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Breaking the Dichotomies: Climate, Coal, and Gender. Paving the Way to a Just Transition. The Example of Colombia

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Abstract: Despite recognizing that climate change and its impacts are not gender-neutral, only few studies address the arising complexities. While in some climate-relevant sectors, such as the transport sector, there already is some initial research on the relationship between climate and gender, research on the climate–gender nexus in the coal sector is still underdeveloped, and the few existing studies focus on dichotomous relations (gender–coal and coal–climate). This article discusses the currently neglected climate, coal, and gender triad and develops a conceptualization along the following aspects: (i) common lines of arguments, (ii) shortcomings in predominant arguments, and (iii) the state-of-the-art regarding the climate–gender–coal triad. To illustrate this outline, it uses the empirical case of the Colombian coal sector. Based on original data obtained via semi-structured interviews, it analyzes how imminent national-level climate policies for the coal sector, i.e., an energy transition, can be made gender-responsive and thus contribute to a just transition. The empirical example shows that women are already important change agents at the local level and in informal decision-making spaces. Although more research is needed to obtain further insights and evidence, this article contributes to the findings of more recent research which allow for the assumption that addressing climate and gender simultaneously may be mutually beneficial for both policy objectives.

Keywords: climate policy; gender; energy transition; coal sector; Colombia; intersectionality



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1. Introduction

1.1. The Need to Examine the Climate, Coal, and Gender Triad

Climate change and its impacts are not gender neutral [1], as non-climatic factors such as multidimensional inequalities based on gender, class, ethnicity, age, and disability determine, to a certain extent, vulnerability to climate change [2]. Based on this, women are among the groups more vulnerable and disproportionately affected by climate change [1,3–6]. Climate policies which take this into account can be drivers for gender equality. Gender equality is therefore known as a potential “co-benefit” of climate policies [1,7–16].

Less known, however, is that gender equality can also be a tool for climate protection. This becomes evident in more recent research which has shown the importance of female participation for progressive and positive outcomes [17,18]; for example, female representation in national parliaments can lead to the adoption of more stringent climate policies, which then result in lower CO₂ emissions [17,19]. Moreover, gender quotas have been proven to make climate policy interventions to reduce greenhouse gas (GHG) emissions, such as forest conservation, not only more equal, but also more effective [20]. Thus, gender equality is most likely also an underestimated tool to strengthen climate protection.

In addition to these initial overarching findings, there is emerging sector-specific research: some advances have been made in certain sectors, such as transport, where there are already first insights into how the transformation of the sector towards greater climate-friendliness can also be made gender-responsive, i.e., that measures recognize gender inequalities and aim at overcoming them [21]. However, despite these important findings the climate–gender nexus is still under-researched and there is little knowledge

on the interdependencies. This becomes particularly evident in the example of the coal sector. Research to date has been limited to dichotomous approaches here, meaning that, while there is emerging research on the relationship between climate and gender as depicted above, on the linkages of coal and gender, as well as well-established research regarding climate and coal, most of these works are limited to dichotomous relations, thus leaving a gap approaching the interdependencies of the triad climate–coal–gender. This is a shortcoming since the coal sector is of particular relevance for climate protection, as well as for gender-equality efforts, as this paper shows (see also [22]).

This paper shows that this triad has been neglected so far and builds the argument that addressing climate and gender simultaneously in this sector can be beneficial for both policy objectives. It offers a conceptualization of the climate–coal–gender triad and illustrates it with the empirical example of the Colombian coal sector. The example focuses on the role of people who identify as women, coal mining, and the impacts of climate change and the resulting insights for the design of a just energy transition.

The empirical case is enhanced by original data from interviews which were conducted during a research project running from 2019 to 2020 [22]. It particularly provides insights into the question whether here, too, gender equality is an underestimated tool for climate protection. It points out important lessons for an imminent energy transition, i.e., a just transition, as one building block of climate protection efforts.

In light of the urgency of the climate crisis, these findings are relevant beyond the case of Colombia as many regions worldwide face the need for immediate and effective climate policies including the transition to a coal phase-out. However, while the fact that the impacts of the climate crisis are not gender-neutral is mostly uncontested nowadays and despite apparent consensus on the international level, there is still very little knowledge and few examples on how to integrate a gender perspective into climate policy on national levels (see Reference [23]). This paper intervenes primarily in the literature at the intersection of energy economics and climate policy. It builds upon findings in the field of energy economics which have developed the importance of the coal sector for climate protection and identified socioeconomic aspects. It expands these approaches with the help of insights from the fields of political science, gender studies, and anthropology and an intersectional perspective.

This article is structured as follows: In order to facilitate the understanding of the empirical example, the following section, Section 1.2, gives a brief overview of the Colombian coal sector and its imminent energy transition. Section 2 elaborates the methodology. Section 3 turns to the results of the climate, gender, and coal triad in Colombia. Section 4 presents a discussion which is followed by the conclusion in Section 5.

1.2. Overview of the Colombian Coal Sector and Its Imminent Energy Transition

The choice to illustrate the triad with the example of the Colombian coal sector is based on the relevance of the country's coal sector for international climate targets, as well as on a window of opportunity:

Up till now, 97% of Colombian coal is exported, making the country the fourth largest exporter of hard coal in the world and accounting for 1 to 2% of the Colombian GDP [24]. International mitigation efforts, especially in the context of the Paris Agreements, focus on a coal phase-out, and an impending energy transition in the main buyer countries (i.e., Germany, the Netherlands, and the USA) are causing the Colombian sales markets to collapse [24,25]. The imminent energy transition bears the potential to address climate protection and gender equality.

