogen projects tend to lack transparency and meaningful community participation**, as emphasized by the Corporate Europe Observatory (CEO) (2024). This **reinforces male-dominated decision-making structures**, limiting the extent to which local needs and priorities are considered. At the global level, this exclusion is mirrored in hydrogen governance structures, where institutions representing hydrogen-exporting countries, particularly in Africa, remain comparatively smaller and less influential. As a result, policy frameworks risk being shaped in ways that prioritize the interests of importing nations over those of producer countries, further **entrenching existing power asymmetries** (Lentschig et al. 2025). **Northern Africa provides a particularly relevant case study,** with several countries prioritizing green hydrogen exports to Europe despite facing energy poverty and domestic development needs. This raises concerns about energy sovereignty, as large-scale hydrogen infrastructure, including land and water-intensive electrolysis, may divert essential resources from local communities (Ammar 2024). In another case in Southern Africa, green hydrogen projects have been criticized for failing to contribute to local decarbonization and development as well as energy transition strategies by prioritizing export markets over domestic energy use. There is also the risk of limited technology transfer or capacity development for local communities. CEO further points out that the reality on the ground is far removed from the sustainability narratives often presented in Europe portraying these projects as mutually beneficial and supportive of sustainable development in Africa (CEO 2024).

Against this background, the scramble for hydrogen exports risks repeating historical patterns of resource extraction, where wealthier nations reduce their own CO2-emissions at the expense of producer countries' needs, and can intensify existing local inequalities, as interviewed experts pointed out. Without clear regulatory safeguards, meaningful local participation, and equity-driven policies, the green hydrogen economy risks reinforcing existing global inequalities, rather than fostering a sustainable and socially just energy transition (CEO 2024).

4) How to transform the Energy System

4.1. Transformation through the lens of Feminist Foreign Policy

The shift from fossil fuels to renewable energy presents a unique opportunity to dismantle entrenched power structures in the energy sector and to overcome the inequalities they have entailed, especially for girls, women and marginalized groups. **At the same time, it is crucial to ensure that the shift to renewable energy systems is indeed a just transition** and does not inadvertently perpetuate these entrenched structures and inequalities.

As discussed in the introduction, countries from the Global North are both in an **influential position and have a particular responsibility** in harnessing their engagement **in cooperation for making a meaningful contribution to a just transition of the energy sector** notably in the Global South. In this, they can and should not only use their levers in development policy, where energy issues have traditionally been addressed in the context of international cooperation. As the rising importance of international energy partnerships around green hydrogen shows, **the energy transition – and by extension, the need to ensure it is a just transition – also needs to be addressed in the domains of foreign policy** in general and foreign energy policy in particular. This is especially the case in countries such as Germany, where the institutional lead for international climate action has been integrated into foreign policy.

In this context, a Feminist Foreign Policy can be an important tool in doing so. Its approach to dismantling the deeply rooted structures that have historically put women and other marginalized groups at a disadvantage offers a valuable framework for addressing the entrenched power structures and inequality in the energy sector. By putting social justice, human rights, and gender equality to the fore, by addressing systemic inequalities as well as by ensuring that the energy transition is not viewed solely through a technocratic lens, an FPP can effectively contribute to ensuring that there is a just transition, not just domestically but worldwide.

At the same time, existing concepts of FFPs still need to be developed further in the way they address energy issues. Often, they do take into account the complexities of how to address entrenched power structures, focusing mostly on advancing women's participation in the energy sector's work force or on tackling women's lack of access to energy. Since most FFPs have only been implemented for a few years, there is still much potential for learning as to which approaches are most promising when putting them to work in the context of the energy transition in particular.

Against this background, the following chapter offers recommendations and entry points for how an FFP can and should be effectively deployed to address entrenched power structures and inequalities in the energy system in order to ensure a just transition. To this end, the chapter is again framed around the three Rs of feminist foreign policy: Resources, Rights, and Representation.[4] Drawing on the analysis of entrenched power structures and inequalities in chapter 3, each section lays out recommendations to advance gender equality and social justice within the energy transition, providing insights into the pathways through which a feminist foreign

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[4] Following chapter 3, the present chapter starts with Resources. For one, Resources concern many of the very palpable and material socioeconomic impacts on peoples' lives that the entrenched power structures and inequalities in the energy sector have – and to which many aspects of the power structures and inequalities under Rights and Representation refer. Moreover, it is precisely through the lens of resources that energy issues have mostly been dealt with both in international development cooperation and Feminist Foreign Policies, where they mention energy issues. Resources are thus a good starting point for exploring how a feminist lens can lead to a more comprehensive approach to the energy sector.

policy can guide and influence global energy transformation to benefit all members of society, especially those most marginalized. Furthermore, the following sections also point out the critical considerations and approaches an FFP should take into account when applied in the energy sector. While not based on a comprehensive analysis of (the implementation of) any particular FFP, the chapter draws on available knowledge about various FFPs, including insights from the German FFP. Thus, the chapter on transformation does not aim to provide a critical review of the current implementation of the German FFP but rather seeks to contribute to the evolution and broader application of feminist foreign policies in the energy transition context.

4.2 Fostering access to resources and their equal distribution

Building on the challenges outlined in the status quo, such as the exploitation of natural resources (section 3.1.1), unequal access to energy (section 3.1.2), unequal ownership over energy-related assets (section 3.1.3) and effects of inequalities in the energy labor market disproportionately affecting women and marginalized groups (section 3.1.4), this chapter now turns its focus to transformational approaches. This will cover four key areas: ensuring equitable resource access and control; promoting community ownership; advancing economic empowerment through fair labor standards; and recognizing the critical role of care work. This also extends to access to education, information, and employment, thereby dismantling longstanding systemic barriers and laying the foundation for a just, inclusive, and sustainable energy transition.

Access to energy resources

Access to resources is fundamental to achieving equity and justice in the energy transition. This refers to ensuring that women, marginalized groups, and underserved communities can obtain and manage productive resources. Structural barriers, such as unpaid care work, restrictive gender roles, and limited mobility, continue to restrict access for these groups, particularly those in the informal sector or affected by displacement (ESCAP 2021, see below). Addressing these barriers is essential to equitable resource distribution and ensuring no one is excluded from the benefits of renewable energy transitions.

An intersectional approach is crucial, as barriers to resource access and the equitable distribution of benefits across the energy value chain can vary significantly based on race, ethnicity, geography, and socio-economic status (Ngum & Kim 2023)**.** For instance, Indigenous women in rural areas often face multiple exclusions, such as limited access to infrastructure and systemic marginalization. Policies must address these intersecting challenges to create targeted and inclusive solutions that effectively meet the diverse needs of all marginalized groups. A transversal approach that links gender justice with socioeconomic and racial justice is essential for addressing intersecting inequities in energy systems (Cannon & Chu 2021).

Technological equity is another critical factor in ensuring inclusive access. Marginalized groups often lack access to the tools, training, and technologies necessary to benefit fully from renewable energy systems. For example, bridging the digital divide – ensuring access to digital infrastructure and skills – enables communities to utilize digital tools critical for managing and maintaining renewable energy systems, such as solar monitoring apps, grid management platforms, or training resources (Ramalho 2024). Building local capacity in using these tools is vital for creating a more inclusive and participatory energy system. **Similarly, robust gender-disaggregated data is needed to identify barriers, track progress, and develop evidence-based policies.** Without reliable data, the specific needs of women and marginalized groups remain invisible, perpetuating

inequities in resource access (Economic and Social Commission for Asia and the Pacific 2021). Valuable gender-disaggregated data is essential for informing policy and ensuring energy systems address the needs of all groups equitably (Cannon & Chu 2021).