At the international level, Colombia ratified the Paris Agreement in 2017. The country's intended Nationally Determined Contributions (iNDC) include ambitious pledges on mitigation: One scenario foresees a 20% reduction of emissions by 2030 covering all emissions sectors (compared to a business-as-usual scenario (BAU)). A second scenario, conditional to international support, foresees emissions reductions of 30% below BAU [26].

The country's energy sector is the sector with the second highest emissions. This sector, which in the country is also known as a "locomotive of growth" [27,28] due to its dominant role in economic development strategies, shows the contradictions between climate ambitions and models of growth/development based on fossil fuels. These contradictions become visible when looking at the country's energy system and the resource coal.

Colombia possesses considerable resources of hard coal, mostly in the northern regions of La Guajira and Cesar, where 90% of the Colombian coal is extracted [29] (p. 7). These are remote regions characterized by ethnic diversity and high levels of poverty. In these regions, the coal industry makes up 47% (La Guajira) and 38% (Cesar) of the regional GDP. Nonetheless, little of the economic value produced stays in the country or benefits the communities near the coal mines. For instance, the mining sector only generates around 2% of the jobs in La Guajira and Cesar [30], and in 2018, the major mining company Cerrejón, which operated in La Guajira, invested only 0.32% of its produced economic value in mining affected communities [30,31]. Moreover, socioeconomic and environmental effects have been shown to negatively affect the territories close to coal mines [30,32–36].

In addition to the coal resources, the two regions are characterized by adequate conditions for the expansion of renewable energies, thus being potential sites for the expansion of wind and solar energy. In La Guajira, renewable energy projects, such as wind turbines [35], are an example of existing nationwide efforts to increase the production of green energy, some of which are implemented in lands traditionally owned by Indigenous communities.

The depicted changes in the coal market coincide with imminent changes in the Colombian electricity system. While Colombia's greenhouse gas emissions per capita are still relatively low, because of low energy consumption and a predominant use of hydropower in its energy matrix (78–80 percent), [37] this is expected to change in the near future. Expected rapid economic growth and the facts that energy demand has already been growing faster than energy supply, as well as the increasing fluctuation of hydropower due to the impacts of the climate crisis, are likely to increase Colombia's GHG emissions [24], [38] (p. 575), [39,40]. Although this vulnerability of the energy system has led to discussions about burning more coal for consumption in Colombia [39] (p. 10), these considerations are at odds with international commitments made and in this context Colombia is now facing the questions of how to handle its coal resources in the future and what an energy transition would look like. The international priority to diminish coal extraction to reduce emissions, on one hand, and Colombia's national future energy needs, on the other hand are conflicting priorities that a climate policy in this sector will have to address. These questions are not only linked to techno-economic issues, such as securing the energy supply and absorbing the loss of jobs, but also have far-reaching socioeconomic consequences, in which gender aspects play an important yet under-researched role.

This momentum is augmented by developments on the international agenda: the acknowledgement of the role of gender aspects in the Paris Agreement, the subsequent agreement on the creation of a Gender Action Plan at COP23, and the strong role of gender in the 2030 Agenda for Sustainable Development have opened a window of opportunity for the creation of gender-responsive climate policies.

These findings indicate that an understanding of the interrelations of the coal–climate–gender triad is needed as a basis for climate policy for the coal sector and that such a policy potentially needs to integrate a gender perspective in order to avoid reproducing and potentially multiplying existing inequalities. With regards to the beneficial relationship between climate and gender, the question arises whether in this case, too, gender perspectives can make an important contribution to the climate policy regulation of this sector [27–29,32,36,41–50].

2. Concepts, Methods, Materials and Limitations

This article offers a conceptualization of the climate–coal–gender triad with an empirical illustration. The term gender refers to the socially and culturally constructed understandings of the attributes, norms, roles, and attitudes that are considered appropriate for

different people, e.g., men and women. This article follows a non-binary understanding of gender, meaning that gender constructions may refer not only to men and women but also to other constructions that might diverge from these two categories. The term climate policy refers to policies that combat the causes and impacts of the climate crisis, i.e., to adaptation and mitigation measures [51,52]. The integration of gender perspectives into policies is most commonly known as gender mainstreaming which can be implemented in different forms [53–56]. Since social categories such as gender, economic status, race, sexuality, and ability intersect, this research is based on an intersectional understanding. The concept of intersectionality allows to recognize and understand the dynamics that occur when gender identity and other social categories overlap [57,58].

The conceptualization is based on a concept-centric literature review (see [59]) and comprises about 100 documents including (peer-reviewed) research articles, policy documents (e.g., policies, laws, and regulations) and grey literature (national and international NGO publications, newspaper articles, etc.). The academic literature is based on bodies of literature from political science, economics, anthropology, and gender studies. The entire literature used was chosen based on relevance and availability and categorized according to disciplines and topics.

The conceptualization is illustrated with the empirical example of the Colombian coal sector. Here, the analysis focuses on the time between 2010 and 2018, thus covering the two Santos administrations. The analysis is informed by a document analysis and enhanced by 18 semi-structured expert interviews comprising 12 women and 6 men, from a total of 13 organizations and institutions, and eight informal interviews which were conducted without the use of the semi-structured guideline. The guideline for the semi-structured interviews was designed based on Reference [60]. In accordance with the conceptualization, it focused on three overarching thematic areas, namely knowledge and awareness of the triad, the role of women within this triad with a particular focus on their agency, and insights for the imminent energy transition. The insights from several informal interviews conducted during the development of the guideline also contributed to its creation. The guideline was tested in a trial run, in particular to make sure that abstract terms (e.g., “gender”) were used in ways understandable to the different groups of interviewees and at the same time in a consistent manner.

The interviews were conducted between April and June 2020. The interviewees were identified based on prior research, the informal interviews, relevance and willingness to participate while using a snowball sampling system. They represent a balanced set of relevant groups of state and non-state actors, i.e., government (national ministries and regional governmental bodies), universities and think tanks and civil society from Bogotá and the two mining regions Cesar and La Guajira. It is particularly noteworthy that the interviewees also included actors from local women grassroots organizations, thus benefitting from the insights of groups which are (due to security concerns) hard to access.

The interviews lasted between 45 and 90 min. They were transcribed using a specialized software, the transcripts were then proofread to ensure their correctness. The content-structuring analysis was based on References [61,62] and followed a deductive–inductive approach. The three thematic areas of the interview guideline were used as core categories. The refinement and creation of subcategories emerged from the material of the interviews. This iterative process was moreover supported by field notes taken during and right after the interviews which also helped to detect common themes and thus inductively form categories. While the transcription of the interviews was performed with a specialized software, the extraction was performed manually with coding tables in spreadsheets. The coding focused on units of meaning and aimed to assign all parts of a transcript that were relevant to the research interest to a category. Anchor examples were used to distinguish between similar categories. Furthermore, a communicative validation was carried out by discussing the categories several times within the working group and by later discussing preliminary results with two interviewees to cross-check the findings.

The choice of this methodological procedure is based on the aim to identify commonalities in order to recognize reoccurring themes, illuminate patterns and build thematic clusters; the focus was not on an analysis of the exact wording. Moreover, the flexibility of this method complemented the explorative character of this analysis well.

Due to the limited scope of this paper and the research it is based on, the field work focused on women and thus does not fully reflect the non-binary understanding of gender. Moreover, the field work focused on Afro-Colombian and Indigenous women. This limitation is based on prior research which identified them as particularly affected by the impacts of climate change in this field while simultaneously indicating research gaps [33,36,63–66].

3. Results: The Triad of Climate, Gender, and Coal

This section first presents the conceptual approach to the climate–gender nexus (Section 3.1). Section 3.2 elaborates the role and relevance of coal in this nexus and thus presents an approach to the triad. Section 3.3 illustrates the triad by presenting the results of interviews with relevant stakeholders (see Section 2). The interviews aimed to address the previously identified gaps and allowed to identify reoccurring aspects and topics regarding the gender–climate–coal nexus in Colombia.

3.1. Conceptualizing Climate and Gender

Research on the climate–gender nexus dates back to the 1980s when first approaches in research emerged which connected gender perspectives to environmental aspects. These approaches were then expanded towards climate change and have continuously increased since the mid-2000s. Arguments supporting the need to integrate gender perspectives into climate policies commonly stress the following aspects.

Common Lines of Arguments

Many approaches to the gender–climate nexus refer to the **higher vulnerability** of women. This argument, as depicted in the introduction of this paper, refers to the fact that women are disproportionately affected by the climate crisis and its impacts. Well-known examples include the fact that women are more likely to die from natural disasters and that rural women need to walk longer distances to collect water and household energy [1,3–6,10]. However, this higher vulnerability is not explained by biological differences between the sexes, i.e., it is not innate, but originates from several interconnected factors and the interactions among these. Examples of these factors are gendered roles in care work, e.g., extra care work women have to perform in comparison to men. Another factor is women’s marginalization in terms of access to various economic, social, and political assets (e.g., their limited ability to access financial and technological resources and participation in decision-making). These disadvantageous factors intersect with other forms of inequality and are deepened by the climate crisis [4,9,11–13,16,67].

Another rather well-known line of argumentation refers to the fact that women possess essential knowledge, i.e., **expertise**, which must be incorporated into climate measures for them to be successful [3,67]. The strand of literature referring to this expertise argument contends that as one of the groups most affected by climate change, women, especially in Indigenous and local communities, have traditional knowledge for necessary adaptation measures. Therefore, a gender perspective could help to combat or prevent the effects of climatic disasters more effectively by incorporating approaches of the most vulnerable [9,18,68].

Further strands of research stress the relationship between sustainable development and climate change, contending from a **value-oriented** and normative line of argument that climate protection measures need to be gender-inclusive in order to be just [1,69] and that actions to combat the climate crisis must simultaneously contribute to **sustainable development** and thus also to gender equality [3–5,23]. The latter line of argumentation has been amplified by the launch of the Agenda 2030’s Sustainable Development Goals (SDG) and stresses that the interests of women and disadvantaged populations must be taken into account [6,23,70].