To ensure equitable access to resources within the energy transition, a feminist foreign policy should:

- **Adopt an intersectional approach to resource allocation.** To this end, it is key to ensure that energy-related cooperations, programs and funding mechanisms take into account the needs and priorities e.g. of Indigenous women, rural populations, and informal sector workers in energy projects. For example, by advocating for intersectional frameworks in international organizations and development banks, such as the 2X Women's Initiative, launched by the Overseas Private Investment Corporation in 2018, committed $1 billion to invest in women in developing countries, ensuring financial decisions address gender-specific needs. By applying gender lens investing, the initiative has since catalyzed over $11 billion in capital for women-led businesses and employment opportunities. This approach aligns with international efforts to integrate intersectional frameworks into development banks, prioritizing marginalized groups such as Indigenous women, rural populations, and informal sector workers in energy projects (2X Challenge 2024; United States International Development Finance Corporation 2024).
- **Introduce clear frameworks to track and incorporate environmental and social costs into energy pricing**, making sure that these costs are accounted for in decision-making and contribute to fair resource distribution and sustainable energy practices.
- **Strengthen technological equity** to ensure that marginalized groups have access to essential digital tools, comprehensive training, and capacity-building initiatives to bridge the digital divide and fully participate in the renewable energy transition.
- **Strengthen global gender-disaggregated data systems.** Advocate for global standards and investments in gender-disaggregated data collection to inform international energy policy, ensuring equitable decision-making in global energy transitions.

Community control and ownership of resources

Community control and ownership of renewable energy resources are essential components of a just and inclusive energy transition. These models empower local stakeholders, particularly Indigenous Peoples, rural communities, and marginalized groups, to manage and benefit from renewable energy projects. Unlike profit-driven systems that often exclude communities from decision-making, community ownership distributes control and financial benefits locally (IRENA 2020).

An approach for improving access to energy resources, as reiterated by interviewees, is to treat energy as a public good rather than solely as a commodity. Ownership structures of energy systems which involve communities offer a pathway to universal access by prioritizing affordability and availability. Public-community partnerships and progressive energy tariffs can help address disparities by making energy more affordable for low-income households while promoting sustainable consumption patterns. This approach supports a balance between equity and environmental objectives and facilitates inclusive decision-making processes (Economic and Social Commission for Asia and the Pacific 2021).

Community-driven models have proven particularly effective in addressing energy poverty and enhancing energy security through fostering empowerment, energy independence, and economic growth. By reducing reliance on centralized grids and providing affordable energy, these

models improve access in underserved areas while ensuring that specific community needs are met. For example, in India, the Self-Employed Women's Association introduced asset-light models enabling rural women to rent energy-efficient technologies, improving energy access and fostering financial inclusion and economic empowerment (Lahiri-Dutt 2023). Similarly, the Dardesheim community-owned wind farm in Germany demonstrates how collective management of energy assets can enhance access, reduce costs, and contribute to decarbonization goals (IRENA 2020; Lu & Ren 2023).

A transition to community-driven energy systems also addresses broader structural injustices in energy development. For decades, centralized, state-led infrastructure projects have disproportionately displaced and excluded rural, racialized, and low-income communities. Community ownership counters this history by ensuring that renewable energy expansion respects land rights, involves local voices, and combats "green colonialism" (Transnational Institute 2024).

To advance community control and ownership, **governments must implement inclusive policies and support measures that balance public and community interests, ensuring that local stakeholders are central to governance and resource management.** Public-community partnerships, financial incentives, and respect for land and resource governance are key to achieving this balance. Such support is particularly needed in order to overcome the challenges community-based energy projects face in competing with large-scale, privately owned energy projects that dominate the market. For example, in Denmark, government policies in the 1980s and 1990s provided subsidies and tax exemptions for cooperative wind projects, exemplified by the Middelgrunden offshore wind farm, co-owned by a cooperative of over 8,000 members and a state-owned utility. This model ensured local participation, economic benefits, and the integration of renewable energy into national grids (Haney & Pollitt 2013). Similarly, Scotland's Community and Renewable Energy Scheme provides financial support and guidance to local communities, enabling them to develop and manage renewable energy projects. These initiatives not only foster inclusivity but also build acceptance for renewable energy at the local level (IRENA 2020).

To promote equity, empowerment, and inclusivity in the energy transition, a feminist foreign policy should:

- **Encourage community-driven energy** models through supporting initiatives that empower local stakeholders, particularly Indigenous Peoples and marginalized communities, to manage and benefit from renewable energy projects. This can involve showcasing examples that demonstrate the effectiveness of collective ownership in addressing energy access, reducing costs, and fostering economic empowerment.

- **Promote financial and technical support for local projects** by advocating for policies that provide subsidies, grants, and technical guidance to community-driven renewable energy projects.

- **Advance public-community partnerships** through facilitating collaborations between governments, public utilities, and communities to enhance equity in energy systems.

- **Strengthen decentralized energy systems** through advocating for localized renewable energy infrastructure that reduces reliance on centralized grids, enhances energy access in underserved areas, and builds resilience against supply disruptions.

- **Combat systemic injustices in energy development** through the promotion of renewable energy policies that respect land rights and prioritize local voices to counter the historical exclusion of rural, racialized, and low-income communities. Notably, it should encourage

measures that prevent "green colonialism" and ensure fair governance of land and resources in renewable energy expansion.

Economic Empowerment and Fair Labor Standards

As the study has shown, addressing gender inequality is a critical aspect of the energy transition. Women in the energy sector continue to experience stark wage disparities, inadequate maternity leave policies, and gender bias in hiring and promotions (World Economic Forum 2022). Inclusive labor policies, such as mentorship programs, gender-sensitive workplace reforms, and investments in public safety and information systems, are vital to addressing these barriers and ensuring women's equitable participation in the workforce (Cannon & Chu 2021). Expanding access to STEM education is equally important, as educational disparities limit women's representation in technical roles, perpetuating systemic inequalities (UNDP 2024).

Another key area for action concerns the fight against poor working conditions and labor exploitation (see Chapter 3.4)**. Safeguards should be incorporated into development plans** to address the problem of exploitative labor practices that notably affect migrant workers e.g. in mining operation challenges, ensuring **ethical labor practices throughout supply chains** (Business and Human Rights Resource Centre & Equidem 2024). **It is also crucial to ensure that resource extraction during the energy transition is both ethical and sustainable.** This means actively tackling human rights violations, environmental degradation, and exploitation of local communities which the sourcing of critical materials, such as lithium and cobalt often needed for renewable energy technologies entail (see also chapter 4.2 on labor rights). To this end, policies and frameworks should also integrate a circular economy-approach that includes recycling and reuse to reduce demand for new resource extraction while addressing these systemic harms. Such approaches not only mitigate environmental and human impacts but also challenge the commodification of nature, advocating for a worldview that treats nature and society as part of a shared settlement (Siamanta 2021). Additionally, institutional support should be provided where labor protection laws are deficient or not properly enforced. Lastly, **addressing power imbalances between multinational corporations and local workers** is also critical, especially in contexts of little unionization, as these imbalances often hinder **advocacy for better working conditions and fair wages** (Siamanta 2021). In strengthening workers' representation and advocacy, it also important to ensure that traditionally male-dominated unions sufficiently take into account the voices and needs of women and marginalized groups (see chapter 4.4).

Although the entire workforce in the energy sector benefits from the formal and informal contributions of women, the latter is not economically recognized. **Labor policies that explicitly value and integrate informal work contributions** are **essential for achieving equity** as informal workers, particularly women, often face systemic exclusion, lack of social protections, and limited access to the benefits of energy transitions (see chapter 3.1.4). Public-private partnerships can also play a **transformative role** in creating **equitable opportunities and improving labor standards across sectors**, ensuring the inclusion of marginalized workers (Cannon & Chu 2021).

A **(human) rights- and norms-based approach, such as an FFP,** is crucial to addressing these intersecting inequities, ensuring that gender, socioeconomic, and racial inequalities are tackled simultaneously by challenging entrenched power structures and discriminatory social norms (Cannon & Chu 2021).