While the above depicted strands of research predominantly concentrate on how the climate–gender nexus can be beneficial for gender aspects, thus making gender known as a “co-benefit” of climate policies, more recent literature indicates that gender can also be a **tool for climate protection**. Mavisakalyan and Tarverdi [19] showed that female representation in national parliaments lead to more stringent climate change policies which then lead to lower CO₂ emissions. They suggest that this relationship is likely to be causal [19]. Cook et al., moreover, demonstrated that mitigation efforts, such as forest conservation, are more equal and more effective when carried out with gender quotas [20].

These findings thus indicate that climate policy can be a driver for gender equality, as well as that gender considerations are an underestimated tool for climate protection, thus indicating that connecting climate and gender policies is mutually beneficial for achieving gender equality and climate protection efforts (see Figure 1).

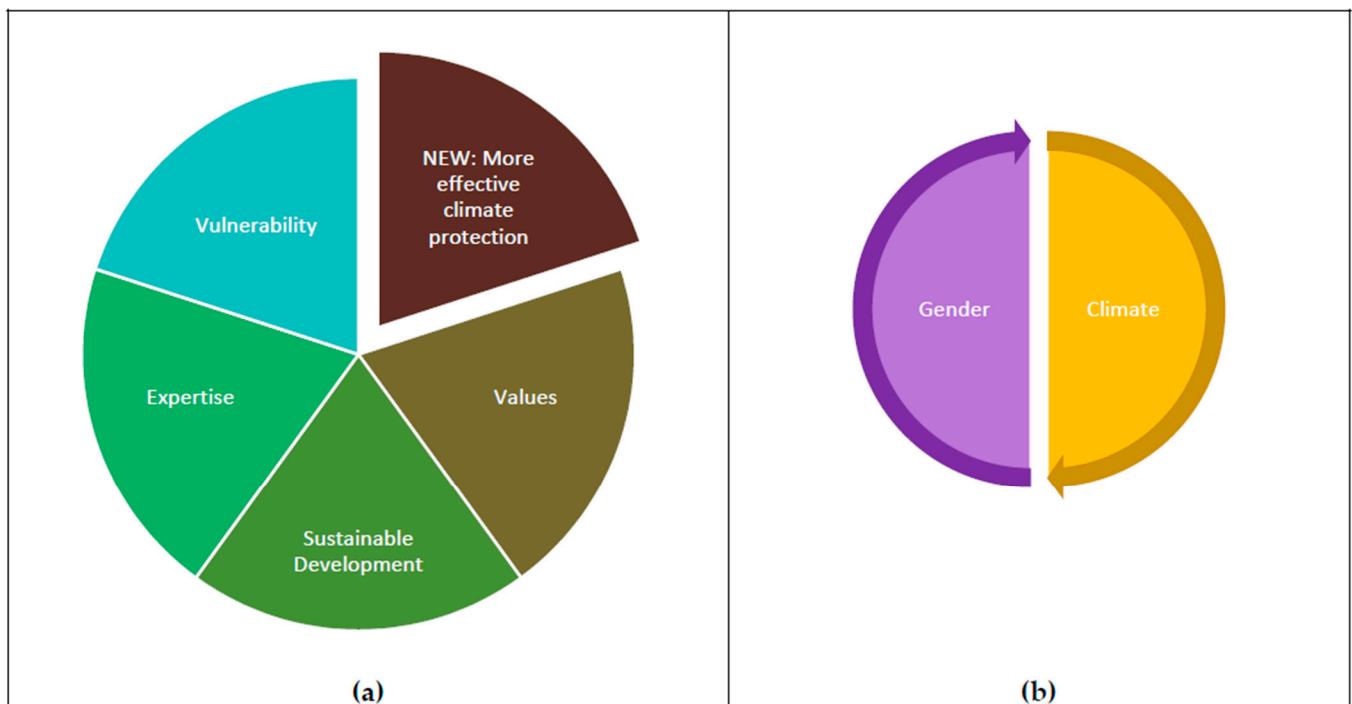


Figure 1. Lines of argumentation supporting a gender-responsive climate policy (a) and the potentially mutually beneficial gender–climate nexus (b). Source: author’s own illustration.

Shortcomings in Current Approaches

However, despite these advances in investigating the climate–gender nexus especially over the past decade, the more recent research also allows to detect shortcomings in the so far existing approaches.

First of all, most of the research on gender and climate change has been conducted in the area of adaptation, focusing on particular sectors, such as agriculture [8], natural disasters [71], and natural resource management [4,15], to name only a few examples. From a climate protection perspective, the disregard of mitigation presents a limitation to achieving climate protection targets as it is inconsistent with the fact that mitigation is the first best option. From a gender perspective, this single-sided focus contributes to an oversimplification of the role of women by framing women as victims, vulnerable, poor, and socially isolated [67,71]. This contributes to an essentialization, i.e., the stereotype that women are naturally more caring or connected with the environment, and leaves out their agency, i.e., their contributions to climate protection, especially on a political level [7,15].

Moreover, from a gender perspective, criticism has emerged that in the climate–gender literature, the term gender most commonly equates to a concept that includes only women [7,71]. This focus is justified given their underrepresentation in decision- and

policy-making spaces while bearing many of the impacts of climate change, yet it also calls for the adoption of nuanced approaches for both men and women, to avoid falling into stereotypes [67,71]. Moreover, this dichotomous male–female perspective, which reinforces the gender binary, has also been criticized for lacking an intersectional approach. The vulnerability of queer persons and LGBTI communities are rarely mentioned amongst studies on groups particularly affected by climate crises [7,18].