To tackle systemic labor injustices and promote economic empowerment while ensuring equity and sustainability in the energy transition, a feminist foreign policy should:

- **Promote fair labor standards in energy supply chains.** Notably, this means encouraging policies that enforce transparent labor practices and mandatory due diligence in renewable energy supply chains to address forced labor, unsafe conditions, and wage theft. Initiatives such as the *Solar Supply Chain Traceability Protocol* developed by the Solar Energy Industries Association for example were created to ensure ethical labor practices in the solar industry, particularly in response to concerns about forced labor in the production of polysilicon, a critical material for solar panels. The protocol includes mandatory due diligence measures, requiring companies to map their supply chains, conduct independent audits, and enforce labor transparency (Solar Energy Industries Association 2021).

- **Incorporate informal work into economic frameworks.** For example, this includes developing policies that formally recognize and integrate the contributions of informal work in energy systems. Provide legal protections, economic recognition, and access to social safety nets for women and others working in informal sectors. An example of a successful implementation of this incorporation is the approach taken by cities within the C40 Cities network, which have developed strategies to incorporate informal workers into climate action plans. These strategies include allocating climate investments to low-income communities and expanding social protections to cover informal workers, thereby acknowledging their role in urban economies and providing them with legal protections and access to social safety nets (C40 2024).

- **Promote ethical and sustainable resource extraction through international standards.** This means to support global agreements that ensure transparency and accountability in sourcing critical materials and to ensure their implementation - for example, conventions like the OECD's Due Diligence Guidance to promote circular economy practices and protect human rights in supply chains (OECD 2018).

- **Support gender-sensitive workplace reforms.** Key in this is enhancing gender equity in the energy sector through policies that address wage disparities, improve maternity leave provisions, and reduce gender bias in hiring and promotions. Another approach is fostering mentorship programs and increase access to STEM education to prepare women for technical and leadership roles in energy transitions. For instance, the World Bank's Energy Sector Management Assistance Program offers a Toolkit for Women's Employment in Energy Sector Utilities, providing practical guidance on attracting, recruiting, and retaining women in the energy sector. The toolkit emphasizes creating a supportive work environment, implementing mentorship programs, and facilitating access to STEM education to prepare women for technical and leadership roles in energy transitions (Energy Sector Management Assistance Program 2025). Furthermore, the Asian Development Bank has developed a Tip Sheet on Gender-Inclusive Approaches in the Energy Sector, which outlines strategies to mainstream gender equality, including setting gender targets, promoting women's participation in decision-making, and ensuring equal opportunities in employment and training programs (Asian Development Bank 2018).

- **Strengthen protections for migrant workers.** This includes advocating for (the ratification and implementation of) international labor agreements that secure fair wages, social protections, and safe working conditions for migrant workers, particularly in mining and construction linked to renewable energy projects, such as the UN International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families (Office of the

United Nations High Commissioner for Human Rights 1990), (similarly the ILO Convention 97 or 143 (ILO 1949, ILO 1975)). It also means ensures that enforcement mechanisms address exploitation and informal labor arrangements.

- **Promote frameworks that require the active participation of women and marginalized groups in energy governance.** Incorporate their perspectives into renewable energy strategies and climate policies to ensure equitable decision-making to ensure inclusive energy governance. For example, the "Mainstreaming Gender in Energy Projects: A Practical Handbook" by ENERGIA, an international Network on Gender & Sustainable Energy, provides practical tools and methodologies for integrating gender into energy projects. It underscores the benefits of gender mainstreaming, such as increased project effectiveness and more equitable outcomes (Cecelski & Dutta 2011).

Recognition of care work

In overcoming entrenched power structures and inequalities in the energy system, it is also important to advance the recognition of care work in energy systems. This refers to valuing the ensemble of paid and unpaid activities that sustain human life, the environment, and communities. These include caregiving, food provisioning, healthcare, education, and household energy management, often performed by women and marginalized groups. Despite its critical role, care work remains largely invisible and unrecognized as "work" (see box 3), receiving minimal support or integration into energy policy frameworks (United Nations Research Institute for Social Development 2024). Addressing this invisibility requires embedding care work into energy planning by recognizing the social value of these activities and ensuring equitable resource allocation. Furthermore, the ethics of care emphasize the relational and interdependent dimensions of energy use, advocating for policies that consider the needs of both caregivers and the ecosystems they support. Furthermore, integrating gender-responsive policies into energy systems can help reduce systemic inequities in access to resources and opportunities. Acknowledging the interdependence between energy systems and caregiving can pave the way for holistic, inclusive policy frameworks that prioritize both human and environmental well-being (Gram-Hanssen 2024).

This is important because the **undervaluation of care work undermines the goals of a just energy transition** by perpetuating gender inequality and **limiting women's participation in the green economy.** Women and caregivers, often burdened by unpaid domestic labor, face systemic barriers to entering energy-related professions and leadership roles (see Chapter 3.1). The exclusion of care work from transition strategies not only marginalizes a significant portion of the workforce but also overlooks the broader social and environmental benefits of integrating care work into sustainability frameworks (UN WOMEN 2023; ILO 2024a).

In turn, recognizing care work as a cornerstone of a just transition can lead to more inclusive and effective energy systems, embedding human rights, social equity, and environmental sustainability at the heart of energy transitions. A feminist framework calls for revaluing "Pink Labor"-care and service work such as child and elder care or environmental rehabilitation-by recognizing its centrality to sustainable transitions (Bell, Daggett, & Labuski 2020). Integrating care work into transition strategies can promote gender-responsive public services, such as affordable childcare and adaptive health and care systems. In addition, investing in care jobs is essential for achieving gender equity, as they are inherently low-carbon and align with the principles of sustainable development (UNRISD 2024). This approach supports social equity and fosters economic empowerment by generating new, decent jobs for women and men in green and blue economies. These jobs, focused on sustainability and equity, ensure fair pay and improved working

conditions, particularly for women who have historically been excluded from formal economic participation. Addressing care work can also contribute to global justice by redirecting resources from environmentally harmful practices, such as fossil fuels and megaprojects, to initiatives that acknowledge and rectify the ecological and climate debt owed by the Global North to the Global South (UN WOMEN 2023).

Key stakeholder interviews also highlighted that in order to achieve this care-centered transition, it is essential to move away from economic frameworks that prioritize profit over people. The general consensus was for governments to redirect public funds from environmentally destructive sectors toward investments in care work. Similarly, the United Nations Research Institute for Social Development (UNRISD) emphasizes expanding social protection systems and services to reduce the unpaid care burden on women is critical for enabling their greater participation in sustainable economies. Furthermore, ensuring that care workers have opportunities for political representation and participation in the design of transition policies is vital for fostering equitable and inclusive energy systems. By creating space for care workers' voices and experiences, policies can be shaped to reflect the realities and needs of those who perform essential care roles, ultimately advancing a more just and sustainable future (UNRISD 2024).

A **truly gender-responsive transition also requires combating gender norms that undervalue care work and limit women's access to STEM fields and financial resources.** By addressing these structural barriers, care work can be fully integrated into energy systems, contributing to a just transition that uplifts all people.

To address the undervaluation of care work in the energy transition, a feminist foreign policy should:

- **Advocate for the integration of care work into just transition frameworks, strategies and policies,** through recognizing care work as essential to human and environmental well-being. This includes developing and supporting strategies and policies that value care work economically, legally, and socially, ensuring its inclusion in sustainability planning and energy transition partnerships.

- **Promote care-centered public services that prioritize the expansion of gender-responsive services** such as affordable childcare, adaptive health systems, and universal social protection. Such services can alleviate the unpaid care burden on women, enabling their full participation in the economy and the energy transition.