Other shortcomings include the strong focus on scientific and technological solutions, which distract from the fact that a transformation of ideologies, power relations and economic systems is also needed and thus risks reproducing existing gender inequalities [7] (see Figure 2).

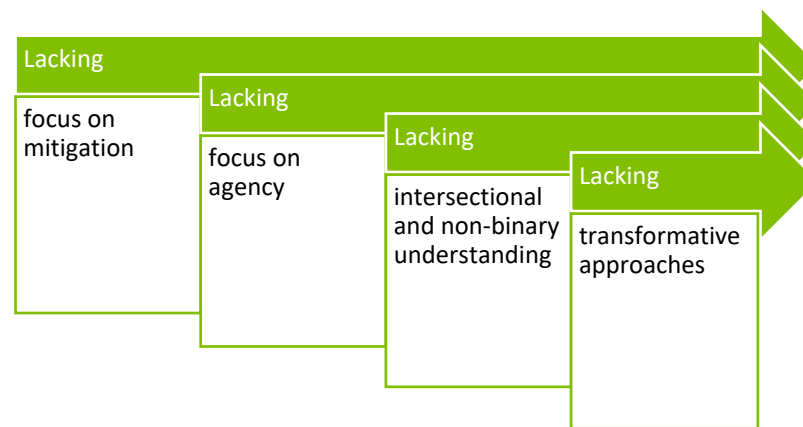


Figure 2. Shortcomings in current approaches to the climate–gender nexus. Source: author’s own illustration.

The literature reviewed also indicated possible reasons for these shortcomings: The lack of sex-disaggregated data is identified as key [4,72]. Data on CO₂ emissions are, for instance, still largely recognized as gender-neutral. This blurs the difference in energy consumption between men and women, which, in different sectors, such as transport, food consumption, and housing, has been shown to vary. A collection of gender-specific data could therefore lead to targeted interventions to reduce emissions and thus better mitigate climate change [18,73,74].

Moreover, lacking and misdirected financing (i.e., gender budgeting) were identified as reasons as financial resources available for adapting to and mitigating climate change are inadequate to respond to women’s needs and structural barriers that often hinder their access to such resources [72]. For instance, only 0.01% of climate finance projects tackle gender inequalities together with climate change [75]. Moreover, on a more general level, lacking expertise, awareness and capacity building regarding the climate–gender nexus were identified in many institutions and organizations [23,72]. Numerous studies also refer to the lack of female representation in climate policy at different government levels [1,3,5,16,17,72,76]. This underrepresentation has been found to be due to social structures, such as unequal access to social, economic, technological resources, education, and information. This prevents women from participating equally in decision-making processes regarding climate policy [9,10,13,18,20,77] and results in the marginalization of women in decision-making structures. It thus leads to the undervaluation of their contributions [3,6,7] and very little practical knowledge [23].

3.2. The Climate, Gender and Coal Triad

After the review of the general climate gender nexus, the question of the role and relevance of the coal sector in this context remains. As briefly mentioned in the introduction, this sector is highly relevant both from a climate perspective and from a gender perspective.

The relevance of the coal sector for climate protection efforts has been well established: worldwide decarbonization efforts focus on coal as the fossil fuel with the highest emissions.

Calculations show that approximately 80% of all coal reserves must stay in the ground in order to achieve the international climate targets [78], thus showing that a coal phase-out is key in order to limit global heating to a maximum of 1.5 or 2 °C and thus fulfill the Paris Agreement [79–81]. For this reason, the attention is shifting from the demand-side only efforts, i.e., reducing emissions during the combustion of coal, to including also the supply side, i.e., reducing coal mining directly [82]. Efforts to transform the coal sector according to international climate targets center on the concept of a just transition, which mainly refers to economic justice and focuses on the work force [83].

The relevance of the coal sector from a gender perspective is based on the fact that several gendered differences have been identified in this sector, particularly in mining: First findings disclosed that the coal sector is traditionally seen as a “masculine” sector in which only men participate, meaning that it is characterized by gendered employment, traditions and culture [84,85]. Research in the area of natural resources and extractivism shows that coal mining, similar to the mining of other natural resources, has gender-specific impacts, such as gendered roles in labor force [86] and gendered impacts specifically on local women [87]. In response to this, there has been a focus on including women in the coal labor market [85,88]. Moreover, the gender-differentiated health and socioeconomic impacts of coal mining have been analyzed [47,65]. In Colombia particularly, the mining sector has been found to depict various gender-differentiated impacts causing disadvantages for women and girls. Reports have pointed to a wide set of impacts, particularly on Indigenous women: ranging from health and childbearing complications to the relationship between gender-based violence and coal mining regions [42,43,65,89]. Moreover, critical perspectives have emerged in Colombia regarding the different understandings of the climate crisis and gender, breaking away from Western paradigms and highlighting the importance of Indigenous knowledge, concepts, and understandings [64,89–91].

These findings indicate that the coal sector does not only present a window of opportunity for mitigating the climate crisis but also for advancing gender equality. It moreover results in the question whether climate and gender efforts in this sector may be mutually beneficial. However, as shown here, up till now research has focused on dichotomous relations, thus leaving a gap regarding the triad, as well as regarding the question of how to address climate and gender aspects simultaneously in policy approaches for a transformation of the coal sector (see Figure 3).