- **Advocate for the recognition of care work as a critical component of the green economy,** ensuring fair pay, improved working conditions, and inclusive opportunities for both women and men. Focus on creating employment in low-carbon sectors such as caregiving, healthcare, and education to enhance gender equity and sustainability.

- **Foster political representation for care workers** by establishing platforms for their active participation in designing and implementing just transition policies, and by ensuring that care responsibilities are accommodated in event planning, e.g., by providing childcare at events, thus promoting policies that truly reflect their needs and lived experiences.

4.3 Empowering through equality: Advancing rights in energy transition

Building on the analysis of the status quo, two central challenges have been identified: weak regulatory frameworks (section 3.2.1) and a lack of accountability both hinder effective protection of fundamental rights, and enable systematic violations of the rights of women, Indigenous communities, and other marginalized groups in energy projects (section 3.2.2). To address these issues, the following approaches propose a transformative feminist approach aimed at reconfiguring the rights dimension of the energy transition. This approach advocates for rights-based frameworks and policies that prioritize inclusivity, equity, and participation; strengthens nature's rights and advances environmental justice to prevent and redress harm; and embeds principles of reparative and restorative justice to address historical exploitation. These measures collectively form the foundation for a just, inclusive, and sustainable energy policy, ensuring both the mitigation of current inequities and the establishment of long-term systemic change.

Justice, equality, and rights-based frameworks

The systemic inequalities created notably by the fossil fuel energy system do not only create negative social and economic impacts, but often constitute a violation of fundamental rights, as the affected communities are often denied access to clean, affordable energy, decision-making power, and protections from environmental harm. In response, feminist approaches call for a transformative rights-based approach that ensures that energy systems are not just technically efficient but also socially just and inclusive. This includes addressing the right to clean and affordable energy, the right to participate in energy governance, and the right to be protected from environmental harm and displacement. In particular, policies should be adopted which center on the rights of marginalized groups which have been most disregarded.

In addressing rights, it is crucial to pursue a holistic approach that goes beyond individual types of rights. Feminist energy policies offer a comprehensive framework that prioritizes relationality and care, examining how energy systems impact social, cultural, and environmental dynamics. By integrating intersectional approaches, these frameworks address systemic inequities and compounded oppressions of gender, race, class. They aim to dismantle entrenched power structures and reimagine energy systems as tools for broader social and ecological well-being Such a holistic perspective can address the risks posed by technocratic, top-down approaches to energy transitions, which often marginalize grassroots and intersectional solutions (Ngum & Kim 2023; Bell, Daggett, & Labuski 2020).

Another critical element of feminist energy frameworks to advance the rights of girls, women and marginalized groups is accountability. Sustainable energy systems must prioritize trust, consent, and accountability to ensure that they are resilient to climate change and inclusive of diverse community needs (Bell, Daggett, & Labuski 2020). Mechanisms such as gender-sensitive audits and capacity-building programs can help align energy policies with these principles. For instance, the EmPower Project, developed by UNEP and UN WOMEN, provides guidelines for integrating gender concerns into renewable energy policies (UNEP 2020). By building the capacity of policymakers and fostering collaboration between governments and civil society, the project ensures that gender equality objectives are central to energy transitions. Similarly, ENERGIA's Gender and Energy Advocacy initiative supports energy ministries in countries like Kenya, India, and Ghana to review policies through a gender lens. This initiative emphasizes evidence-based policymaking, awareness campaigns, and monitoring practices to ensure policies translate into action (ENERGIA 2024).

Another key element for accountability in the context of the energy transition are robust monitoring and evaluation frameworks that ensure marginalized voices are included in decision-making processes. Trust and transparency are essential in forging energy systems that are not only sustainable but also socially inclusive. By centering these principles, feminist energy frameworks can create resilient systems that address historical injustices and foster equitable energy transitions.

To ensure inclusivity, justice, and rights-based access in energy transitions, a feminist foreign policy should:

- **Recognize energy access as a human right.** Key to this is advocating for international agreements which recognize that energy is essential for the fulfillment of basic needs, such as healthcare, education, housing, and livelihoods, and must therefore be treated as a public good rather than a commodity. This entails calling for the establishment of public and democratically managed energy systems that ensure universal access to affordable, clean, and sustainable energy.

- **Incorporate intersectional and transversal frameworks into policymaking.** This means supporting the development of energy policies that integrate intersectional gender analyses from the outset, ensuring they address the compounded impacts of gender, race, and class inequities. It also involves supporting transversal approaches that link gender justice with broader socioeconomic and environmental justice goals to create inclusive energy systems.

- **Advocate for the inclusion of gender and human rights safeguards in energy policies,** ensure legal protections against energy poverty, and strengthen land and resource rights for women and marginalized communities to enable equitable participation in the energy transition.

- **Monitor progress and enhance accountability mechanisms.** This means to advocate for the establishment of independent monitoring and evaluation bodies to oversee the implementation of just policies in energy transitions. These bodies should include diverse representation from marginalized communities, ensuring that energy actors and governments are held accountable for their commitments to justice and equity.

- **Support rights defenders on the ground.** This means to support human rights and environmental rights advocates, for example through partnerships, capacity-building, financing and their inclusion in e.g. dialogues and international fora. For example, the international initiative Front Line Defenders supports human and environmental rights advocates by providing capacity-building, financial assistance, and facilitating their participation in global dialogues and networks.

Strengthening of nature's rights and the legal dimensions of environmental justice

In order to contribute to overcoming entrenched power structures in the energy system, a feminist foreign policy should also include approaches to strengthen nature's rights and foster (the legal dimensions of) environmental justice when it comes to working on the transition to renewable energies.

The concept of nature's rights expresses the idea that ecosystems, species, and natural entities have intrinsic rights, independent of their utility to humans. This perspective challenges the traditional anthropocentric legal frameworks that treat nature as property or resources to be exploited and instead recognizes it as a subject with its own legal standing (Ito & Montini 2018). Nature's rights can be codified and legally recognized in different ways: they can be enshrined in

constitutions as has been done in Ecuador and Bolivia, they can be anchored in regular laws and operationalized in concrete regulations, or they can be recognized through court rulings as has happened in Colombia, India or New Zealand (European Parliament 2021).

Strengthening nature's rights is relevant for addressing notably the fossil energy system's past negative climate-related and environmental impacts and the cultural, economic and health-related effects this has particularly on women and marginalized groups. As such, nature's rights can be an important tool for groups particularly affected by environmental damage in demanding compensation and ensuring accountability. **At the same time, it can also be a tool to ensure that political decision-makers and economic actors prevent such damage in the first place.** It is also a **relevant approach for avoiding negative environmental impacts in the transition to renewable energies,** such as biodiversity loss e.g. in cases where land needs to be cleared for the construction of renewable energy plants. Thereby, it can be a key tool for achieving environmental and climate justice (Rodríguez 2023, UN WOMEN 2022).

Strengthening nature's rights refers to both improving legal norms and regulations themselves as well as to strengthening their effective enforcement. However, leveraging their potential requires a comprehensive approach, not least since the history of putting nature's rights into legal practice is a recent one and is still facing many challenges. This includes strengthening access to the justice system in general, since groups affected by environmental damage often lack the capacities and resources to legally claim rights related to the environment by recourse to the judicial system (Client Earth 2024; UNEP 2023). It also encompasses strengthening the enforcement of both nature's rights where they have been legally codified as well as other laws protecting the environment. For, even where nature's rights have been codified in legal norms, where courts have ruled in favor of nature's rights or where general laws protecting the environment exist, there is often a lack of enforcement and harmful practices continue and can even be exacerbated. In the context of weak institutions, rights and their enforcement can be undermined by judicial corruption (Whittemore 2011). Also, there are cases of violence against defenders of human and nature's rights and even cases of misuse of the newly established rights against indigenous groups (Whittemore 2011; Guiam & Livermore 2021; Richardson & Bustos 2023). Therefore, it is key to strengthening the rights and the protection and safety of affected communities, their (legal) representatives as well as activists advocating on their behalf in general, given that many environmental activists face intimidation and repression (Guim & Livermore 2021; Business & Human Rights Resource Centre 2021; Agrawal et.al. 2023). In turn, strengthening judicial systems such as ensuring reliable enforcement of environmental laws can also make an important contribution.

Nature rights should also be accompanied by policies for ethical and sustainable resource extraction practices and strong environmental protection laws in general. For example, policies should promote circular economy approaches that minimize reliance new resource extraction. An example of this adoption of ethical and sustainable resource extraction practices is the European steel industry's shift towards a circular economy. By increasing the use of electric arc furnaces, which produce steel from scrap metal, the industry reduces reliance on virgin iron ore extraction. This transition not only decreases CO_2 emissions but also minimizes environmental degradation associated with traditional mining. However, this approach necessitates a significant restructuring of supply networks to manage scrap metal as a strategic resource, highlighting the importance of developing efficient recycling infrastructures and policies that support sustainable material use (Klimek et al. 2024).

To strengthen nature's rights and the legal dimensions of environmental justice in energy transitions, a feminist foreign policy should:

- **Recognize and document interlinkages between nature's rights and other types of rights,** namely human rights and environmental justice (UNDP 2022). This foundational recognition ensures that advocacy for nature's rights is aligned with broader social justice and equity goals.

- **Support the establishment, expansion, and enforcement of nature's rights,** for example by strengthening the capacities of key actors, such as legal scholars, and practitioners advocating for the legal recognition of these rights as well as affected communities, activists working on their behalf, in claiming and upholding these rights (in cases where such rights have been infringed or in order to ensure they are abided by). This includes fostering dialogues in which marginalized voices are adequately represented and advancing efforts to institutionalize nature's rights.

- **Empower affected communities to claim nature's rights** by actively supporting affected communities by improving their access to legal systems. This involves ensuring they have the necessary resources, knowledge, and legal aid to claim and defend their rights when infringements occur.

- **Ensure protection for defenders of rights** to ensure the protection of individuals and groups who claim and defend rights-both the rights of nature and the rights of affected communities. This protection is vital to safeguard activists and communities from harm or retaliation.

- **Strengthen judicial institutions in relevant areas** by bolstering judicial institutions tasked with protecting and enforcing rights, both in environmental justice and other relevant areas. Strengthening these institutions ensures that rights are not only recognized but also effectively enforced.

Reparative and restorative justice in energy transition

Intersectional feminist approaches to energy justice suggest that just transitions should explicitly redress negative social or ecological impacts of the energy system through policies that include measure for reparative justice. Reparative justice can be applied both retroactively and proactively. This means that such an approach should not only compensate for past harms but can also lay the foundation for equitable energy systems through inclusive governance, equitable resource distribution, and participatory decision-making. Interviewees highlighted the importance of this framework as a means to (re)build trust. They emphasized that transparent, inclusive policy processes and visible reparative actions are essential to restoring confidence among affected communities. Furthermore, they noted that integrating reparative justice into the transition creates a foundation for long-term collaboration and resilience by ensuring that past harms are acknowledged and addressed.

On the one hand such policies based on reparative justice aim to repair the damage caused by fossil fuel extraction, mining, and energy infrastructure projects-especially to marginalized communities such as Indigenous peoples, rural populations, and women. Reparations go beyond financial compensation to include land restitution, energy access, and support for local clean energy initiatives led by affected communities. Restorative justice provides a framework to operationalize these goals within the energy sector, addressing harm caused by energy systems, including environmental damage, displacement, and socio-economic inequities. Retroactive applications ensure accountability through reparative measures like ecological restoration, financial

compensation, and land restitution (Hazrati & Heffron 2021). For example, the Community Environmental Justice Forums in British Columbia serve as an enforcement tool applying restorative justice principles to address environmental law violations. In one case, a company responsible for mercury discharge into the Columbia River was required to provide monetary restitution for environmental activities, conduct internal reviews, and issue a public apology (Wijdekop 2019).

This includes acknowledging and addressing historical injustices like the historical exploitation of energy resources, particularly in colonial contexts, and advancing reparative and restorative policies that aim to address past harms. This exploitation often resulted in land dispossession, environmental degradation, and socio-economic harm to Indigenous peoples, rural populations, and women. A feminist foreign policy should include measures for reparative and restorative justice to redress these historical injustices as an integral element, focusing on global solidarities to confront the ecological debt owed to marginalized communities by wealthier nations (Bell, Daggett, & Labuski 2020). While restorative justice focuses on repairing relationships and fostering reconciliation through dialogue, reparative justice emphasizes compensating for harm and addressing systemic or historical injustices through material or structural compensation (European Environment Agency 2024).

On the other hand, reparative justice can be applied proactively. Proactive mechanisms prevent harm by mandating safeguards, such as impact assessments, and financial reserves for potential reparations. Such measures, combined with global solidarities and feminist energy frameworks, highlight the transformative potential of reparative and restorative policies in addressing historical exploitation while fostering sustainable and inclusive energy transitions. Furthermore, these policies empower communities to actively participate in clean energy transitions and sustainable development, ensuring a just and equitable future.

To address historical injustices and ensure equity in energy transitions, a feminist foreign policy should:

- **Acknowledge and document historical exploitation.** This implies in a first step advocating for formal acknowledgments of the historical exploitation of energy resources, including public apologies and ecological debt commitments from wealthier nations or national governments. It also means to ensure that these acknowledgments are incorporated into multilateral agreements.
- **Implement reparative justice measures** by supporting programs that provide reparations to communities most affected by past energy projects, including land restitution, energy access, and funding for clean energy initiatives led by Indigenous peoples, rural populations, and women. This includes promoting such initiatives in international development programs and funding mechanisms.
- **Adopt proactive restorative justice mechanisms as standard requirements in all international energy agreements and projects.** In doing so, it is key to ensure that these mechanisms include specific provisions for preventing harm and securing financial resources to address damage when it occurs.
- **Strengthen enforcement tools for restorative justice**. This includes encouraging the adoption of restorative justice enforcement mechanisms in international energy policy. Another key approach is to highlight successful case studies to demonstrate how these tools can hold energy actors accountable while fostering trust and reconciliation.

4.4 Voices of transformation: Ensuring inclusive representation in energy governance

The status quo analysis reveals significant underrepresentation in economic participation and leadership (section 3.3.1), in political planning and decision-making (section 3.3.2), and in the representation of nature (section 3.3.3). Transforming the energy system requires strengthening decision-making and leadership capacities and redefining prevailing narratives. The forthcoming approaches are specifically designed to address these representation gaps, ensuring that marginalized groups gain meaningful access and influence. By tackling these dimensions, representation becomes a powerful tool for challenging entrenched assumptions and advancing more equitable, inclusive energy transitions.

Strengthen inclusive decision-making and leadership

Social dialogue between governments, private-sector actors, and trade unions, as advocated by IRENA (2023), is critical to shaping just and inclusive energy and climate policies. By creating mechanisms for equitable participation, FFPs can help dismantle the structural inequalities that have historically marginalized women and other underrepresented groups in the energy system.

Inclusive decision-making is a key approach for overcoming entrenched inequalities in the energy system by ensuring the meaningful participation of girls, women, and marginalized groups in shaping energy policies and governance structures. It **goes beyond quotas or token representation** to create mechanisms and platforms where these groups hold real influence over decisions that directly impact their lives and communities. A FFP should champion this approach, ensuring that their voices, needs, and priorities are central to energy-related decisions**.** Inclusive decision-making fosters energy systems that are equitable, sustainable, and responsive to the needs of all, particularly those most affected by the energy transition. Globally, energy policy often reflects the priorities of decision-makers, who are overwhelmingly men, limiting the scope for policies to address the needs of women and marginalized groups (Cannon & Chu 2021). Frameworks like the Community Renewable Energy Ecologies Model, defined as community economies involved in small and medium scale renewable energy production and consumption, emphasize collective ethical decision-making, the commonification of resources, and participatory, localized governance while highlighting human-nature interdependence (Siamanta 2024). Similarly, principles like FPIC ensure that IPLCs can influence decisions affecting their land and resources, embedding justice into governance structures.