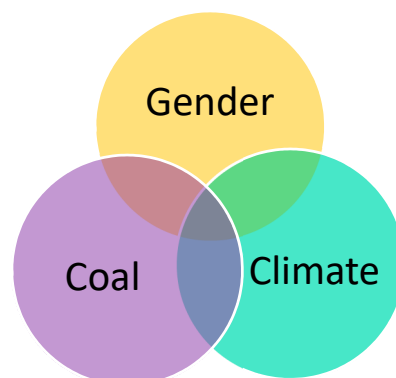


Figure 3. The climate–gender–coal triad. Source: author’s own illustration.

Closing the knowledge gap on this triad is thus important in a twofold way: On the one hand, sector-specific research contributes to gaining further insights for understanding the overarching climate–gender nexus. On the other hand, understanding the interdependencies is important for policy design of the coal sector transformation. The latter, in particular, is thus also insightful for energy transitions, since ultimately a transformation of the coal sector will mean that renewables will be expanded. While this has been shown and well-evidenced to be an important building block for the reduction of greenhouse gases, little is known about the gender aspects in this area. Awareness is rising that the

switch from fossil fuels to renewables does not only have environmental aspects to be considered, but also societal aspects in order to become a “just” transition and thus benefit society without reproducing or multiplying existing inequalities. Accordingly, the concept of a “just energy transition” [92] has come into focus which refers to the idea of incorporating socioeconomic aspects of the otherwise technical energy transition [93] (p. 677). However, while it has been argued that renewable energies can contribute to sustainable growth and benefit gender equality through the promotion of female participation, there is still little knowledge on the broader context and especially the interdependencies and resulting insights for policy design as research to date has focused on specific aspects, such as gender gaps in energy access, the energy labor market, and the energy-related decision-making [13,53,70,73,94–106].

Based on the conceptualization outlined in this section, the following section illustrates these findings with the empirical example of the Colombian coal sector.

3.3. *The Climate, Gender, and Coal Triad in Colombia*

This illustration of the conceptualization is based on the results of interviews with relevant stakeholders (see Section 2). The interviews focused on the three overarching topics (knowledge and awareness of the interrelations of the triad, the role and agency of women, and insights for an energy transition). They allowed to identify reoccurring aspects and themes in these areas which are presented in this section in thematic order.

The Climate–Gender–Coal Triad

The field work allowed the following insights: Regarding the awareness of the climate–gender–coal triad, the interviews first of all indicated a discrepancy between the national and the local level regarding its perception. At the national level, the interviews showed that the integration of gender aspects into climate policies is starting to gain prominence. This is reflected in attempts to integrate gender aspects into policies and programs and in the fact that government officials showed awareness of the climate and gender relevance of the country’s coal sector (interviews 6, 10, 11, and 13).

On the local level, the interviews with women grassroots activists and NGO representatives confirmed that climate change here, too, is perceived as an important issue, whose impacts are starting to affect everyday life. However, when asked about their engagement to face this crisis, the responses were centered on the defense of the territory (*defensa del territorio*), as an all-encompassing issue that involves not only adapting to the impacts of the climate crisis but also resisting against the social and environmental damages of coal mining. One interviewee stated that “*the topics of climate change, of the need to reduce carbon emissions [. . .] have served us as a tool in the political struggle, in the discourse, to be able to stop the expansion of the extractive borders*”. Moreover, the interviews showed that for women in the communities, the relationship with the territory (*territorio*) is a fundamental element in the construction of their collective identity and worldviews (Different strands of feminism, such as feminist geography, communitarian, or territorial feminisms, have further explored this relationship from a post- and de-colonial perspective in Latin America. See, for example, Ulloa [64,89,107] and Colectivo de Geografía Crítica del Ecuador [108] for an overview on this topic.). The defense of the territory is the central struggle at the local level and refers to the resistance to coal mining and holding the government and mining companies accountable for the environmental, health, and social damages they have instilled in the communities (interviews 5, 12, 14, and 15).

Regarding the interrelations of the triad, the interviews showed that there is still little knowledge, while the dichotomous relations are well-known. The gendered impacts of climate change were mentioned, since, as one interviewee put it, “*if there is something that’s always been clear for us in the topic of climate change it is that its impact is differentiated. It does not affect a pregnant woman in the same way as a young male worker*”. Regarding the relationship between the coal sector and gender, interviewees were even more aware of the intersections. They referred to damages of the territory and the environment (interviews 1, 5, 7, 8, 12,

14, and 15), as well as to gender-differentiated impacts of mining, thus confirming those impacts referred to in the literature, including the following:

- Negative impacts on women's health, such as infertility and miscarriages (interviews 1, 8, 10, 14, and 15);
- Impacts on gender roles, including increased care work for women (interviews 1, 5, 14, and 15);
- Impacts on other cultural effects related to the separation of communities from their territory or changes in ancestral activities (interviews 2, 5, 8, 9, 12, 14, and 15);
- A relationship between mining and gender-based violence, including child prostitution and trafficking (interviews 2, 8, 12, 14, and 15).

However, when asked how these impacts are related to the impacts of climate change, there were no clear answers. Some interviewees mentioned that it is difficult to determine which environmental changes can be attributed to the climate crisis or to coal mining (interviews 9, 11, and 13).