Ensuring meaningful participation in energy governance requires more than filling quotas or achieving gender parity. While such measures are an important first step, true inclusiveness demands that marginalized groups have real power to influence outcomes and hold decision-making processes accountable. Mechanisms like weighted voting systems, which give greater influence to those most affected by energy projects, can help achieve this. **Barriers to participation e.g. for CSOs and grassroots movements must also be addressed to enable these groups to engage meaningfully in policy-making processes**. For, visibility and advocacy play an equally vital role in fostering inclusivity in the energy system. CSOs and grassroots movements, particularly in the Global South, are key actors in promoting energy justice and ensuring that marginalized voices are heard. However, these organizations often face significant barriers, including inadequate funding and limited access to policy-making platforms. Addressing these challenges requires targeted institutional support to enable these groups to advocate effectively.

Representation must also account for intersectional barriers that further marginalize certain groups to better address the diverse needs and experiences of marginalized groups while fostering inclusive and equitable governance. For example, networks like the Women in Green Hydrogen Network provide a valuable model for showcasing contributions from women in the energy sector, fostering mentorship, and building collaboration. **Capacity-building is essential in this regard, not only to equip marginalized groups with the tools and knowledge to navigate complex policy environments, but also to prepare them for confident participation and effective argumentation.** This empowers them to advocate for their priorities and assert their rights in decision-making spaces, ensuring their voices are heard and respected.

Linked to this, gender-equitable leadership is a critical component of inclusive decision-making and accountability. Increasing the representation of women and marginalized groups in leadership roles across energy ministries, regulatory bodies, companies, labor unions and other interest groups strengthens the effectiveness of energy governance. Women and indigenous communities often bring unique perspectives informed by local and traditional knowledge, energy access challenges, and sustainable practices. However, women are frequently overlooked in energy decision-making, and their interests are often inadequately represented, even within unions which are often dominated by men (Lahiri-Dutt 2023).

In particular, women and play a crucial role in advancing equitable, innovative and sustainable solutions within the energy transition and broader climate action. Research shows that women are more likely to advocate for policies that address social disparities in energy access while fostering socio-economic well-being. Female leaders, in particular, tend to prioritize long-term sustainability and community-based energy initiatives, driving behavioral change against the entrenched dominance of fossil fuel industries and advancing a green energy agenda. Empirical evidence supports this, as Mavisakalyan and Tarverdi (2019) found that greater female representation in national parliaments leads to more stringent climate policies, ultimately resulting in lower carbon dioxide emissions. Additionally, when women are involved in decision-making, natural resources are managed more sustainably, and climate policies tend to be more effective (Women Deliver 2019). Their participation extends beyond policymaking to community resilience and disaster recovery, where they often act as first responders, leaders in disaster risk reduction, and key contributors to post-disaster recovery efforts. In fact, the UNFCCC (2023) highlights that communities are more successful in resilience and capacity-building strategies when women are actively engaged in planning and response efforts. By integrating women into all levels of climate and energy decision-making, we can ensure a just transition that benefits all while building stronger, more resilient communities equipped to face the challenges of climate change.

To address this gap, a feminist foreign policy should advocate not just for gender quotas and diversity requirements in leadership but should also support mentorship and capacity-building programs that prepare women for influential roles in energy governance. Lastly, policies that incentivize the private sector to diversify its leadership structures are also crucial for creating a more inclusive energy sector.

More inclusive decision-making does not only concern ensuring participation but also refers to ensuring that both the process of decision-making and its results and outcomes lived up to high standards of accountability and transparency. Transparency requires that procedures are clear, information is easily accessible, and all stakeholders, particularly marginalized groups, are provided with timely and accurate data about decisions and their potential impacts.

Accountability mechanisms are equally important, ensuring that decision-makers are held responsible for their actions and the outcomes of their decisions, including mechanisms to address grievances or unintended consequences. Processes must also ensure that the input of marginalized groups is meaningfully integrated into outcomes.

To address entrenched inequalities and strengthen inclusive decision-making and leadership as well as accountability in the energy system, a feminist foreign policy should:

- **Support the institutionalization of meaningful participation of marginalized communities in policy-making processes**. Decision-making platforms should ensure that these communities can express their priorities and influence outcomes in ways that genuinely reflect their lived experiences. An example here is weighted voting systems to amplify marginalized voices. Weighted voting in consultations ensures that affected communities have significant influence in energy governance, particularly for decisions that directly impact their land, resources, and livelihoods. This approach recognizes the disproportionate impact of energy transitions on vulnerable populations and provides them with greater agency.

- **Promote the incorporation of the FPIC principle into national and international energy policies** to ensure that Indigenous communities and local populations in particular have the right to participate in decisions affecting their land, resources, and ways of life.

- **Promote gender-transformative energy planning processes.** Advocate for and fund capacity-building initiatives, such as training programs for government officials and stakeholders on incorporating gender perspectives into energy strategies. Push for the adoption of international standards that require national energy strategies and climate goals to integrate gender-sensitive approaches. Amplify and support initiatives like the Multi-Stakeholder Gender and Energy Compact by encouraging further signatories and commitments.

- **Strengthen access to decision-making platforms for marginalized groups**. Promote the creation of inclusive platforms by funding community energy councils and supporting grassroots organizations advocating equal participation. Encourage multilateral organizations to prioritize marginalized voices in energy dialogues and offer technical and financial support to make these platforms accessible.

Specifically on enhancing visibility, representation, and accountability a feminist foreign policy should:

- **Foster the establishment of accountability mechanisms in the energy system**. Advocate for international standards requiring energy projects and governance structures to establish mechanisms like independent monitoring bodies and gender audits. Fund the development of tools to measure the quality of participation and press for transparency in how marginalized groups' contributions are reflected in decisions, ensuring their participation is meaningful and not tokenistic.

- **Support locally-led energy initiatives.** Communities should have the resources, knowledge, and legal support to design and implement energy projects that reflect their specific needs. This includes supporting community-based renewable energy projects and local energy cooperatives, particularly those led by women and other underrepresented groups, to empower local decision-making.

- **Promote equitable representation of Global South nations in international energy policy forums,** in order to ensure that voices from climate-vulnerable regions are prioritized in global discussions on energy transitions. This includes both advocate for the inclusion of Global South

nations and provide institutional support to grassroots movements and advocacy groups in these regions.

- **Promote the development of international expert databases and networks that highlight and amplify the contributions of women in the energy sector** in order to provide valuable resources for aspiring leaders, foster collaboration, and offer opportunities for mentorship and professional connections.

- **Strengthen data collection mechanisms to track progress in achieving gender parity and inclusive representation in energy governance.** Transparent reporting frameworks should be established or enhanced to ensure decision-making processes are inclusive and that the voices and contributions of marginalized groups are reflected in policy outcomes.

Redefining narratives and roles: Gender, masculinities, and our relationship with nature

In order to overcome entrenched power structures in the energy system, it is also critical for a feminist foreign policy to address the narratives that shape the actions and perceptions of public institutions, private actors, and society at large within this sector. Narratives influence convictions about what is valued and why-such as certain types of labor or aspects of nature-and determine who holds which roles, responsibilities, and rights in the energy sector.

Interview stakeholders from civil society emphasized that transforming gender- and nature-related narratives is a crucial step in dismantling the fossil fuel-based energy system and ensuring a just, equitable transition to renewable energy. They reiterated that the fossil fuel system not only drives environmental degradation but also reinforces systemic inequalities by systematically excluding women and marginalized groups from decision-making and economic opportunities. Further, without addressing these entrenched narratives, the renewable energy transition risks reproducing similar inequities limiting women's access to leadership roles, opportunities in the renewable energy workforce, and meaningful participation in shaping the future energy system.

Given the energy system's often negative impact on the environment and biodiversity, it is also important to transform existing narratives about nature and humanity's relationship with it, shifting away from exploitative and hierarchical representations toward an ethic of care and interdependence. For, such narratives influence deeply how the environment is valued and why-whether as a mere resource for human exploitation or as something with intrinsic worth-and which parts of it deserve protection. The concept of "ecosystem services" or the newer concept of "nature's contributions to people" illustrate the operationalization of these narratives in policy frameworks (Pascual et al. 2017; UNEP/ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services 2014). **These narratives are equally shaped by societal norms, including those related to gender.** Research indicates that, in many societies, masculinity is linked to an instrumental relationship with nature, where control and exploitation are emphasized, while environmental care is framed as feminine and undervalued. Transforming such attitudes is particularly relevant in the context of climate change denial and resistance to environmental protection, where opposition to ecological action often intersects with anti-feminist stances promoting traditional gender roles (Barla & Bjork-James 2021; Kaul & Buchanan 2023; Plumwood 1993).

Feminist civil society actors and academics emphasized that transforming dominant narratives in the energy sector requires challenging harmful gender norms and roles that continue to marginalize women and reinforce unequal power structures. They noted that these

social norms not only determine whether women and marginalized groups are seen as suitable for energy-related work but also influence how their contributions are valued and whether their voices are heard in decision-making processes. For example, although women often manage household energy provision and shape spending decisions, their work remains largely invisible and underappreciated. Addressing these gender norms, they argued, is critical to enabling women's meaningful participation in governance and overcoming structural constraints, thereby ensuring that the renewable energy transition serves as a catalyst for broader social and ecological justice.

Addressing such norms also requires confronting the roles and attributes that shape masculinities, including how men are expected to act in specific settings. Given the central role that men have in the energy system, it is essential to also transform the masculinities that influence the dynamics of energy governance and labor markets in the transition to a more equitable system (Connell 2005; UN Women 2014).

Linked to this, engaging men as allies is crucial for creating a just energy transition. While men's roles as change agents for gender equality have been highlighted since the Beijing World Conference on Women, their potential as advocates for equity in energy systems has received less attention. Yet, the literature on just transitions makes clear that men can and must play an active role in dismantling harmful norms and fostering inclusive systems (ILO 2022). Without their engagement, transformative change will remain incomplete.

Linked to nature- and gender-related narratives, another important set of narratives concerns those that frame energy transitions (merely) as technical or economic challenges, sidelining ethical, ecological, and relational considerations (Siamanta 2024). Such narratives marginalize alternative frameworks rooted in care, reciprocity, and participatory governance, emphasizing the importance of creating inclusive and equitable energy systems – as promoted by feminist and justice-oriented approaches (Siamanta 2021).

However, promoting the adoption of alternative narratives requires actively addressing systemic barriers, such as institutional inertia, inadequate funding, and the limited representation of marginalized voices. Establishing clear definitions for gender equity outcomes within just transition frameworks is therefore crucial to ensure measurable progress and accountability (Ngum and Kim 2023). Without robust metrics, women's contributions to the energy sector remain invisible, and the ecological costs of energy production are obscured. Tackling these barriers also involves implementing gender-sensitive measures that align with broader social and environmental goals, ensuring the voices of marginalized groups are central to decision-making and governance. Relational practices provide a critical lens for rethinking energy systems, prioritizing interactions among humans and between humans and nature based on mutual support and interdependence rather than exploitation. By embedding care, community, and inclusivity into governance and decision-making, relational practices offer a pathway to build energy systems that are not only just and sustainable but also equitable and responsive to the diverse needs of all stakeholders.

To address entrenched inequalities and strengthen inclusive decision-making and leadership in the energy system, a feminist foreign policy should:

- **Promote public awareness campaigns to challenge harmful gender stereotypes in the energy sector**. These campaigns should aim to dismantle long-standing biases that perpetuate inequality in energy-related work and decision-making. By highlighting the

contributions of women and marginalized groups, they can foster a more inclusive energy system and encourage equitable representation in governance and leadership roles.

- **Support the development of education programs and policies that normalize equitable roles in energy-related work and governance.** Such programs should address structural barriers that limit participation by women and marginalized groups, providing them with the knowledge, resources, and confidence needed to contribute meaningfully to energy governance and technical roles.

- **Engage men and boys as active allies in creating gender-equal energy systems.** Men and boys must play an active role in fostering inclusivity and dismantling patriarchal norms. By understanding their roles as allies, they can advocate for equity in decision-making processes and help shift workplace and societal cultures toward gender equality.

- **Advocate for policies that recognize nature's intrinsic value and prioritize relational approaches to environmental care.** Policies should shift away from exploitative and commodified views of nature to recognize its intrinsic worth. Such relational approaches emphasize care, reciprocity, and sustainability in the management and governance of natural resources.

- **Support research on frameworks based on a more relational, reciprocal understanding of nature like "nature's contributions to people" and their integration into policy documents to interlink ecological justice with energy governance.** By operationalizing these frameworks, energy systems can embed principles of ecological and social justice, ensuring that environmental care and community well-being are prioritized in policy and practice.

- **Allocate funding to initiatives that center care, reciprocity, and participatory governance in energy systems and its relation to nature**. Adequate financial resources must support programs and initiatives that challenge exploitative hierarchies and foster equity-driven, participatory governance frameworks.

- **Create platforms for underrepresented groups to influence how gender and nature are portrayed in energy governance.** These platforms should empower marginalized groups to shape the narratives surrounding energy systems, ensuring their lived experiences and perspectives are represented in decision-making and public discourse.

4.5 Mind the process: What is important for implementing a feminist foreign policy in the energy system

In pursuing the approaches laid out above there are a number of considerations relevant on a procedural level of how they are implemented.

- **Implementing a feminist foreign policy in the energy system requires a holistic approach that aligns the three pillars of Rights, Resources, and Representation.** These dimensions are deeply interconnected, and policies must create synergies between them to drive transformative change. Addressing only one pillar in isolation risks leaving core inequalities intact, as structural, procedural, and normative changes in the energy system are highly interdependent.

- **A feminist foreign policy must recognize intersecting inequalities and ensure tailored solutions for diverse socio-economic and environmental contexts.** As outlined in the Paris Agreement, provisions for a just transition must be integrated into climate, energy, socio-

economic, and industrial policies to prevent the shift to renewable energy from reinforcing or exacerbating existing disparities (UNFCCC 2016). Achieving this requires policies that align representation, resources, and rights to empower women, Indigenous communities, and other marginalized groups in shaping energy transitions (Cannon & Chu 2021).

- **To operationalize these commitments, feminist foreign policies must integrate energy policy with climate and environmental justice principles** (McCauley & Heffron 2018). This includes developing regulatory frameworks that incentivize investment in renewable energy while penalizing environmentally harmful practices. Embedding feminist and intersectional principles in these policies ensures that energy transitions are not only sustainable but also just and equitable, prioritizing the needs of those most affected by climate change and environmental degradation.

- **Linked to this, in harnessing a feminist foreign policy to advance a just transition of the energy system, it should be ensured that there is sufficient policy coherence between relevant domains such as (feminist) foreign policy, external energy policy and development policy.** This refers to both the strategic policy-level as well as the operational level of specific measures implementing the respective policy agendas. As the present study has shown, the complexity of entrenched power structures and inequalities in the energy system means that isolated approaches implemented with a narrow focus is a risk to perpetuate them, such as when renewable energy projects do not consider effects on local communities or biodiversity.