The Role of Women

Regarding the role of women, the interviews showed that women, especially Afro-Colombian and Indigenous women, participate actively in decision-making spaces which on local level are of informal nature (such as community organization), while men are found to participate more in formal leadership roles, e.g., unions (interviews 3, 5, 9, 11, and 14).

In response to the question of why women are more actively involved at the local level in the defense of their territory, local interviewees pointed to their role as caregivers and their motivation to provide a safe future environment for their children (interviews 1 and 2). Moreover, more intensive-care work due to the increase in diseases, as well as the lack of food and water, were mentioned as reasons for increasing concerns for the future of their children and communities (interviews 1 and 2).

Another reason quite frequently mentioned for these differences in women's participation in decision-making spaces is the structural exclusion of local communities (interviews 2, 3, 4, 5, 7, 8, 10, 11, 14, and 15), which refers to minimal state presence in many regions in rural Colombia, including La Guajira and Cesar, along with the lack of representation in local, regional and national governmental, legislative, and other decision-making bodies. Additionally, several respondents mentioned a lack of knowledge and interest in cultural differences by public institutions (interviews 1, 2, 4, 14, and 15).

Moreover, gender roles were mentioned repeatedly as a factor that contributes to the exclusion of women. In many communities, there is a clear distinction between the roles of men and women, the latter being perceived primarily as family caregivers. As a result, these strict roles restrict women's participation because oftentimes they are not asked to formally participate, for example, in prior consultation (*consulta previa*) processes (interviews 1, 5, 8, 9, 10, 11, 12, 14, and 15). Several interviewees observed the perception of women as caregivers and the care work itself as a hindering factor when it comes to the participation of women in formal spaces (interviews 3, 5, 8, 11, and 12).

Energy Transition

With regards to an energy transition and the subsequent expansion of renewable energies, the possible pitfalls of these renewable energy projects were repeatedly mentioned: several interviewees explained that, to achieve a just transition, new conflicts related to renewable energy projects must be prevented, and conditions, such as the safety of local leaders, must be ensured (interviews 5, 12, and 14).

Moreover, national and international projects were criticized for failing to take into account the cultural specificities of the territories where the projects are implemented (interviews 5, 9, 11, and 14). Project-related displacement from the territories or drastic changes in the environment due to new renewable energy projects were mentioned as threats to local communities and their livelihoods (interviews 8, 9, 11, and 15). Hence, the lack of adequate regulations for a national energy transition was described as a further obstacle to transform the sector (interviews 8, 9, and 11). The idea of a just transition within

national renewable energy projects has not been sufficiently considered, and much less the gender aspects of it (interviews 2, 6, 8, 12, and 15).

4. Discussion of Results

As presented above, the interviews allowed for specific insights on the aspects of knowledge on the climate–coal–gender triad, the role of women and the question of how to design an energy transition. This section discusses the results in thematic order.

The Climate–Gender–Coal Triad

Regarding the climate–coal–gender triad, the interviews indicated that, while the dichotomous relationships between mining and gender and between climate and gender are generally well-known and understood, the interdependencies of the coal–gender–climate triad still remain unclear. Partially, this may be due to climate change being a rather abstract and technical construct which stands in contrast to the first-hand experienced impacts of the coal mining [89]. Even for those interviewees well familiar with the concepts of climate change, it remained difficult to determine to what extent environmental and climatic changes are caused by mining or by the effects of the climate crisis. This indicates that there is currently not enough information on the issue and that more knowledge needs to be generated. The results of the interviews thus confirm the lack of knowledge on the climate–gender nexus in general and the climate–gender–coal triad in particular, as well as the expertise argument, all of which were identified in Section 3.

A possible explanation for the detected discrepancy between the national and the local level may lie in the differences between the policy-making spheres at national level located in Bogotá and the local level, i.e., the communities in the coal regions. As depicted before, in Bogotá, climate-policy-making is strongly influenced by the international climate regime and centers on mitigation efforts and adaptation measures to reduce vulnerability. At this policy level the climate crisis has a central role in the actions of government institutions. In the coal regions, which, as depicted in Section 1.2, are characterized by high percentages of Afro-Colombian and Indigenous communities, especially the Wayúu in La Guajira, the discussion is inserted in a much broader context of the engagement against the impacts of coal mining in the communities and its territories. In the context of local communities, the protection and defense of the territory seems to take priority, regardless of whether the damages stem from coal mining or the climate crisis.

The Role of Women

Regarding the role of women, the evidence obtained from the interviews leads to a paradoxical observation: while women referred to their role as caregivers as their motivation to participate, this role is also one of the factors constraining their participation in official decision-making spaces. Interviewees agreed that the inclusion of women in decision-making processes is an indispensable tool for more effective climate policy (interviews 7, 10, and 14). While at first sight the finding that women do participate in decision-making and thus exert agency may seem contrary to the identified lack of female representation in climate policy, the important difference is that the identified participation only refers to informal spaces. Regarding the participation in formal spaces, to which most of the literature refers, the empirical example confirms the findings that female participation is limited due to social structures.