- **A feminist foreign policy** should not only be used to achieve inclusive decision-making and meaningful representation of girls, women and marginalized groups in the energy sector, but **should in its implementation itself foresee inclusive mechanisms of representation, consultation**. This refers **on a more strategic level** to including e.g. civil society actors representing the interests of girls, women and marginalized groups in e.g. the elaboration of action plans defining concrete targets for implementing feminist approaches in the energy system as well as in the ongoing monitoring of their implementation. This entails regular and meaningful exchanges about the relevance of the prioritized approaches and key learnings as to challenges encountered and the most promising approaches to address them. **On a more operational level**, this means that in the process of choosing and designing concrete measures to put approaches of a feminist foreign policy to work in the energy system the voices, needs and preferences of the girls, women and marginalized groups affected should be included as far as possible.

5) Conclusion

The present study shows that energy systems are marked by profoundly entrenched power structures and inequalities that put girls, women and marginalized groups at a disadvantage. These structures that can therefore be described as "patriarchal". While these groups disproportionately carry the burden of energy systems' negative – notably social and ecological – impacts, they also do not get an equal share in the benefits from it.

Not only are they affected by **energy poverty** due to a lack of access to clean and affordable energy, they are also underrepresented in the workforce in the energy sector. Where they are part of the workforce, they are more vulnerable than other groups to **poor working conditions and labor exploitation**, with migrant workers being at a particular risk. **Environmental harm** due to energy projects causes **negative health impacts** as well as **economic displacement** and **cultural marginalization** which especially affects them. Indigenous communities in particular often face **land dispossession** in the context of energy projects as well as outright **physical violence**, notably when contesting such projects. At the same time, such groups have **limited control over energy resources**, linked to existing ownership structures that for example do not include local communities close to energy projects in their sharing of benefits.

These issues are both enabled and compounded by a number of factors. **Weak regulatory frameworks, lacking law enforcement** and **deficient accountability mechanisms** render preventing and redressing harm difficult. Moreover, girls, women and marginalized groups are **underrepresented in positions of energy-related leadership and decision-making processes** which hinders them driving change. Last but not least, **hierarchical and instrumentalist narratives about gender roles and nature** underly and enable extractivist economic frameworks and related economic metrics – narratives which disregard women's needs and rights and treat natural resources and labor, including women's care work, as resources to be exploited.

Crucially, these structures and inequalities intersect, which means that **groups are often affected by several of these issues, and it is notably groups that are already at a disadvantage who are most affected**. While for example Indigenous communities relying heavily on natural resources are particularly affected by environmental harm, women or the elderly among them can be doubly affected due to care responsibilities or pre-existing health conditions. In turn, these very groups are often already in precarious economic conditions, marked by cultural marginalization or lack of political influence and representation, which curtails their ability to improve their situation and to contest the entrenched power structures that have led to it.

These entrenched power structures are particularly wicked in the context of fossil energy systems, which have reinforced these structures just as they have contributed to the stickiness of the fossil fuel system. A prime example, as the concept of "petro-masculinity" shows, is how the fossil energy sector has contributed to forms of masculinity that in turn favor the persistence of the fossil fuel system. While fossil fuel-intense lifestyles are championed and tied to ideals of masculinity and strength, e.g. in the case of the marketing of SUVs, environmental concerns have been framed as "weak" or "unmasculine". Moreover, the fossil energy sector has led to an unequal distribution of benefits which has reinforced structures of decision-making power, participation and ownership that exclude girls, women and marginalized groups – which in turn limits their ability in pushing for a just transition away from fossil energies.

However, **renewable energy projects do not automatically lead to more gender equality or to overcoming other social inequalities,** because technological solutions alone do not resolve structural issues rooted in societal and cultural norms. **On the contrary, there is a high risk that the transition to renewable energies perpetuates these structures, and often, this is already the case**. For example, regarding the fact that the **professional underrepresentation** of women and marginalized groups in the energy sector, notably in high-tech, well-paid and leadership positions, and **unfair remuneration** are continued. Moreover, renewable energies risk leading to new forms of **exploitative and hazardous working conditions** – as is already the case in mining for minerals needed for renewable energy technology. Large-scale renewable energy projects also risk – and in several cases are already – causing **environmental harm and destruction of biodiversity**, which especially concerns indigenous communities living close to such projects. Last but not least, if unaddressed, **unequal grid access and electrification as well as low affordability** of energy pose the risk that girls, women and marginalized groups will not equally benefit from renewable energies and that existing cycles of poverty and disempowerment will be perpetuated.

This shows the need for dedicated approaches that can capture and address the multidimensionality and interlinkages of these entrenched power structures to ensure that the transition to renewable energy systems is a just transition. In turn, the study has pointed out that this multi-dimensionality of challenges also offers a high potential for positive change. Ensuring a just energy transition can create many positive knock-on effects, for example on girls' education or women's health and economic empowerment and can thereby have positive effects beyond the energy sector for society and the economy more generally. More gender equality and diversity in the energy sector's leadership can also lead to more effective, innovative and sustainable energy solutions. **Feminist approaches are especially useful in addressing both the challenges and in leveraging the potentials** examined**,** given their focus on the intersectionality of these structures and the inequalities they lead to.

Against this background the study shows **how Feminist Foreign Policies in particular can and should play a role** in overcoming entrenched power structures in the energy sector. Notably, with countries in the Global North relying on energy imports in the context of decarbonizing their economies, as in the case of international hydrogen partnerships, this has **heightened the role that foreign policy and foreign energy policy can and should play in the transition to renewable energies**. To ensure that foreign policy and foreign energy policy contribute this transition being a just one, Feminist Foreign Policies are a key tool. With their focus on girls', women's and marginalized groups' Rights, Resources and Representation, they **offer both a useful lens to identify needs for action as well as practical entry points for concrete measures**.

The study also makes a contribution to advancing the application of FFPs in the energy sector. For, where FFPs have addressed energy issues so far, it has mostly been regarding improving women's and marginalized groups' access to energy and their participation in the workforce of the energy sector. **On a substantial level**, an FFP should therefore also advocate for community-involvement in energy ownership, fair labor conditions – including the recognition of care work – as well as solid (access to) rights concerning environmental justice, accountability, and natures rights. At the same time, it should work towards redefining harmful narratives about nature and gender roles as well as advancing inclusive decision-making and leadership in the energy sector. In doing so, **on a procedural level**, the Three Rs need to be pursued in a holistic way, by ensuring policy coherence between relevant domains such as (feminist) foreign policy, foreign energy policy and development policy as well as by inclusive mechanisms of representation and consultation in its implementation. Moreover, an intersectional approach is crucial, as barriers to resource access and

the equitable distribution of benefits across the energy value chain can vary significantly based on race, ethnicity, geography, and socio-economic status.

At the same time, there is a **need to continue discussing and clearly demonstrating the relevance of Feminist Foreign Policies and their high potential to effectively contribute to positive change** in the sense of a just transition. On a global level, this is manifest in the current global anti-gender backlash that threatens girls' and women's empowerment, and which strongly intersects with climate change denial, a return to fossil fuel energies and a resistance to ecological action. It is also evident on the level of policy-making, given that some countries such as Sweden have annulled their FPPs after government changes. On the one hand, this requires showing that feminist approaches can benefit all, e.g. that they do not just benefit girls and women but can also improve the lives of men. On the other hand, it means continuing to provide a clear picture of the existing challenges that such approaches seek to address.

While the future of Feminist Foreign Policies may not be certain, that of the material and existential challenges posed by the unfolding climate crisis as well as of the persistent energy-related inequalities concerning peoples' quality of life, well-being and empowerment most certainly is. This shows that the need for policy frameworks and transformative approaches that can provide better lives for all and ensure a just transition exists regardless of labels such as "feminist". Tackling entrenched power structures and inequalities in the energy sector is paramount in this, not least because given energy systems' role in shaping societies and economies, transforming the energy sector can also have broader positive impacts for society at large.

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