Energy Transition

Regarding an imminent energy transition, the interviews indicated that the active integration of gender perspectives into the planning and implementation of a transition is central in order not to reproduce or multiply existing inequalities, i.e., to create a just transition. The identified efforts at national policy level to strengthen gender perspectives in climate policies present a window of opportunity for the creation of a gender-responsive climate policy for the coal sector. The interviews allowed for two important insights for the design of such a policy: women already are change agents at local level, yet there are obstacles hindering their participation in formal decision-making spaces. The example indicated that the removal of such obstacles to allow for more equal participation

may contribute to both more climate protection and more gender justice. Moreover, the interviews indicate that intersectionality needs to be an intrinsic element of the design of such a policy. This became evident in the fact that, while not originally in the center of the interviews, the analysis highlighted that cultural differences and the lacking integration of those into decision-making processes were mentioned frequently as a transversal category. Given the fact that the impacts of the coal sector and climate change disproportionately affect Indigenous and Afro-Colombian communities, a policy for a just transition cannot be designed without their inclusion.

5. Conclusions

This paper centered on the climate–gender–coal triad and aimed at contributing to a better understanding of it. In order to conceptualize the triad, the paper started with offering a conceptual approach to the climate–gender nexus. Here, it identified four central arguments in support of the inclusion of gender perspectives into climate policy. These are the sustainability argument, which contends that actions to combat the climate crisis must simultaneously contribute to sustainable development, including gender equality; the vulnerability argument, which stresses that women are more vulnerable and negatively affected by the climate crisis; the expertise argument, which states that women have expertise and skills that must be integrated into climate policies for those to be effective; and the normative argument, which asserts, from a value-oriented approach, that gender equality is a value that all policies should pursue.

These arguments were enhanced with recent findings evidencing that gender perspectives made climate policies more effective and thus established the argument that connecting climate and gender policies in a gender-responsive climate policy is mutually beneficial for achieving gender equality and climate protection efforts.

Based on this outline, the paper elaborated the relevance of the coal mining sector for climate and gender efforts and showed that, while dichotomous relations between climate, gender, and coal have been studied, the complexity of the triad has been neglected. It established this argument and used the empirical case of the Colombian coal sector to illustrate it. This choice of the example was based on the urgency of an effective climate policy in this sector, the particular relevance of gender aspects, and the window of opportunity to create policies for an energy transition that address climate protection and gender equality simultaneously. The results of the field research confirmed the before-identified shortcomings of current climate policies. It moreover showed that, while the relevance to address the triad with comprehensive policies is uncontested, there is still little knowledge on the interrelations. Regarding the role of women, it became evident that they have the potential to be central change agents, as the analysis showed that women already are important actors of transformation at local level and in informal decision-making spaces. This indicates that gender equality may be an underestimated tool for climate protection and identifies gender parity in decision-making at all levels as an important tool to foster both gender equality and climate protection efforts. Moreover, regarding the insights for policy design, the analysis allowed to identify gender considerations as an important element of a just energy transition. It became clear that, without their integration into planning and implementation, this transition risks multiplying existing inequalities. Intersectionality was identified as a central building block. Resulting policy recommendation can be found in the Appendix A. Overall, although further research is needed to obtain further insights and evidence, this article contributes to the findings of more recent research which allow for the assumption that addressing climate and gender simultaneously may be mutually beneficial.

Future research could extend these findings in the following two directions:

(1) Focus on women's agency, mitigation, and intersectional and transformative approaches: It has become clear that these are predominant gaps in the climate–gender nexus that need to be closed. Regarding intersectional and non-binary understandings of gender, in-depth ethnographic and sociological research might provide a better understanding of

the existing gender constructions in Colombia, including among the Wayúu Indigenous and Afro-Colombian communities relevant for this study, and their gendered experiences regarding coal mining and the climate crisis. Research, especially in the fields of political science and gender studies, could question the existing power structures in climate policy-making and the inherent gender roles “behind” it, thus contributing to transformative approaches. In this way, future research can contribute to broadening the techno-economic focus predominant in climate discussions.

(2) Extend research across sectors: Although the coal sector is of particular importance for the climate–gender nexus, a gender-responsive climate policy must eventually include all sectors. For this reason, research should expand to cross-sectoral approaches, too.

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Appendix A

Policy Recommendations

From the findings of this paper, the following policy recommendations can be derived for the conceptual strengthening and implementation of a gender-responsive climate policy.

1. Investments in research and knowledge generation

This paper confirmed that there is an enormous knowledge gap on the climate–gender nexus in general and the climate–coal–gender triad in particular. Knowledge is the basis for creation of policies and their implementation. The first step is, hence, to fund and promote knowledge generation in this area, and the focus should be on overcoming the current shortcomings, i.e., research should focus on investigating the agency of women and intersectional understandings.

2. Foster female participation in decision-making spaces

This paper showed that, while women already participate in informal decision-making spaces, their participation in formal ones is still limited. Especially with regard to the fact that gender parity in national parliaments—i.e., formal decision-making spaces—is an important tool for more stringent climate policies, female participation in such spaces must be enhanced. Gender parity is an important first step which should be enhanced with intersectional approaches.

3. Broaden the concept of a just transition

The concept of a just transition, which here refers to the phase-out of fossil fuels and a transition to renewable energies, is an important steppingstone for the creation of a gender-responsive climate policies. However, the current understanding of the concept focuses heavily on employment aspects and has lacked a gender perspective. A transition to renewable energies will not automatically make society more just, include women in value chains, contribute to gender equality, or repair the damage caused by coal mining. For it to be gender-responsive, a just transition must include a gender perspective and tackle structural inequalities instead of reproducing them. Energy projects should actively promote gender equality not only regarding the participation of women in the workforce but also in considering how such projects might have gendered impacts and affect communities.

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